MINISTRY OF BLUE ECONOMY AND CIVIL AVIATION

Belize Maritime Economy Plan

Commonwealth Marine Economies Programme

Enabling safe and sustainable marine economies across Commonwealth Small Island Developing States (SIDS)

UKaid
from the British people

Please consider the environment before printing this report

This report has been created to be viewed digitally as a PDF. Should you need to please print in black and white.

Table of contents

Ministerial Statement

Ministerial Statement on behalf of the Belize government

With its expansive seagrass beds, mangroves and coral reefs, Belize's marine system is one of the most diverse marine areas in the world. Prized for its biodiversity, it plays an important role in the lives of all Belizeans. These ecosystems nurtured by Belize's ocean is central to life and livelihood for all the people in Belize from coast to city. Through food provision, climate regulation and recreational activities our ocean provides significantly to the socioeconomic development and growth of Belize. More than half of the population of Belize depends directly on marine activities. It is estimated that the reef contributes more than a billion dollars to our national economy through tourism, fisheries, and shoreline protection. This Blue Economy Maritime Plan is timely and crucial as it provides an opportunity to strategically plan the use of our blue resources in a manner that will be most impactful to the development agenda of our country in a manner that is sustainable and eco-responsible.

The support of the Government of the United Kingdom through the Commonwealth Marine Economies Programme represents a strategic partnership. It is one that contributes to our economic as well as our environmental targets which seek to build a robust sustainable Blue Economy for Belize. Our new and innovative Ministry of the Blue Economy was launched recognising the importance of this sector to our development agenda and our Plan Belize. The process of developing this plan was inclusive in nature ensuring the harmonization of visions and plans of all stakeholders in the country's blue space. Aligned with the Ministry's 5-year strategic management plan, it is intended to culminate in sustainable economic development through the responsible use of our marine environment and the wealth within.

The recently concluded COP 26, chaired by the UK Government, has further impressed on us and the world the important role the oceans play in sustaining livelihoods and lives. Through climate regulation and wise stewardship of this critical resource, we are preserving this "wealth untold" for many more years to come.

The Government of Belize and our Ministry of Blue Economy and Civil Aviation extend its heartfelt gratitude to all key stakeholders across key government ministries, civil society, academia, and the private sector for providing valuable input during the development of this Blue Economy Maritime Plan. Special thanks to our Coastal Zone Management Authority and Institute and our Fisheries Department for their participation in this important process.

We especially would like to thank the Government of the United Kingdom for sharing their expertise and resources to help us create this Plan that realises the blue component of our national development framework for Belize, Vision 2030.

Hon. Andre Perez
Minister of Blue Economy and Civil Aviation

Ministerial Statement on behalf of the UK government

The ocean is where life began and is essential for all life on Earth. It regulates climate and weather patterns, provides our food, medicine, energy and other valuable resources, facilitates marine transport and trade and is full of wonders we have hardly begun to understand. Mangroves, seagrass beds and coral reefs also offer natural protection from the effects of climate change.

We know that effective ocean protection will be game-changing in turning things around for climate, for nature, and for people. For many nations, especially Small Island Developing States (SIDS), or 'Large Ocean States', that is even more important, since the ocean is at the very heart of their sustainable economic development and the future of their people.

I am delighted that the UK has been working in partnership with the Government of Belize to develop Belize's bespoke national Maritime Economy Plan under the Commonwealth Marine Economies (CME) Programme.

This plan presents a holistic view of the opportunities presented by the ocean for developing a sustainable 'blue economy' in Belize. It covers the role of marine tourism for Belize's prosperity; the need for responsible coastal development to protect lives and homes in the face of extreme weather events; the importance of including the protection of valuable ecosystems in national planning decisions; and the provision of diverse training and job opportunities within the blue economy to ensure that future generations continue to reap the ocean's benefits.

It's great that the CME Programme has also been supporting Belize, in collaboration with the UK Hydrographic Office, the Centre for Environment, Fisheries & Aquaculture Science, and the National Oceanography Centre, to deliver capacity building and to facilitate scientific data collection. This research has provided much needed information about the health and status of the marine environment.

By working with local scientists, and academics at the University of Belize to study the aquatic environment, Belize has been able to establish state-of-the-art monitoring, allowing them to address the risks and threats associated with climate change (including threats from ocean acidification, water quality and microplastics).

I am pleased to see Belize's commitment to protect its reefs and a portion of its ocean estate from the impacts of oil exploration and dredging, including through the establishment of a Blue Economy Ministry. The recent MOU signed between the Government of Belize and Galen University to mainstream blue economy into the Environmental Science curriculum of schools is a strong indication of the country's commitment to the transition to a sustainable blue economy. By working in partnership through the CME Programme, and through projects supported by our British High Commission in Belmopan, the UK and Belize are supporting commitments made at the Commonwealth Heads Of Government Meeting (CHOGM) in 2018. That includes the Commonwealth Blue Charter, which helps Commonwealth countries work together on a fair, inclusive and sustainable approach to ocean protection and economic development. Ambitious and co-ordinated actions, like those outlined in this Maritime Economy Plan, are critical for the future health of the ocean.

As Presidents of the 26th United Nations Climate Change Conference, the UK will make the case for ocean protection at every opportunity. We are pleased to be partnering with a number of Large Ocean States on the frontline of climate change to inspire climate action. There is simply no path to net zero emissions, or the sustainable development goals, or the recovery of nature, without effective ocean protection and sustainable management of the marine environment.

The UK Government remains committed to maintaining its track record as a reliable and committed development partner with Belize in navigating this rapidly developing maritime sphere. We share one global ocean – so we need a whole earth effort to sustain it.

Lord (Zac) Goldsmith of Richmond Park
Minister for Pacific and the Environment

Abbreviations and Acronyms

BEL – Belize Electricity Limited
BHSFU – Belize High Sea Fisheries Unit
BPA – Belize Port Authority
BZ$ – Belizean Dollars (national currency)
CAF – Development Bank of Latin America
CARICOM – Caribbean Community
CCCCC – Caribbean Community Climate Change Centre
CCCFP – Caribbean Community Common Fishery Policy
CBD – Convention on Biological Diversity
CDB – Caribbean Development Bank
CDERA – Caribbean Disaster Emergency Response Agency
Cefas – Centre for Environment, Fisheries and Aquaculture Science (of the United Kingdom)
CIMH – Caribbean Institute for Meteorology and Hydrology
CME – Commonwealth Marine Economies
CRFM – Caribbean Regional Fisheries Mechanism
CSA – Climate Smart Agriculture
CSF – Critical Success Factor
CZMAI – Coastal Zone Management Authority and Institute
EASME – European Agency for Small and Medium-size Enterprises
ECP – Environmental Compliance Plans
ECROP – Eastern Caribbean Regional Ocean Policy
EDC – Economic Development Council
EEZ – Exclusive Economic Zone
EIA – Environmental Impact Assessment
ENSO – El Niño Southern Oscillation
ERC – Energy Report Card
EU – European Union
FAO – Food and Agriculture Organisation
FCDO – Foreign, Commonwealth & Development Office
DRR – Disaster Risk Reduction
DRM – Disaster Risk Management
GDP – Gross Domestic Product
GESTER – Governance, Environment, Social, Technology, Economy, Resilience & Risk (analysis)
GHG – Green House Gas
GSDS – Growth and Sustainable Development Strategy (2016-2019)
CIAT – (from Spanish) International Centre for Tropical Agriculture
ICZM – Integrated Coastal Zone Management
IDB – InterAmerican Development Bank
IDC – Institutional Development Consultants
INNS – Invasive Non-Native Species

Abbreviations and Acronyms (cont.)

ISM – Islands System Management
ITCZ – Inter-Tropical Convergence Zone
JICA – Japan International Cooperation Agency
MBECA – Ministry of Blue Economy and Civil Aviation
MED – Ministry of Economic Development
MEP – Maritime Economy Plan
MHW – Mean High Water
MNRE – Ministry of Natural Resources and the Environment
MLW – Mean Low Water
MPA – Marine Protected Area
Mt – Metric tonne
NEAC – National Environmental Appraisal Committee
NEMO – National Emergency Management Organisation
NDC – Nationally Determined Contribution
NGO – Non-Governmental Organisation
NOC – National Oceanography Centre (of the United Kingdom)
NOP – National Ocean Policy
NTMP – National Transportation Master Plan
LULUCF – Land use, land use change and forestry
O&G – Oil and Gas
OECS – Organisation of Eastern Caribbean States
ORE – Offshore Renewable Energy
OTEC – Ocean Thermal Energy Conversion
PoB – Port of Belize
PPP – Public Private Partnership
PUC – (Belize) Public Utility Commission
PUP – People's United Party
REDD+ - Reducing Emissions from Deforestation and Forest Degradation
SCCF – Special Climate Change Fund
SDG – Sustainable Development Goal
SIDS – Small Island Developing State
SMP – Shoreline Management Plan
SLR – Sea Level Rise
SWAC – Sea Water Air Conditioning
TNC – The Nature Conservancy
UKHO – United Kingdom Hydrographic Office
UNEP – United Nations Environment Programme
US$ – United States Dollars
WCR – Wider Caribbean Region
WCS – Wildlife Conservation Society
WTTC – World Travel and Tourism Council

The Commonwealth Marine Economies Programme

The Commonwealth Marine Economies (CME) Programme was launched in 2016 and aims to support 17 Caribbean and Pacific Small Island Developing States (SIDS) in conserving their marine environments and making the most of their maritime resources to catalyse sustainable economic development. It is designed to promote growth, innovation, jobs and investment whilst safeguarding healthy seas and ecosystems, and it helps to address climate change, the UN Sustainable Development Goals and the Paris Climate Change Accord.

The CME Programme broadly comprises three components:

- **Government Engagement and Dialogue**: The UK Government is committed to working in partnership with SIDS Governments of individual countries.
- **Scientific Research and Capacity Building**: To sustainably manage and use marine resources, it is vital to understand them. As a demand-led initiative, since 2016 the Programme has been collecting data, undertaking scientific research and delivering capacity building activities against a clear action plan developed from country requests.
- **Preparation of national Maritime Economy Plans**: Where requested by SIDS Governments, and in partnership with them, the Programme will assess the existing national economies and identify the opportunities and obstacles to development. Bespoke national Maritime Economy Plans (MEPs) will be developed to enable individual countries to address economic growth and alleviate poverty.

The UK's Foreign, Commonwealth & Development Office (FCDO) is leading this Programme, which since 2016 has showcased UK world-leading expertise in marine science through delivery partners at the United Kingdom Hydrographic Office (UKHO), the Centre for Environment, Fisheries and Aquaculture Science (Cefas) and the National Oceanography Centre (NOC). The programme has also engaged a team of technical experts who are working in partnership with SIDS governments to develop national Maritime Economy Plans. Examples of the work carried out in partnership with Belize are provided in Section 1.5.

At the Commonwealth Heads of Government meeting in April 2018, 53 countries agreed the landmark **Commonwealth Blue Charter**, a bold commitment that sets out how member states will lead international efforts to sustainably develop and protect our oceans. The CME Programme supports the aims of the Commonwealth Blue Charter and the UK Government's International Ocean Strategy. It is an integral part of the UK's effort to protect the health of the world's oceans and promote the growth of blue economies.

Executive Summary

This Maritime Economy Plan provides an overview of the existing maritime economy of Belize. It sets out priorities and actions that aim to help Belize demonstrate a clear vision and direction that takes account of national issues, international commitments and the challenges of a Small Island Developing State. Actions support economic growth, livelihoods and jobs, and reduce losses from natural hazards, extreme weather events and climate change. The overall objective is to help grow the national economy in a way that reflects the aims of the Commonwealth Charter, including good governance, sustainable development, and gender equality while recognising the needs of small and vulnerable States. Importantly, this Plan aligns with Belize's Growth and Sustainable Development Strategy (GSDS) (2016-2019) and the People's United Party's "Plan Belize 2020" directional document for
the country.

The principles of **low carbon**, **resource efficiency** and **social inclusion** have been used to shape the development of this Plan. This is compatible with the concept of the 'blue economy', which first emerged at the 2012 Rio+20 United Nations Conference on Sustainable Development and recognises the need to maximise the vast economic potential of the ocean while also preserving it for current and future generations. Progress towards a blue economy can help achieve a range of UN Sustainable Development Goals (SDGs), including SDG 14 (Life Below Water), SDG 5 (Gender Equality), SDG 8 (Decent Work and Economic Growth), SDG 7 (Affordable and Clean Energy), SDG 11 (Sustainable Cities and Communities), and others.

The maritime economy includes established sectors such as fisheries, tourism and shipping as well as emerging activities such as offshore renewable energy, aquaculture and marine biotechnology. It also includes the policies and management of these sectors and of the coastal and marine environment on which these sectors rely. This Plan describes the maritime economy in terms of bedrock / traditional sectors and emerging sectors. Other reports may describe the same concept using different categories as there is no internationally agreed way to describe maritime economy sectors.

Bedrock / traditional sectors	Emerging sectors
Energy – Oil and Gas (O&G), desalination	Energy – renewables, storage, hydrogen, Ocean Thermal Energy Conversion (OTEC), Sea Water Air Conditioning (SWAC)
Shipping, ports	Biopharma
Fisheries and aquaculture	New fisheries (deep-slope) and aquaculture incl. mariculture
Tourism – cruise, yachting, beach / all-inclusive resorts	Tourism – eco tourism
Minerals / aggregates	Deep sea minerals / minerals

The production of this Maritime Economy Plan is the result of several months of desk work, structured questionnaires, a consultative mission to Belize and discussions with a range of Government, Non-Governmental Organisations (NGOs), and other stakeholders. It is, therefore, very much a strategic overview of Belize's maritime economic potential. Each maritime economy sector was subject to a bespoke **multicriteria analysis** using the information collected from all the sources to consider **governance**, **environment**, **social factors**, **technology**, **economy**, **resilience and risk**.

The draft Maritime Economy Plan was subject to review, feedback and update during 2020 / 2021, in consultation with the Government of Belize. Due to the COVID-19 pandemic, engagement with stakeholders was carried out remotely through a series of online meetings, phone calls and emails. The Ministry of the Blue Economy and Civil Aviation, and the Coastal Zone Management Authority and Institute (CZMAI) have acted as the focal points for engagement on the Maritime Economy Plan.

Key findings for Belize's maritime economy are:

- **Tourism** is the most important economic sector in Belize, with the total contribution accounting for over 40% GDP (2017) and almost 40% employment (2018). Travel earnings account for 40% of total exports of goods and services. Although the economy is highly reliant on this sector (making it potentially vulnerable to changes in the market), the tourism offering is diverse with potential to expand and diversify further. Yachting is proposed as a new focus area for the Belizean tourism sector to pursue in the coming years.
- **Maintaining a high quality coastal and marine environment underpins the tourism sector.** Ensuring tourism development is sustainable and does not adversely affect the environment is paramount.

- **Maritime transport is of strategic importance** but it lacks a focused development plan. The main ports are privately owned and the mechanisms for the Government to set the strategic direction for maritime transport facilities are limited.
- **Fishing is an important bedrock sector** that provides employment for around 2% of the workforce and contributes approximately 4% of GDP. Inshore fisheries are well managed, with management plans in place for key species, and provide an important food source and export commodity, contributing at least one third of fishery exports by value.

Actions, primary actors (i.e., who should be responsible for the actions) and desired outcomes are presented for each maritime economy sector. These are high level actions that are of strategic importance for the sector and the country as a whole. Importantly, the actions align with the vision and mission of the Ministry of Blue Economy and Civil Aviation along with PUP's "Plan Belize" and Strategic Programmes including "Economic transformation and growth"; "Trade deficit reduction" and "Protection of the environment". Each sector is given a prioritisation category – Urgent, New / Needs Attention or Well Established.

22 actions are identified. The Coastal Development sector has been identified as requiring **urgent** action. The coastal zone and numerous islands have experienced rapid tourism development. To ensure development is environmentally sensitive and does not undermine the quality of the marine and coastal environment, an integrated island development approach that reflects the principles set out within the Belize Integrated Coastal Zone Management Plan (2016) is needed.

The **shipping and ports** sector is well established and vital to Belize's economy, but it would benefit from strategic assessment of ports to support other sectors, such as tourism and fisheries. In addition, increased capacity building and training of seafarers would increase opportunities for a wider range of jobs (Port State measures, etc).

Tourism is an established sector which is expected to grow in Belize after recovery from the COVID-19 crisis. Identifying strategic areas for tourism development and a training programme would ensure a sustainable tourism sector with a skilled workforce. Additionally, developing guidance and building codes to manage the risk of coastal hazards and climate change will ensure resilience in the sector.

Fisheries is a well-established sector in Belize however, improvements to fisheries management, addressing the spread of invasive non-native species, and implementing a training programme for fishers would strengthen the sector by ensuing sustainable use of resources. Further economic potential may arise in developing marine fisheries (finfish), improving value chains (seafood processing sector) exploration of deep water resources, and access to non-traditional markets. This would require data, management plans and regional cooperation to ensure sustainable use of resources.

Investment in research and development of **marine renewable energy** technologies would strengthen the established energy sector by reducing reliability on fossil fuels.

Aquaculture and mariculture and **ecosystem services** are emerging sectors that need attention in order to contribute sustainably to Belize's maritime economy. Undertaking feasibility assessments and building on previous studies will assist in determining the best location, species and markets for the aquaculture and mariculture sector. Natural capital valuation and marine spatial planning will also help to ensure that ecosystem services are considered as part of future decision making.

The actions, issues and outcomes identified in this Maritime Economy Plan are **high-level**, **strategic issues that require further discussion and development** before they can be implemented. Appropriate sources of funding need to be identified to support this process. The Maritime Economy Plan has been able to identify organisations potentially able to provide suitable funding, but it was beyond the scope of this initial high-level approach to develop the actions and identify specific funds at this stage.

The next step along the pathway towards a blue economy is to work across government to identify those actions that are highest priority and which Belize is most able to develop and implement in order to create **detailed implementation plans** and **funding applications** capable of achieving success with regional and national development agencies and funds. Such packages should create synergies with Belize's Horizon 2030 National Development Framework, the Growth and Sustainable Development Strategy (2016-2019), the Integrated Coastal Zone Management Plan (2016), and PUP's "Plan Belize 2020", links to regional activities and goals in the Caribbean (e.g. Caribbean Community Common Fisheries Policy, CRFM / SICA / OSPESCA, etc.) to help meet the aims and objectives of donor countries and organisations; and funding programme priorities. This is a significant task and should be addressed in a partnership approach across government and with relevant regional organisations.

Maritime Economy Plan
Belize

UKaid
from the British people

1. Introduction

Commonwealth Marine Economies Programme
Enabling safe and sustainable marine economies across Commonwealth Small Island Developing States (SIDS)

1. Introduction

1.1. What is the Maritime Economy?

A maritime economy can include diverse components, from established ocean industries such as fisheries, tourism and maritime transport, to emerging activities such as offshore renewable energy, aquaculture, deep sea mining, and marine biotechnology. The mix will depend on national circumstances but will provide social and economic benefits for current and future generations, restoring and protecting the diversity, productivity, resilience, and natural capital of marine ecosystems.

In the context of developing Maritime Economy Plans, the terms marine or maritime economy and **blue economy** are considered synonymous, such that the focus on the maritime economy, and plans to support its development and growth, encompass the sustainability and equity concepts of the blue economy.

Blue economy has been defined as, "economic activities that (i) take place in the marine environment or that (ii) use sea resources as an input, as well as economic activities that (iii) are involved in the production of goods or the provision of services that will directly contribute to activities that take place in the marine environment"[1].

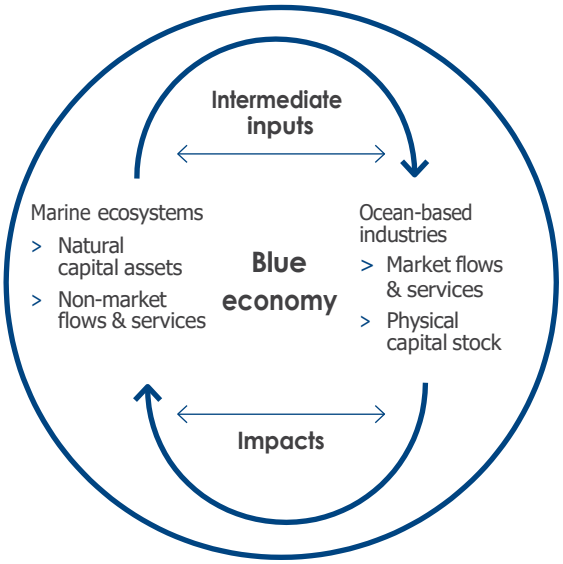
At its simplest, the blue economy includes all economic activities (existing and potential) that depend on the existence of the ocean, either directly or indirectly. For Small Island or Coastal States, the blue economy often comprises the majority of the national economy, with so many economic activities dependent on the ocean. Interactions between economic, ecological and social interests on land and at sea, therefore, become symbiotic and difficult to disentangle, such that a development on one side of the land/sea interface affects the other.

1.1.1. Sectors in the Maritime Economy

The maritime economy can be divided and subdivided in many ways, with high-level generic divisions such as 'harvesting of resources', 'trade and commerce', and 'ecosystem services' giving way to more detailed categories based on specific and established ocean industries such as 'fishing', 'shipping' or 'tourism'. These can be subdivided further – 'fishing' can be divided by vessel size, catch method or target species and can include onshore activities such as selling and processing as well as supporting activities such as netmaking and repair or chandlery and vessel maintenance.

A key step in the development of sustainable Maritime Economy Plans is to analyse existing maritime sectors, known as 'bedrock' or traditional sectors, to help their transition to more sustainable practices, where needed. Consideration is given to the potential for developing new sustainable maritime activities to diversify the economy or replace those that are in decline. Natural capital / ecosystem services are also taken into account as these underpin so many economic sectors and activities.

Figure 1 – A conceptual diagram of the sectors and interactions within the blue economy[2]



Marine ecosystem services

Natural resources and the economic benefit derived from them, whether specifically measured and included in economic valuations or not, are often termed '**ecosystem services**' and are also considered as part of the blue economy.

These traditionally non-monetised resources, such as the coastal defence benefit derived from reefs, are increasingly being explicitly considered in management decisions. They are integral to the value and support of the blue economy as they underpin and support many of the traditional sectors, such as fishing and tourism.

[1] Ecorys & European Agency for Small and Medium-sized Enterprises (EASME) Service contract: EASME/EMFF/1.3.1.13/SI2.718095. Study on the Establishment of a Framework for Processing and Analysing of Maritime Economic Data in Europe, Final Report, MARE/2014/45. https://www.msp-platform.eu/sites/default/files/ea0217517enn.en_.pdf. (Accessed October 2019.)

[2] Based on information in OECD, 2016, The Ocean Economy in 2030, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264251724-en

1.2. What is a Maritime Economy Plan?

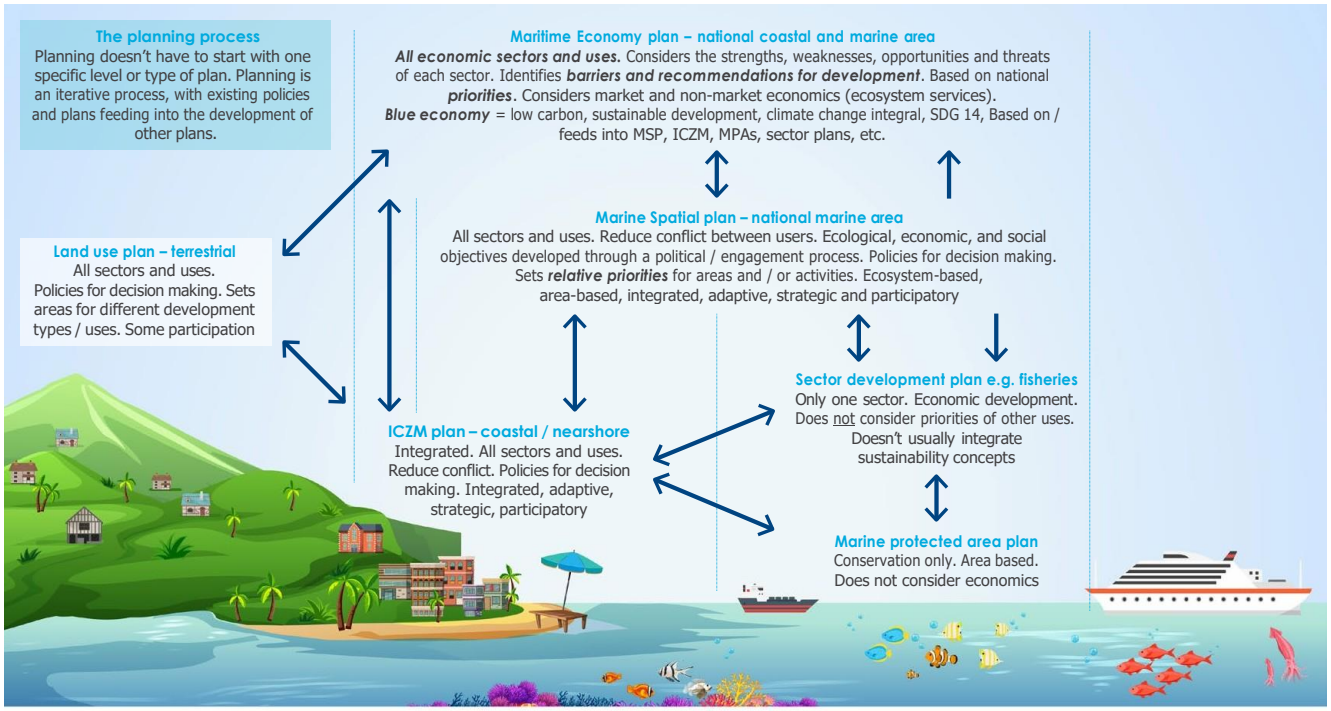
There are many types of plans used and applied in the management of the marine area. Most countries have some form of planning in their marine area already, even if it is not specifically called a 'Marine Plan' e.g. designation of shipping / navigation lanes or the identification of protected areas for conservation or fishing. Planning helps to communicate and achieve objectives. Planning, as a process, is important for a range of reasons:

- Increases efficiency by avoiding activities that do not work towards the stated objectives of the plan and by helping to organise resources.
- Facilitates coordination between organisations – everyone knows what the objectives are and helps to define roles and responsibilities.
- Helps to maintain management control over activities.
- Helps facilitate consistent decision making.

1.3. How to use this Plan

- This Plan only considers sustainable (blue) practices and is concerned with **finance** and **economics** of the Belize Marine Area. It focuses on opportunities and risks to sustainable economic development and areas where there are greater opportunities / risks.
- It may be used to support decisions about **strategic Government / financial support** bodies or mechanisms for sectors to develop e.g. should there be financial instruments for a new fishery, for fleet renewal, for renewable energy supply chain development. Ideally, a Maritime (or Blue) Economy Plan should sit underneath and assist the implementation of a National Ocean Policy.
- It is **not** the intention that this Plan will be used to inform individual management decisions by regulators about which individual activities should / should not be permitted in a particular place / time - this is the role of a Marine Spatial Plan.
- It does **not set priorities for all activities / uses** - there are activities that take place in the marine area which do not have a 'traditional' economic benefit that are not included (e.g. cultural use, landscape / seascape, non-use values, recreation, health benefits). Such activities and uses will, however, be enshrined within a National Ocean Policy (which may sit **above** this plan) or be presented within a Marine Spatial Plan, which might sit **alongside** this document.
- It does not contain management measures but may identify **how management can be financed** e.g. user access fees for recreational diving areas, blue bonds, etc.

Figure 2 – Types of marine plan and how they relate to each other



1.4. Benefits of a Maritime Economy Plan for Belize

Maritime Economy Plans enable an analysis of existing maritime sectors to be undertaken in order to help the transition to more sustainable practices, where needed, and to consider the potential for developing new, sustainable marine activities. The work identifies the bedrock/traditional sectors of the maritime economy, the emerging sectors and the natural capital / ecosystem services utilised.

Having a Maritime Economy Plan helps to demonstrate that there is a clear vision and direction for the development of a sustainable maritime economy that takes account of national issues, international commitments, such as working towards the **UN's Sustainable Development Goals (SDGs)** with particular reference to SDG14 – Life Below Water, and the challenges associated with a number of themes shared by Belize and other Small Island or Coastal States, such as:

- High dependency on imports for energy – the main source of energy is from hydrocarbons that be imported from elsewhere.
- High dependency on imports for processed food supply.
- Reliance on one or a few economic sectors (e.g. fishing, tourism, etc).
- Large ocean resource, with potential for new / emerging sector growth (e.g. biotechnology, renewable energy, minerals, etc).
- Capacity constraints to effectively manage / exploit sustainably a large ocean area / resource - relatively small population, government, resource (e.g. coast guard, research / exploration capability).
- Vulnerable to economic and environmental shocks (e.g. earthquakes, tsunamis, hurricanes), including those driven by climate change (e.g. hurricanes) with low resilience / ability to recover.
- Regional co-operation and organisations are well established (these may be sector specific e.g. fisheries, or more wide ranging).
- Remote locations – increases costs for both imports and exports of goods and services.
- High levels of poverty / social inequality – need to make growth inclusive to benefit all.
- High country debt and high relative proportion of government budget on servicing debt.

The overall objective is to grow the national economy, such that the country becomes economically resilient and less reliant on financial aid. It is also intended to reflect the aims of the Commonwealth Charter including good governance, sustainable development, gender equality and recognising the needs of small and vulnerable States.

1.5. The Commonwealth Marine Economies Programme in Belize

A number of activities have been carried out in Belize under the CME Programme, following national engagement on country priorities in 2016. These include:

- Seabed mapping of main ports and approaches to update navigation charts.
- Supply of new navigation charts and training in the use of new maps and bathymetric data, as well as training in hydrographic governance linked to international obligations.
- Provision of data on coastal sensitivity to oil spills and risk of introduction of non-native species for the national and regional disaster management teams.
- Marine data collection on spiny lobster and conch to support sustainable fisheries management, and training in water quality surveys.
- Installation of the first long-term ocean acidification monitoring system on the Mesoamerican barrier reef system in Belize, enabling real-time monitoring of marine conditions.
- Installation of a low maintenance solar powered tidal gauge in Belize City and training in calibration and maintenance, including its dual radar measurement and satellite-linked transmission system. This new national sea level monitoring infrastructure provided operational early warning systems and contributes to the coordinated regional approach to disaster management.
- Supported staff of the Meteorological Services to attend training course on tsunami early warning, quality control data and tidal forecasting.
- Marine habitat mapping of priority areas to inform local management agencies and the new Integrated Coastal Zone Management Plan on the ecological diversity and sensitivities in their coastal zone, to support coastal management decisions.
- Quantification of the extent and importance of seagrass meadows in Belizean coastal regions including Turneffe Atoll, and determination of their blue carbon potential.
- Application of ocean current models to characterise how sargassum moves around the region, to support the Meteorological Services' ability to forecast its arrival and impacts on coastal communities.
- Study of the impacts from land-use management on coastal environments in partnership with the University of Belize, Galen University and the Coastal Zone Management Authority and Institute (CZMAI), to support a management policy review, development of regulations and coastal zone management.

Maritime Economy Plan
Belize

UKaid
from the British people

2. Belize Maritime Economy

Commonwealth Marine Economies Programme
Enabling safe and sustainable marine economies across Commonwealth Small Island Developing States (SIDS)

2. Belize Maritime Economy

2.1. Background

Belize is on the Caribbean coast of the Central American peninsula and is bordered by Mexico and Guatemala. The total land area of Belize is 22,960km^2, 5% of which is distributed among more than 1,060 islands (IDC, 2017[3]). The total national territory including territorial sea is 46,620km^2. Belize's coastline extends for 280km with a large swampy coastal plain and the second largest barrier-reef in the world, the Belize Barrier Reef Complex, flanking much of the marshy coastline.

Belize has a population of almost 400,000 that is characterised by ethnic and cultural diversity – Mestizo (52.9%), Creole (25.9%), Mayan (11.3%), Garifuna (6.1%), Mennonite (3.6%), East Indian (3.9%), Chinese (1%) and others (1.2%) (2010 census data, Belize Chamber of Commerce and Industry, 2017[4]). Over half of the population (55%) lives in rural areas (CIAT, 2018)[5].

Figure 3 – Map of Belize

Source: https://www.worldometers.info/maps/belize-map/

[3] IDC. 2017. Belize National Sustainable Development Report. https://sustainabledevelopment.un.org/content/documents/1012belize.pdf [Accessed 01/07/2019]

[4] Belize Chamber of Commerce and Industry. (2017). Belize Country Profile. Accessed [01/07/2019]

[5] CIAT; World Bank. 2018. Climate-Smart Agriculture in Belize. CSA Country Profiles for Latin America and the Caribbean Series. International Center for Tropical Agriculture (CIAT); World Bank, Washington, D.C. 24p,

The economy of Belize is based mostly on agriculture, dominated by sugar, which accounts for half the country's exports, and the banana industry, which is the largest employer. Vegetables, root crops and beans are important for the domestic market and, to a much lesser extent, the export market. The smallest and poorest farms typically grow corn and beans in shifting cultivation practices (e.g. milpa) (MAF & FAO)[6]. The tourism, agro-based industry, merchandising and construction sectors also have important economic roles.

In 2017, Belize exported US$374m and imported USS1.07bn, which resulted in a negative trade balance of US$692m. Tourism is the key foreign exchange earner (with marine resources being the primary attraction). Exports of sugar, bananas, citrus, marine products, and crude oil contribute significantly to national income (CIA, 2019[9]). Fisheries are also an important foreign exchange earner.

The main export destinations of Belize are the United States (USS80.5m), the United Kingdom (US$70.3m), Italy (US$25.9m), Spain (USS19.2m) and Jamaica (US$15.5m).

The main imports to Belize are refined petroleum, aircrafts, rolled tobacco, and recreational vessels. Belize has a high dependence on energy imports, which makes it vulnerable to energy price shocks.

The main imports originate from the United States (US$326m), China (US$108m), Mexico (S101m), Curaçao (US$70m) and Guatemala (US$57.6m) (OEC, 2017)[10].

In 2019 debt service represented just over 8% of exports[11] and the total public debt burden was 97.52% of GDP[12]. Climate change impacts in the country and the COVID-19 pandemic have exacerbated the situation. Natural disasters, such as hurricanes, have also disrupted the national economy and impacted growth. Historically, hurricanes have caused heavy damage to tourist facilities and impacted agricultural outputs[13]. In 1998 Hurricane Mitch caused significant damage to the Belize Barrier Reef Complex, reducing coral recruitment by as much as 80% in exposed areas. In 2010 Hurricane Richard damaged 410,000 acres (11%) of Belize's forests (IDC, 2017). In 2021 it was reported that wind-related incidents and floods have led to annual losses of around US$123 million (ca.7% of GDP) and COVID-19's economic fallout has lifted Belize's debt-to-GDP ratio to 130%[14].

Table 1 – Gross Value Added (GVA) by Industry in Belize Dollars (million)

	2012	2013	2014	2015	2016	2017	2018	2019p
Agriculture, Forestry & Fishing	**249.8**	**246.6**	**249.4**	**252.5**	**229.2**	**255.5**	**248.7**	**237.0**
Growing of crops; horticulture	202.0	196.6	190.6	196.7	170.4	192.9	182.6	169.3
Livestock farming	**42.6**	**44.8**	**53.6**	**50.5**	**53.6**	**57.3**	**61.0**	**62.3**
Forestry and logging	5.3	5.2	5.2	5.3	5.2	5.2	5.2	5,2
Fishing	**99.3**	**121.9**	**128.0**	**82.6**	**29.4**	**28.6**	**27.5**	**27.7**
Mining & Quarrying	13.0	12.2	10.5	10.1	11.0	8.7	7.9	10.0
Manufacturing	269.5	217.3	201.0	171.5	158.6	160.2	164.5	171.6
Electricity and water supply	115.8	127.3	132.1	136.7	145.2	149.6	151.6	112.6
Construction	60.0	63.9	68.0	80.7	90.2	86.8	88.0	98.4
Wholesale and retail trade, repairs	399.8	414.2	423.6	456.8	539.4	576.5	590.4	583.5
Hotels and restaurants	91.5	99.4	109.2	105.6	104.7	108.3	122.3	122.2
Transport and communication	273.4	265.1	269.0	282.5	286.6	286.5	242.5	242.2
Financial intermediation	273.1	255.2	263.8	317.3	316.4	300.9	248.1	258.7
Real estate, renting and business services	152.9	156.2	165.4	162.2	164.5	177.8	211.2	244.1
Community, social and personal services	139.3	141.6	140.5	144.6	146.3	146.5	150.8	153.0
General government services	234.6	227.4	247.2	275.6	287.2	299.3	327.3	341.4
INDUSTRIES AT BASIC PRICES	2,229.3	2,205.8	2,265.2	2,321.0	2,348.1	2,428.7	2,449.8	2,474.7
Taxes less subsidies on products	366.8	392.0	428.4	465.1	421.5	380.7	386.7	411.8
GDP AT MARKET PRICES (BZ$ millions)	2,596.0	2,597.7	2,693.6	2,786.0	2,769.6	2,809.5	2,836.5	2,886.4
GDP AT MARKET PRICES PER CAPITA (BZ$)	7,618	7,427.1	7,505.1	7,564.4	7,327.7	7,243.1	7,068.28	7,068.28

*p - provisional
Source: Statistical Institute of Belize, 2018[7] and 2020[8]

[6] MAF & FAO, 2011, Plan of Action for Disaster Risk Reduction, Ministry of Agriculture and Fisheries and the Food and Agriculture Organisation

[7] Statistical Institute of Belize http://sib.org.bz/wp-content/uploads/AnnualReport_2018.pdf

[8] Statistical Institute of Belize Abstract of Statistics 2020. http://sib.org.bz/wp-content/uploads/2020_Abstract_of_Statistics.pdf [viewed Accessed 11/10/21]

[9] CIA. (2019). World Factbook. Belize Economy 2019. Accessed at https://theodora.com/wfbcurrent/belize/belize_economy.html [02/07/2019]

[10] The Observatory of Economic Complexity (OEC) (2017) – Belize. Accessed at https://atlas.media.mit.edu/en/profile/country/blz/ [02/07/2019]

[11] World Bank International Debt Statistics. Debt service (PPG and IMF only, % of exports of goods, services and primary income) – Belize. https://data.worldbank.org/indicator/DT.TDS.DPPF.XP.ZS?locations=BZ 9[11/10/21]

[12] Belize National Debt 2019, https://countryeconomy.com/national-debt/belize [11/10/21]

[13] The Commonwealth. (2017). Belize: Economy. Accessed at http://thecommonwealth.org/our-member-countries/belize/economy [01/07/2019]

[14] The Commonwealth (2 July 2021). https://thecommonwealth.org/media/news/belize-explores-debt-climate-swaps-commonwealth-support

2.2. Existing Economic Sectors

2.2.1. Context

Every aspect of a Small Island or Coastal State's economy can be considered as being linked to the maritime economy because of the dependence on maritime actors in importing necessary equipment and exporting produce to local and wider markets.

The **Tourism** sector is diverse and well established in Belize, employing numerous people and bringing in foreign currency. The sector has been supported by the Government and continues to grow (e.g. 'friendly' business environment; attachment of national currency to the US dollar at 2:1). Many tourism attractions are closely linked to the marine environment, including diving, island hotels, water sports, nature watching, cruise ships and sport fishing.

Infrastructure is in place to serve the tourism sector but is challenged with keeping pace with growing development, particularly in coastal areas, and in being developed sustainably on islands with pristine natural environments.

Agriculture is an important economic sector in terms of employment (ca. 10% of workforce) and economic contribution, serving many small households and bringing in foreign exchange from exports of sugar, molasses, banana, citrus and wood. The sector is vulnerable to global fluctuations in the price of these commodities.

Fisheries is another important economic sector that (in tandem with aquaculture) provides an important food source for island and coastal communities as well as employment for around 2% of the workforce and contributes approximately 4% of GDP[15]. Tuna and lobster exports are generated from high seas fishing fleets and are not a contributor to national fisheries.

2.2.2. Maritime economy

This section describes Belize's maritime economy, using the general economic sectors set out in Table 2.

Table 2 – Maritime Economy sectors

Bedrock / traditional sectors	Emerging sectors
Energy – O&G, desalination	Energy – renewables, storage, hydrogen, OTEC, SWAC
Shipping, ports	Biopharma
Fisheries and aquaculture	Development of new fisheries and aquaculture (mariculture)
Tourism – cruise, yachting, beach / all-inclusive resorts	Tourism – eco tourism
Minerals / aggregates	Deep sea minerals / minerals

The following tables provide details of current economic activities via a sectoral overview and summary of economic contribution along with a short description of emerging opportunities.

Snorkelling through coral reef near Ambergris Caye, Belize

[15] These figures only include the domestic fisheries and not those derived from high seas fisheries operations which are not landed in Belize.

2.2.2.1. Bedrock sectors

ENERGY Sector overview	Historically, Belize has imported petroleum-based fuels to power its economy, and as its population grows and the economy expands, the demand for energy is rising, requiring larger volumes of fossil fuels. Partly to satisfy this demand, Belize has secured a long-standing energy agreement with Mexico (as well as Venezuela until the deal's suspension in 2017), which has given Belize a preferential purchase price for their oil exports. Petroleum exploration in Belize began in the 1930s and by 2000, 50 exploration wells had been drilled (34 onshore and 16 offshore), with another important commercial discovery made in 2008 at the Never Delay Oilfield. Today, Belize Natural Energy (BNE) is the only producer of crude oil in Belize (CZMAI, 2016). In 2014 the Government of Belize issued a temporary moratorium on the issuing of permits for offshore oil exploration / drilling with the aim of protecting the marine environment and the economic sectors that depend on it, such as tourism and fisheries. Through its National Sustainable Energy Roadmap and Strategy, the Government seeks to expand existing hydropower capacity, develop wind energy, significantly increase the use of solar power in remote areas and for cooling services in buildings and increase domestic oil production to reduce the country's energy related trade deficit and become more energy efficient. There is a particular interest in replacing diesel / petrol-powered golf carts with electric alternatives in Caye Caulker and San Pedro, where this mode of transport is dominant (BEL, pers. comm July 2019).
Economic contribution	The total Petroleum revenue earned by the Government of Belize from 2006 - 2014 was US$211.8m (CZMAI, 2016[16]), but the country remains an importer of oil. Fuel imports accounted for 7% of GDP in 2017 and were the largest import expenditure (ERC, 2017[17]), meaning that fluctuations in refined petroleum prices can considerably affect the national economy due to the country's heavy dependence on fossil fuels. BEL employs around 320 workers (BEL Annual Report, 2012), including some high skilled labour. However, the majority of jobs in the sector belong to unskilled workers and business with small volumes of capital and technology. There is no statistical data for employment in energy generation.
Emerging opportunities	Emerging 'green technologies' and the opportunities for research into these should be a focus in the coming years. Belize has potential for development of wind, solar and biomass energy, which are key elements for the country to achieve its Nationally Determined Contributions (NDC). Wind resources need to be studied / evaluated. Solar energy is a good alternative when provided with public education programmes and incentives for remote communities where grid energy supply is expensive. Biomass could be used for the production of biofuels (ethanol), if the market is large enough to warrant its production (e.g. the Belize BELCOGEN plant).
Cross-cutting issues	**Climate change** and **extreme weather events**: Increased frequency and strength of tropical storms can deter private investment in large scale renewable energy installations such as solar or wind, particularly in the cayes. The Government remains committed to continue supporting renewable energy, including smaller modular alternative installations.

[16] Coastal Zone Management Authority and Institute (CZMAI). 2016. Belize Integrated Coastal Zone Management Plan. CZMAI, Belize City.

[17] ERC. (2017). Energy Report Card. Belize

SHIPPING & PORTS Sector overview	The Port of Belize (PoB) is the main seaport in the country for the import and export of cargo. Operational port management resides with the Belize Port Authority (BPA), a statutory body established in 1980, and which currently falls under the portfolio of the Ministry of Transport & National Emergency Management[18]. The BPA regularly commissions hydrographic surveys to ensure safe navigation around the larger ports. Due to water depth limitation, ships must dock at the end of a 900m long pier, 'King's Wharf', and use trucks to transport the cargo to / from the warehouses and storage area on land. There is also a small berth with a depth of 2m in PoB, which is used primarily for domestic cargo transported by barge to and from the Cayes (NTMP, 2018)[19]. In 2017, the port had 205 calls and cargo throughput of 935,910 tonnes (PoB). Approx. 500m west of the port, a large land reclamation area is the site of a cruise terminal development, which has never been completed. Currently, cruise ships must anchor in the bay and passengers are ferried by water taxis to the tourist village in Belize City. A new offshore cruise terminal called Port Coral is under construction on Stake Bank that will provide facilities for up to 4 vessels to berth. Separately, Norwegian Cruise Line has commissioned the building of exclusive port facilities on a private island in Harvest Caye. Big Creek in the south is mainly used for the export of agricultural products, such as bananas, citrus fruit, and sugar. It also started exporting crude oil in 2008. There are three berths, two with a length of 305m and a smaller berth with a length of 213m. While vessel size is currently limited, dredging and widening of the port is currently underway to increase capacity[20]. There is ample land available for potential expansion of landward facilities. Export projections foresee an increase in sugar and citrus fruits and a reduction of oil exports. In 2017, the port had 168 calls and cargo throughput of 286,402 tonnes (PoB). Punta Gorda has a few jetties used for small cargo transport, leisure crafts and ferry services to Livingston, Guatemala. The Port of Dangriga was developed for the banana export industry and a few small jetties are still used by water taxis and diving boats for nearby resorts, although its long jetty is now in disuse. Corozal Port is another minor port with a single jetty, mostly used by leisure craft and ferry services to San Pedro. Ferries and water taxis between Belize City and the islands play an essential role in providing access to services in the capital city, jobs and servicing the tourism industry. Ferries also connect roads where there are no bridges (e.g. Laguna Seca, Caracoal Road).
Economic contribution	There are no statistical figures available for the economic contribution and jobs of the maritime transport sector in Belize. Cruise-based tourism and the agriculture sectors are projected to grow (i.e. bananas, citrus fruit), fuelling an increase in maritime transport and related jobs and revenue (in addition to the high volume of inter-island maritime transport). The new BPA Strategic Document (2025) was due to be completed by September 2021 and should be aligned to "Plan Belize".
Emerging opportunities	Expansion to the Port of Belize is proposed to enlarge the cargo and container port areas, which will need to involve dredging and deepening of the entrance channels for larger vessels. There is also a demand for an additional passenger cruise terminal port in addition to the cargo port (at the NAREM complex), even though the current Port Policy states there should be no more than 2 ports within this complex. The planned Central (Dangriga) port complex is now to be designed as a mixed port (cargo and passengers) focusing on smaller / medium boats. The Port Authority Act is currently under review, and the BPA is drafting updated Maritime Regulations which will cover marinas, safety and pollution aspects. The cruise sector is predicted to grow[21], and the country is seeking to explore ways to increase revenue without causing detrimental impacts to the natural environment.
Cross-cutting issues	Shipping is a mature sector in Belize, but it is hampered by infrastructure limitations and institutional arrangements. The two main ports are privately owned and the vision for development of the ports' private investors is not always aligned with the strategic interests of the Government. **Climate change** and **extreme weather events**: Increased frequency and strength of tropical storms can damage ports and shipping infrastructure. Future developments need to be designed in accordance with climate / storm resilient standards to reduce the risk of damage and economic loss.

[18] The Authority is administered by a Board of Directors.

[19] NTMP – National Transportation Master Plan, April 2018. Department of Public-Private Sector Dialogue: Government of Belize.

[20] Port of Big Creek is being dredged to circa -11m to better accommodate larger vessels

[21] As stated within the first version of the National Port Policy (presented to Cabinet for approval in September 2021).

FISHERIES Sector overview	The Belize fisheries sector is comprised of both a High Seas and a coastal fishery component. With regards to the High Seas aspect, this is an 'open registry' State with a number of non-locally owned fishing vessels flying its flag. In 2018, the total number of fishing vessels operating in commercial fisheries was 623 (CRFM, 2018) with combined catches exceeding 900 tonnes in 2017[22] The main commercial offshore fisheries are long-line (34 vessels in 2014) and purse seine (16 vessels in 2014) tuna fisheries targeting albacore, bigeye, yellowfin, skipjack and swordfish; and trawlers (16 vessels in 2014), which target mainly horse mackerel, sardines and sardinella. Tuna catches had been ~4,000 tonnes per year, on average, from 2005 but this increased to ~24,000 tonnes in 2012 and then decreased to ~17,000 tonnes in 2016 (Fugazza et al, 2018)[23]. Catch of other small pelagic species (e.g. mackerel, sardines) peaked at ~400,000 tonnes in 2010 but decreased dramatically until 2013. Total production in 2016 was approximately 85,000 tonnes (Fugazza et al, 2018). Capacity and technical constraints (boat sizes etc) influences the amount of fishing that takes place beyond the EEZ and into Belizean High Waters[24]. The Managed Access regime was fully established in 2016 and the area of no take zones was expanded to 11.6% of the territorial seas (Griffin, 2019)[25]. Coastal fishing concentrates on spiny lobster (*Panulirus argus*) and Queen conch (*Strombus gigas*) the two primary seafood exports and most important fisheries in Belize[26]. Both fisheries have been relatively stable for the last 15 years and hence are considered as mature fisheries. They have benefitted from the strengthened managed access regime which increased the no-take areas, and from updated management plans. There are also small-scale fisheries targeting finfish species such as groupers, red snappers[27], hogfish (*Lachnolaimus maximus*), great barracuda (*Syhyaena barracuda*) and Jacks for export. Species harvested for local consumption include grunts, snooks, mullets, porgies, and triggerfish.
Economic contribution	In 2013, the fisheries industry employed 2,946 full-time and part-time fishers and the fishing fleet comprised 560 vessels (www.fisheries.gov.bz/). For 2018, the Belize Fisheries Department estimated that 2,525 people actively worked as fishers[28]. Exports of fish and fishery products were US$44.6m in 2014 and in the same year, imports were small, valued at only US$900,000 (www.fisheries.gov.bz/). Domestic fish consumption, estimated at 13.8 kg per capita, is mainly covered by domestic production (FAO, 2016)[29]. Coastal fishing is mostly small scale with a total of 3,188 licensed fishers and 871 fishing vessels in 2020. Artisanal fisheries, which are dominated by Queen conch and spiny lobster, account for 95% of national fisheries landings and generate over US$17m in 2020 (MBECA, 2022)[30]. Export value of spiny lobster was US$ 6.5m in 2018 (UNCTAD, 2020),[31] predominantly to the US, which has created a strong market dependency carrying a risk to economic changes.
Emerging opportunities	Opportunities for the sector lie in the use of sustainable energy to contribute to reduced cost of production and value added, fishery accreditation, develop new fishing gear, enhanced spatial management of fisheries to reduce competition between users (fisheries vs tourism activities, marine protected areas, maritime transport, etc.), and regional and national collaboration (CZMAI, Belize Fisheries Department, Regional Organisations). This may include the need to consider enhancing the link between fisheries and tourism[32]. While the lobster and conch fisheries are both mature markets, opportunities exist in developing new products in emerging market trends, such as the red snapper fishery, which could help increase the presence of Belizean products in the US market. Further economic potential lies in developing marine fisheries (fin fish), improving value chains of the seafood processing sector, exploration of deep water resources and access to non-traditional markets. Possible interventions may include capacity building and improvements to fishing technology and associated infrastructure.
Cross cutting issues	**Sargassum** - affects vessels, landing sites, tourism facilities and inshore fisheries within the region. The sargassum can clog engines and gear, smother fishing areas, impinge on access and affect water quality. Additionally, it has been found to contain high levels of inorganic arsenic, and its use for human and animal consumption requires further research. **Climate change** – possible negative impacts on ecosystems that are important to commercial fish e.g. coral reefs, sea grass beds, mangroves. Changing water temperature may affect pelagic species' distributions / migrations. An increase in extreme weather events damaging vessels, landing sites, affecting trade and impacting coastal ecosystems. Ocean acidification affects coral reefs and ocean productivity, impacting lobster and conch development.

[22] CRFM, 2018. Statistics and Information Report for 2018.

[23] Marco Fugazza, David Vivas Eugui and Samuel Rosenow. 2018.. Evidence-based and policy coherent Oceans Economy and Trade Strategies. Sector data factsheet: Belize Available at https://unctad.org/meetings/en/Contribution/ditc-ted-Belize-28112018-Factsheet-1-fisheries.pdf {02/07/2019]

[24] Information deduced from the Belize High Seas Fishing Unit

[25] Griffin, 2019, Belize's fishers net bounty of trailblazing approach – in pictures, The Guardian, website, https://www.theguardian.com/environment/gallery/2019/aug/22/belize-marine-conservation

[26] Information taken from the The Nature Conservancy Fisheries Improvement Project (FIP) and separate Spiny Lobster Fisheries Improvement Project.

[27] The MCCAP project undertook some test trials on red snapper catch (2019).

[28] Belize Fisheries Department, 2019; cited in "Draft Ocean Economies and Trade Strategy (UNCTAD) for Belize" (2019).

[29] FAO. (2016). http://www.fao.org/fishery/facp/BLZ/en

[30] MBECA, Pers. Communication, 2022.

[31] Ocean Economies and Trade Strategy (UNCTAD) for Belize (2020)

[32] Taken from CRFM, 2016. Promoting Regional Trade and Agribusiness Development in the Caribbean: Case Studies on Linking Fisheries to Tourism-Related Markets. CRFM Technical & Advisory Document, No 2016 / 3. Belize City. pp101.

MARINE MINERAL EXPLOITATION Sector overview	Minerals mined in Belize include gold, clays, river aggregates, limestone, dolomite, chert, granite, and meta sediments. Small scale mining activities include river aggregate mining and suction dredging. Large scale mining includes open pit mining and quarrying. There is no deep-sea mining. Mining is predominantly undertaken in the terrestrial zone, but sand mining occurs in the coastal zone. In 2003 and 2004 permits were issued to carry out offshore dredging activities to mine an estimated 106,962 and 327,031 cubic yards of sediments. The actual extraction figure in 2005 only amounted to 46,639 cubic yards compared with sand and gravel extraction from rivers and streams of 119,539 cubic yards. Dredging of rivers, creeks and canals for drainage and port services to accommodate development in the coastal zone has been undertaken in many areas including the Deepwater Port and the Haulover Creek in Belize City (MNRA, 2008)[33]. When dredging occurs along or within the Belize Barrier Reef System, sediment curtains are mandatory to reduce impacts from sediment smothering. Dredging from the lagoon side of the cayes is preferred and encouraged. Currently there is no policy to deal specifically with marine dredging in Belize.
Economic contribution	There is limited information of the economic contribution of marine elements of mining in Belize. In 2015, mining and quarrying accounted for an estimated 0.5% of the country's GDP of US$1.8bn (USGS, 2015). The net contribution to GDP from mining and quarrying has changed from BZ$9m (2000) to BZ$12.9m (2010) to BZ$11.7m in 2017 (Statistical Institute of Belize, 2017). This is predominantly from land-based mining.
Emerging opportunities	There is little opportunity to develop marine mineral exploitation, due to a lack of available aggregate sources and the potential risks that dredging poses to the coral reef system and the tourism / fishing sectors it supports.
Cross-cutting issues	Removing sand from beaches increases the rate of coastal erosion and can impact assets and land onshore as well as affect coastal habitats and species that use the beaches (e.g. turtles). Reducing beach widths and heights increases the impact and extent of wave impact on the coast, which can also increase erosion. Such risks are likely to increase with climate change and sea level rise. Steeper beach profiles with unknown depths can also pose a danger to swimming.

TOURISM Sector overview	Tourism is one of the most important economic activities in Belize, with many other economic subsectors dependent on this industry (e.g. car hire, water taxis, farmers and fishers selling to local restaurants, etc.). The National Tourism Policy of Belize (2018) sets the foundations for the sector which is designed to align with "Plan Belize". Tourism in Belize is focused around ecotourism, adventure and cultural tourism as well as sun, beach and nautical tourism. Tourist attractions include extensive rain forests, the largest cave system in Central America (Chiquibul Caves), significant Mayan ruins, wildlife, the second largest barrier reef in the world, and three of the four 'true' atolls in the Americas, including the Great Blue Hole (a marine reserve) and sports fishing. The main marine-based tourism activities are beach tourism, recreational fishing, water sports, diving, wildlife watching, and cruise tourism. There are more than 100 islands and beaches in the reef system, which makes it a popular diving destination. The diversity of the different types of tourism is reflected in a relatively wide spatial distribution of tourism activities. Belize City is a major cruise ship port. Areas such as Ambergris Caye are home to luxury resorts, while areas such as Hopkins and Placencia are 'off the beaten track'. Inland cities such as Sand Ignacio and Orange Walk Town serve the Mayan ruins, caves and jungle activities.
Economic contribution	The *direct* contribution of tourism to the GDP in Belize was US$277.7m, (15% of total GDP) in 2017 and was forecasted to rise to 19% of *total* GDP in 2028 (WTTC, 2018). The total contribution of tourism to GDP was US$766.8m, (41.3% of GDP) in 2017, which was forecasted to rise to US$1,250.7m, (54% of GDP) in 2028 (WTTC, 2018)[34]. Tourism is also the largest earner of foreign exchange with travel earnings accounting for 40% of total exports of goods and services from 2008 - 2012 (Nuenninghoff et al, 2015)[35]. In 2017, the total contribution of tourism to employment, including jobs indirectly supported by the industry was 37.3% of total employment (59,000 jobs). In 2018, travel and tourism contributed to 39.9% (63,000 jobs) of total employment (WTTC, 2019)[36]. This is expected to rise to 90,000 jobs in 2028 (40.5% of total) (WTTC, 2018). These figures are pre-COVID-19, which significantly impacted tourism during 2020 and 2021. While the economy is projected to recover in 2021, with GDP growth of 7.5%, the tourism sector is also expected to recover and grow (ECLAC, 2020)[37].

[33] MNRA. (2008). National Plan of Action For the Control of Land-Based Sources of Marine Pollution in Belize.

[34] World Travel and Tourism Council. Accessed https://www.prosperityaid.com/wp-content/uploads/2018/08/Belize-2018.pdf

[35] Nuenninghoff, S., Lemay, M., Rogers, C., Martin, D., 2015 Sustainable tourism in Belize. Accessed https://publications.iadb.org/publications/english/document/Sustainable-Tourism-in-Belize.pdf

[36] World Travel and Tourism Council (WTTC). (2019). Belize. 2019 Annual Research Key Highlights. Accessed https://www.wttc.org/economic-impact/country-analysis/country-data/ [02/07/2019]

[37] ECLAC, 2020. Economic Commission for Latin America and the Caribbean. Accessed https://repositorio.cepal.org/bitstream/handle/11362/46504/65/PO2020_Belize_en.pdf EPAL

Emerging opportunities	Emerging coastal destinations in Belize include Punta Gorda which has been identified as a "new hub" destination to provide boat access (small marinas for pleasure craft) to some of the most unspoilt offshore islands in Belize. There are numerous opportunities for growth and investment in the tourism sector, including areas such as ecotourism, adventure, nature, cruise and nautical tourism (yachting and sports fishing); and decentralisation to more remote areas and outer islands. Building code enhancement that provides climate change resilience and its enforcement on offshore cayes will continue to be important, in addition to creating mitigation strategies to address sargassum clean up related issues. Linked to this, the construction and upgrade of ports and jetties need to be improved and modernized as well as measures installed to improve marine water quality (including the management of solid waste). Marketing the 'ridge to reef' concept will be important for future tourism development, as will considering how maritime tourism can assist in broader terrestrial eco-tourism development. Both aspects will benefit from enhancing the interaction and links between fisheries and tourism[38].
Cross-cutting issues	**Sargassum** – which has high levels of arsenic, has affected water quality, vessels, landing sites, tourism facilities and inshore fisheries within the region. The sargassum can clog engines and gear, smother fishing areas, and impinge on coastal access. **Climate change** – negative impacts to ecosystems that support tourism; increase in frequency of extreme weather events damaging infrastructure, increasing erosion, and impacting coastal ecosystems. Sea level rise (SLR) is predicted to increase the loss of beach and coastal area, including areas of the cayes. It can also affect the availability of certain fish species and, hence, fishery-related products that tourists come to Belize to enjoy. **Community Impacts** – should cruise ship tourism be developed further, consideration needs to be given to the potential societal impact of visitors on communities in certain coastal areas of Belize. **Information Management** – there is a need to introduce references to improved data management to help decision makers in the tourism sector with integrated blue economy related measures and approaches.

2.2.2.2. Emerging sectors

OFFSHORE RENEWABLE ENERGY (ORE) Sector overview	Ocean Thermal Energy Conversion (OTEC) technology has potential for development, as high temperatures at the surface and low deep water temperature provide the conditions required for this technology. Although still in the early stages of development and not currently present in the country, there are several pilot or research OTEC projects underway in the Caribbean, including in the US Virgin Islands, Martinique and Cayman. The Development Bank of Latin America (CAF) has identified the potential use of Sea Water Air Conditioning (SWAC) systems in the Caribbean. Hotels and resorts are large electricity consumers with conventional air conditioning (A/C) systems accounting for around 40% of the energy consumption in such buildings. A prefeasibility study in 8 Caribbean locations in the Dominican Republic, Jamaica, Guadalupe and Martinique indicated that SWAC is economically viable and competitive against conventional A/C in several of the sites. The calculated simple pay-back time was 4 to 6 years for the 4 most attractive sites (OTECnews, 2015)[39]. Although Belize offers some prime locations on the cayes, where tourism-linked business and affluent individuals could run prototype ORE installations, the easier supply and reliability of energy from land-based sources - through underwater cables, diesel generators or the more developed solar panel technology - have delayed the advance of ORE technologies. Additionally, the natural marine environment of Belize has a high degree of protection, which could present a challenge for the installation of any ORE development.
Economic contribution	There is no data on the economic contribution or employment in ORE. The sector is at the development stage only.
Cross-cutting issues	Belize already has a high exposure to hurricanes and tropical storms, particularly between August and October. Offshore renewable energy generation equipment may be badly damaged by natural events and unable to contribute to national requirements for some time, thus reinforcing the country's dependence on fossil fuels. Hurricanes and storms are limiting factors for future offshore energy generation in Belize.

[38] see CRFM, 2016. Promoting Regional Trade and Agribusiness Development in the Caribbean: Case Studies on Linking Fisheries to Tourism-Related Markets. CRFM Technical & Advisory Document, No 2016 / 3. Belize City. pp101

[39] Vast potential for Ocean Thermal Energy in the Caribbean, 2015, http://www.otecnews.org/2015/08/vast-potential-for-ocean-thermal-energy-in-the-caribbean/

MARICULTURE Sector overview	Aquaculture in Belize formally began in 1982 to test the production of the whiteleg shrimp (*Penaeus vannamei*). Following successful commercial trials, the shrimp aquaculture industry experienced rapid expansion, with 16 farms established by the end of 2005. There is now a full-scale commercial farm that has contributed significantly to the national economy in terms of foreign exchange earnings, income generation, employment, nutrition, and food security (FAO, National Aquaculture Sector Overview). Although economic returns proved promising, significant declines in world market prices and impacts of disease, have resulted in economic losses and the closure of half the farms so that by 2016 there were only eight active shrimp farms in Belize (CZMAI, 2016). There is an emerging interest to diversify the aquaculture sector into commercial marine cage farming and the Fisheries Department has reviewed two project proposals to develop such ventures. Species proposed for culture include cobia (*Rachycentron canadum*) and the Florida pompano (*Trachinotus carolinus*), both of which are widely distributed in the Caribbean Sea. A cobia farm was developed in 2006 by Marine Farms Belize Limited and by 2009 the farm produced 500 million tonnes. In 2010 the cage infrastructure suffered severe damage from Hurricane Richard. The company has since dedicated its efforts to production of cobia seedstocks near Dangriga (CZMAI, 2016). There have been trials of seaweed cultivation (*Euchuma isoforme* and *Gracelaria spp.*) by fishermen from the Placencia Fishing Cooperative and Turneffe Users, supported by The Nature Conservancy (TNC). In the past there has been experimental grow-out of red drum (*Sciaenops ocellatus*). Interest has also been expressed in the cultivation of sea cucumber, common snook and octopus (CZMAI, 2016), as well as crabs. In spite of this, the current contribution of mariculture in Belize is minimal since the species farmed are still under commercial experimentation. This is mostly the case with seaweed farming which is primarily undertaken by fishermen as an alternative livelihood. There is however great potential to develop this industry, and whilst the Aquaculture Policy currently remains as a draft, the Mariculture Policy is being produced, as required by the Fisheries Development Act, to provide the enabling conditions for success. Regional initiatives through the Organisation of Fisheries and Aquaculture (OSPESCA) are also supporting the sector, focusing on the development of snapper farming, seaweed, octopus and oysters.
Economic contribution	The growth performance of the aquaculture sector is reflected in the 160 percent annual increase in the production volume of farmed shrimp over the last decade. The export production and revenues have increased from 545.4 tonnes and BZ$ 10.4m (US$ 5.2m) respectively in 1995 to 16.86 7,664 tonnes and BZ$ 84.28m (US$ 42.14m) in 2004 (FAO 2005-2019)[40]. Shrimp farming has made a significant contribution to the development of Belize in relation to employment and income generation, especially in rural communities. Aquaculture provides full-time employment for approximately 800 permanent or full-time employees, and approximately 200 temporary or seasonal workers (FAO 2005-2019). It offers opportunities for both women and men.
Cross-cutting issues	**Climate change** impacts to coastal land and suitable bays may affect the development of the sector. The risk of damage to coastal infrastructure from weather events, which are predicted to increase in frequency as a result of climate change, is a challenge to mariculture development. **Water quality** deterioration caused by human activities or climate change driven influences may be an issue for both the species cultured and human health.

[40] FAO 2005-2019. National Aquaculture Sector Overview. Belize. National Aquaculture Sector Overview Fact Sheets. Text by Myvett, G. In: FAO Fisheries and Aquaculture Department [online]. Rome. Updated 1 February 2005. [Accessed 20/08/2019].

BIOPHARMA Overview	The economic value of the search for biopharmaceuticals can benefit the pharmaceutical industries, the host country, and the community who gain benefit from ownership of the biological resource and should expect adequate compensation for resource use. There is currently no systematic search for biopharmaceuticals in Belize. Although Belize is a signatory of the Convention on Biological Diversity (CBD) it is not a party of the Nagoya Protocol on Access and Benefit-sharing. As a result, any successful biopharmaceutical discoveries in Belize would not be required to comply with the Protocol or benefit the country as much as possible. One of the earliest approved drugs which is still in use today, Ara A (Vidarabine-Vira-A®), Ara C (antiviral) and synthetic analogue of Ara C- cytarabine (Cytosar-U®-anticancer) originated from the Caribbean sponge *Tethya crypta*. Distribution of *Tethy crypta* has been found across the Caribbean including Belize[41]. In addition, the drug Trabectedin (Yondelis), approved to treat soft tissue sarcoma, was sourced from the tunicate *Ecteinascidia turbinata* in Belize (Drews, 2014)[42]. Another example of use of marine resources for pharmaceutical purposes in Belize, is the cultivation and harvesting of Golden Seaweed (*Eucheuma isiforme*) near Placencia for the manufacturing of natural skin cosmetics (see Angel Lisa project – https://www.angel-lisa.com/).
Economic contribution	There is no data on the economic contribution or employment of biopharma.

[41] Porifera Guide. Tectitethya crypta. Available Online: https://guide.poriferatreeoflife.org/sp_35.html [Accessed February 2019]

[42] Drews, 2014. Dimensions and Potentials of Marine Bioprospecting. http://www.abs-initiative.info/fileadmin/media/Events/2014/17_November_2014__Sydney__Australia/Potentials_of_marine_bioprospection_Introduction_and_Overview.pdf

Haulover Creek and promenade in Belize City

Maritime Economy Plan
Belize

UKaid
from the British people

3. Cross Cutting Issues

Commonwealth Marine Economies Programme
Enabling safe and sustainable marine economies across Commonwealth Small Island Developing States (SIDS)

3. Cross Cutting Issues

A number of issues cut across the different economic sectors previously highlighted and deserve consideration in their own right. Individually, they are significant enough for a small island or coastal state with a small and static population, a geographically expansive but constrained resource area and highly volatile and changing geomorphology. However, their inter-connections increase their individual effects: as a result, these interactions need to be actively considered as part of the recommendations contained within a Maritime Economy Plan.

3.1. Regional Organisations in the Caribbean

Countries in the Wider Caribbean Region (WCR) have a strong tradition of working together to achieve shared goals and this is a particular feature in relation to ocean governance and management. The **Caribbean Community (CARICOM)**, is an economic bloc of 15 member states, including Belize, (14 nation-states and one dependency) that allows for the implementation of common approaches and collaboration including the use and exploitation of marine resources.

CARICOM has several associated agencies that deal with issues of relevance to maritime economy sectors or concerns, including the Caribbean Regional Fisheries Mechanism (CRFM), the Caribbean Community Climate Change Centre (CCCCC), the Caribbean Tourism Organization (CTO), and the Caribbean Institute for Meteorology and Hydrology (CIMH).

Belize is also a member of the Central American Integration System (SICA), which promotes peace, freedom, democracy and development in the region, and OSPESCA[43] which aims to coordinate the definition, execution and monitoring of policies, strategies and projects related to the regulatory framework of regional scope that leads to the sustainable development of fisheries and aquaculture activities.

3.2. Current State of Marine Planning and Management in Belize

Belize has had a government department responsible for the integrated management of the coastal area since the creation of the Coastal Zone Management Unit in 1990. This was superseded by the creation of the Coastal Zone Management Authority and Institute (CZMAI) via the Coastal Zone Management Act in 1998. As a result, Belize has a statutory National Integrated Coastal Zone Management (ICZM) planning process in place and a ICZM Plan, currently being reviewed.

Belize has a long-term sustainable development approach as set out in the Horizon 2030 National Development Framework. This is an overarching policy that links to land use planning through the National Land Use Policy and Integrated Planning Framework, as well as the ICZM Plan.

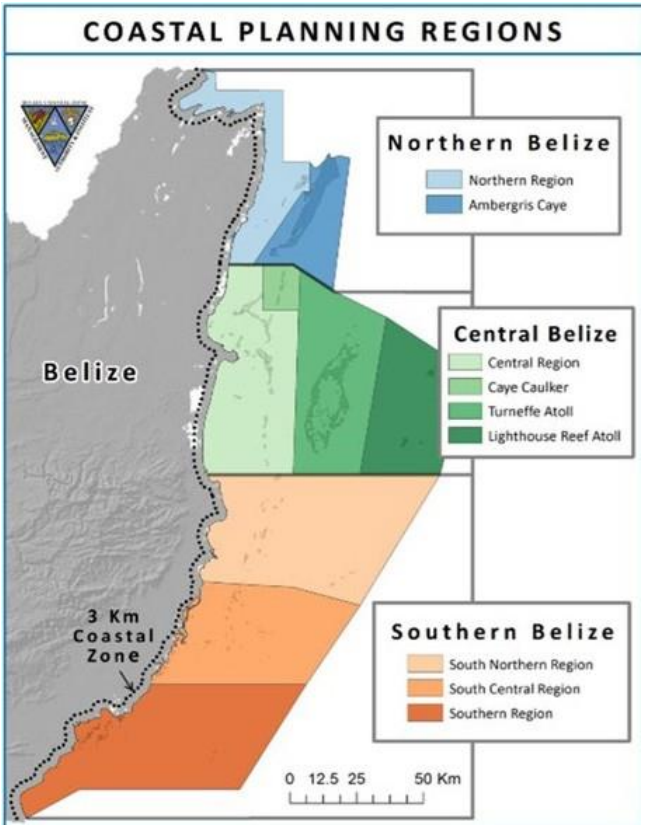
[43] Organization of the Fisheries and Aquaculture Sector of the Central American Isthmus

Belize has defined several areas in law and policy that relate to the coastal and marine area:

- Belize Coastal Zone Management Act (1998) defines the coastal zone as the area bounded by the shoreline up to the mean high-water mark on its landward side and by the outer limit of the territorial sea on its seaward side, including all coastal waters.
- The Maritime Areas Act (Statutory Instrument 12 of 1992) defines the territorial sea of Belize (as well as the outer limits of the coastal zone) as the limit provided by law measured from the mean low water mark (MLWM) outward to 12 nautical miles in most places. This act was last amended in 2019.
- In areas where there are fringing reefs, the outer limit is measured using MLWM on the fringing reef itself. Therefore, the three atolls (Turneffe, Lighthouse Reef and Glover's Reef) are included within the territorial waters of Belize.
- All features found within 3km westward from the mean high water mark (MHWM) are considered in the ICZM Plan, as the zone of influence of the sea.

Implementation of the ICZM Plan and the development of a marine spatial plan is considered an important milestone for the protection of the environment, a strategic objective of 'Plan Belize'. This is also important for the achievement of the 'sustained or improved health of natural, environmental, historical, and cultural assets', which is Critical Success Factor (CSF) 3 in the Growth and Sustainable Development Strategy (GSSD) for Belize (MED, 2017).

Figure 4 – Map of Belize's coastal planning regions



Belize has a network of 14 marine protected areas (MPAs). In addition to these MPAs, there are 13 protected fish Spawning Aggregations sites. Marine Reserves are the most common form of MPA and are under the mandate of the Fisheries Department. These marine reserves have clearly defined zones including: Preservation zones (no extraction); Conservation zones (recreational activities including sport fishing and SCUBA permitted); General Use zones (artisanal commercial fishing permitted but use of SCUBA is prohibited - fishing using free diving, traps and handlines is allowed).

The Fisheries Department directly manages 5 marine reserves (Bacalar Chico Marine Reserve, Caye Caulker Marine Reserve, South Water Caye Marine Reserve, Glover's Reef Marine Reserve, and Sapodilla Cayes Marine Reserve), and has 3 areas under co-management agreement with NGOs.

Other forms of MPA are National Parks, Natural Monuments and Wildlife Sanctuaries, which are under the mandate of the Forest Department, and which prohibit fishing. An exception is made in Corozal Bay Wildlife Sanctuary to enable continued access by traditional artisanal fishers (Blue Ventures & Belize Fisheries Department, 2019).

Together, 7 of the MPA form a UNESCO World Heritage Site - the Belize Barrier Reef Reserve System - for their *superlative natural phenomena and natural beauty and ongoing biological and ecological processes and biological diversity.* However, the remoteness of many of the MPAs in Belize, e.g. Glover's Reef, and their distance from land contribute to significant issues in terms of management options.

The MPA network covers approximately 23.5% of the territorial sea (up to 12nm). The 'no-take' zones account for 7.61% of territorial waters (approx. 0-20nm offshore), and 6.28% of the EEZ (20-200nm).[44]

Besides these official Government bodies, NGOs often play an important role in marine activities and local conservation efforts. However, it is noted that communication between NGOs and the new Ministry of Blue Economy and Civil Aviation has sometimes been limited to World Heritage Site aspects. A formal communication strategy between the MBECA and NGOs could be beneficial.

Table 3 – Ministries, Departments and Bodies with a role in marine planning and management

Ministry / Department / Organisation	Role in marine planning / management
Ministry of Blue Economy and Civil Aviation (MBECA)	Increase the gross domestic product through a thriving Blue Economy development pathway that is harmonized, innovative and socially-just, supported by a robust, science-based management regime of aquatic resources and spaces to improve the livelihood of all Belizeans.
Coastal Zone Management Authority and Institute	Mandated to promote sustainable ICZM through evidence-based public policy recommendations to improve the governance over the utilization and planned development of the Belizean coastal zone. Its role includes planning, policy development, coordination, research, and monitoring the use and development of resources within the coastal zone.
Department of the Environment	Regulates aspects of coastal and marine planning regarding pollution and the environment.
Fisheries Department	Responsible for the management of fisheries and aquatic resources, including mariculture. It has the legislative mandate to declare and manage marine and inland water reserves and special management areas.
Ministry of Natural Resources	Manages natural resources.
Ministry of Transport and National Emergency Management	Advises on transport requirements and coastal disasters such as coastal flooding and hurricanes.
Belize Ports Authority (under the Ministry of Transport and National Emergency Management)	Regulates and develops ports and shipping activities, including safety of navigation, inspections and enforcement of regulations.
Ministry of Economic Development, Petroleum, Investment, Trade and Commerce	Promotes trade, investment, and use of islands and coastal areas.
Ministry of Public Works	Administers public investment of infrastructure projects such as ports and sea defences.
High Seas Fisheries Unit (under the Ministry of Finance)	Responsible for regulating Belize flagged vessels engaged in fishing on the high seas.
Ministry of Public Service, Energy and Public Utilities	Regulates electricity generation and transmission including offshore energy generation.
Belize Electricity Limited (circa 30% is under Government ownership)	Manages subsea cables between the islands and the mainland.

[44] Wade, B., 2021. Marine Protected Areas - Case Study: Belize – Towards Expansion of No-Take Areas in the MPA System. The Commonwealth Blue Charter. Available at https://bluecharter.thecommonwealth.org/case-study-belize-towards-expansion-of-no-take-areas-in-the-mpa-system/

3.3. Weather events and Climate change

Belize is characterised by a typically moist tropical climate. Northern Belize has a subtropical climate while to the south the climate becomes increasingly tropical. The country has a seasonal variation that is slightly different from that of other Caribbean countries. The major features that drive Belize's climate are the El Niño Southern Oscillation (ENSO) phenomenon and the intensification of the inter-Tropical Convergence Zone (ITCZ). From the months of June to August, the El Niño generally produces warmer conditions, while La Niña produces wetter conditions typically associated with the tropical Atlantic cyclones. The effects of flooding and sea level rise are exacerbated by Belize's low-lying coastal terrain. The country is vulnerable to hurricanes, storms and associated flooding, wind damage, and storm surge, especially in Belize City. Belize's major infrastructure such as public buildings, health, commercial and transportation facilities are located on or near the coast, which makes them extremely vulnerable to sea level rise.

Belize is also at risk from suffering extreme temperature events that can affect agriculture and people directly. Although there is currently an abundant supply of water and the highest volumes of freshwater availability per capita in Latin America, increased population growth, drought episodes and heavy agricultural activities have created stresses on the country's water supply. Changes to rainfall patterns and the impact of sea level rise on freshwater could adversely affect future water supplies for both agriculture and people. Some areas of Belize already experience drought conditions on a yearly basis. Projected increases in temperature as a result of climate change could increase the extent of drought in these areas and / or spread to other areas. Higher temperatures will favour some crops like rice but economically important crops in Belize such as sugarcane and citrus will be adversely affected.

3.3.1. Opportunities and plans for climate action

Belize's planned climate change mitigation and adaptation policies and actions, as presented in its NDC, offer some opportunities for climate action and have a target year of 2030.[45]

Mitigation:

- Renewable Energy – A target of 85% renewables in electricity production by 2027 (equivalent to a 62% CO_2 emissions reduction below a 'business as usual scenario'). Develop appropriate financial and market-based mechanisms that support energy efficiency and renewable energy.
- Energy – A target of 24MtCO_2e reduction in Green House Gas (GHG) emissions in the energy sector over the period 2014 – 2033.
- Transportation – Target of a 20% reduction in conventional transportation fuel use by 2033; improving public transportation; upgrading maintenance of bus fleet; upgrading the industrial fleet; improving scheduling as part of transportation planning; promoting the use of bio-fuels (conditional).
- Land use, land use change and forestry (LULUCF) – Sustainable forest management, reducing emissions from deforestation and forest degradation (REDD+), afforestation, conservation.
- Waste – Waste minimisation, re-use and recovery; and integrated solid waste management programme.

Adaptation:

- Climate smart agriculture (CSA) - both short and long-term measures to address critical gaps in technological developments relevant to crop production, better soil management practices, diversification into drought resistant crops and livestock, and farm production adaptation (including land use, land topography and increasing use of low-water irrigation systems) (conditional actions with estimated total implementation costs of US$13m).
- Sustainable Forest Management – Integrating climate change in a revised National Forest Plan - provide guidance for actions that concern the direct and indirect threats posed by climate change to forests and forest-dependent people in order to reduce their vulnerability (conditional with estimated total implementation costs of US$5.16m).
- Coastal Fisheries – Sustainable management of the fisheries sector; conservation and preservation of fisheries resources and marine habitats in promoting reef ecosystem resilience (conditional actions with estimated total implementation costs of US$750,000).
- Coastal Management – Promote and adopt the Belize Integrated Coastal Zone Management Plan: support important ecological functions, as well as social, cultural and economic prosperity for current and future generations; ensure responsible and sustainable use of Belize's coastal and marine resources in the face of climate change (conditional actions with estimated total implementation costs of US$5m).
- Water Management – Improved integrated water resource management: enhance the protection and restoration of forest ecosystems and build the resilience of water catchment areas.
- Tourism – Integrate climate change in the tourism sector: assess the vulnerability of the tourism system to climate change and ensure mainstreaming of climate change consideration throughout the sector to enhance ecosystem resilience, equitable distribution of tourism activities and fostering of sustainable tourism development, at a local and national scale. Offshore caye management schemes (Goff's Caye) need to be set up to ensure environmental sustainability; these may include caye specific marine spatial (and land-use) plans.
- Sustainable Urban Planning – Building resilience of human settlements: promote the adoption of an integrated land tenure and land classification policy; discourage the establishment of human settlements in areas prone to natural hazards (flooding, land slippages, high winds and storm surges) and develop housing and settlement patterns / practices that enhance adaptation and resilience.

[45] Belize Nationally Determined Contribution https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Belize%20First/BELIZE%27s%20%20NDC.pdf. Cabinet have endorsed the NDC and implementation plan which includes targets and indicators for a range of marine sectors and related matters.

- Waste Management – National Integrated Waste Management Programme to improve waste management: including programmes to reduce, re-use, recover and recycle solid waste and reduce greenhouse gas emissions.[46]
- Infrastructure and Roads – Enhance the resilience of the transport sector: vulnerability assessments to be undertaken with greater focus on transport infrastructure, particularly in urban areas and other areas which are critical to sustain the country's productive sectors (agriculture, tourism and ports).
- Health Services and Assessment – Strengthen and improve human health: conduct a vulnerability and capacity assessment for the health sector, in order to adopt practices and technologies that will reduce exposure and health impacts from extreme heat, and improve physical infrastructure of health institutions and their functional capacity.

Cross-cutting areas:

- Climate Risk Management – National Climate Resilience Investment Plan: cross-sectoral plan that identifies both physical and non-physical interventions that take into account current and future risks posed by current and future climate variability (unconditional actions to be implemented by the government of Belize with estimated total implementation costs of US$ 231m).
- Matters of communication on Blue Economy issues are improving with the creation of the new Ministry (MBECA). However, it is recommended that more formal arrangements are needed in the form of a National Blue Economy Steering Committee (or Inter-Agency Committee).

3.4. Ecosystem Services

Marine and coastal environments, and their associated ecosystems, support a diverse range of sea life that is important for global biodiversity and play a significant role in Belize's economy and way of life. Maintaining the health and biodiversity of marine ecosystems in Belize is fundamental for the services that they currently provide, for supporting cultural and social well-being and for future sustainable development opportunities.

Current ecosystem services include subsistence food provision from fisheries and aquaculture, shore stabilisation and coastal protection provided by mangroves and carbon sequestration from seagrass and tidal marshes. The protection and preservation of coral reefs is of critical importance, both from an ecological perspective and for their role in supporting a tourist industry that depends largely on healthy marine and coastal ecosystems.

Degradation of marine ecosystems presents a major threat to livelihoods, health and well-being. In the marine area, these come from the effects of climate change, including ocean acidification and coral bleaching, physical damage from increasingly intense hurricanes and the growth of maritime activities and land-based pollution. CZMAI and the Wildlife Conservation Society (WCS), for example, are currently working on studies to assess the rate of sedimentation of coral reefs, using NASA satellite data (from the University of Alabama) to determine which water systems are most likely to be heavily impacted.

3.4.1. Economic contribution

Coastal and marine ecosystems provide a variety of ecological functions that directly and indirectly translate to economic services and value to humans. However, the value of ecosystem services is often difficult to quantify as it is not easily captured in 'traditional' economic balance sheets. It may not be immediately visible in markets, business transactions or national economic accounts and it may only be perceived when services are severely diminished or lost. The importance of natural assets can be disregarded if they are under-valued and, therefore, they may become overused or depleted. In turn, this may have real and significant, if unintended, knock-on effects to economic sectors.

A project to quantify the economic contribution of Belize's coral reefs and mangroves by the World Resources Institute/ World Wide Fund for Nature, which was developed through a consultative process with several local government agencies and stakeholders, estimated the following:

Ecosystem service	Value
Value of reef, mangrove-related fisheries, tourism shoreline protection services per year (2007)	US$395-559m
Mangroves	US$174-249m
Tourism	Accommodation, reef expenses - US$ 150-196m Sport fishing – US$30-37m
Fisheries	US$17.86m (commercial fisheries in 2020)
Shoreline Protection: (per year)	Reef protection – US$120-180m Coastal mangrove protection – US$111-167m
Belize GDP in 2007 as reference	US$ 1.3 billion

Source: Monsanto, M. (2009)[47]

[46] CZMAI and the UK National Oceanography Centre are working on assessing land based nutrient challenges facing the coastal zone.

[47] Monsanto, M. (2009). Ecosystem services & Valuation: Examples from Belize. Accessed at https://www.cbd.int/doc/meetings/fin/rmws-2015-01/other/rmws-2015-01-presentation-04-en.pdf

3.5. Coastal and Disaster risk management

A significant proportion of Belize's infrastructure, properties and population including six of the ten major residential centres, most airstrips, significant lengths of roads, and approximately 40% of the population is located in the coastal area. This puts them at potential risk from coastal hazards and climate change risks.

The National Emergency Management Organization (NEMO) is the umbrella organization to coordinate Disaster Risk Reduction (DRR) and Disaster Risk Management (DRM) in Belize. Its Secretariat is responsible for development, refinement and testing of all emergency plans as well as ensuring the existence of national capacities to execute the plans, namely 12 Operational Committees.

The Committees are designated to manage specific areas of an emergency and are represented in the NEMO structure through the Chief Executive Officers of the Ministries with specific mandates. They support emergency management responses through the action plans approved by NEMO but only become active during times of alert and emergencies. This leaves a gap in the NEMO structure in times of non-emergencies. NEMO staff are responsible for emergency management countrywide as well as the co-ordination of all international assistance in the event of a disaster.

The NEMO co-ordinated the preparation of the national Disaster Response Preparedness Plan and prepared Belize's National Hazard Mitigation Policy (and Plan) with the support of the Caribbean Disaster Emergency Response Agency (CDERA) and the Caribbean Development Bank (CDB) (MAF & FAO, 2011).

Belize has legislation in place that can help operationalise Disaster Risk Management and which includes:

- The Land Utilisation Act –The Act effectively provides government with the opportunity to regulate, promote, create and approve land development applications and, special development areas within which hazard mitigation measures can be incorporated.
- Environmental Protection Act – assigns authority to the Department of the Environment to approve environmental impact assessments (EIAs), subject to consultation with NEMO.
- Coastal Zone Management Act – established the CZMAI, which has consultative and advisory roles on policies and planning relating to coastal development and resource use.
- Reconstruction and Development Corporation Act – was used to relocate government buildings following significant hurricane damage (1961), but which has not been applied since and has no currently functioning administering unit.
- Belize Building Act – regulates the construction of buildings countrywide.

3.5.1. Resources and training

In terms of Government, the Geology and Petroleum Department, the Forest Department, the Fisheries Department and the Department of the Environment are the major agencies with mandates that include research or monitoring activities in the coastal area of Belize. The CZMAI is tasked with performing coastal research, community outreach and coordinating data collection for the region.

Galen University had been approached by the MBECA to consider the design of courses that relate to the Blue Economy and its implementation. A Memo of Understanding (MoU) has been created so that a Minors programme on Blue Economy could be set up. Future courses shall have a focus on both Green and Blue economies. The MBECA shall offer technical expertise and the University shall offer its experience in teaching environmental science, economics, business, anthropology and other specialist topics. Support for this initiative from the private sector, e.g. Chamber of Commerce, is being sourced.

The University of Belize launched its Environmental Research Institute in 2010, which is responsible for the building of national capacity for research and monitoring to better inform natural resource management decisions. The Inter-American Development Bank (IDB) also supports a project, the Reduction in Coastal Risk project, which aims to assess skills to develop ICZM and training in Belize.

3.6. Gender Equality

The UN SDG 5 aims to achieve gender equality and empower all women and girls. There are nine targets, with at least one indicator each, that aim to achieve the overarching goal. Maritime industries are traditionally male-dominated areas, particularly in the bedrock sectors of fishing, ports / shipping, and marine aggregates. Commercial and offshore fisheries remain a male-dominated sector worldwide. Women's roles and activities in these bedrock sectors tend to be in supporting onshore roles, such as fish processing, food preparation and service sector roles. It remains, for example, important to stress gender opportunities within the marine tourism sector (including the development of the yachting sector).

Women's role in subsistence nearshore / coastal fishing is often underpaid and, therefore, undervalued in economic data. A move towards valuing ecosystem services and the economic contribution that ecosystems make in supporting the economy will help to highlight the value of the roles of women to the economy. The stewardship and management of ecosystem services and the creation of new small scale business opportunities can also provide additional opportunities for women and more rural or remote island communities, such as through aquaculture.

Tourism is one maritime economy sector that offers a wider range of opportunities for women to take an active part of the economy. The opportunity to diversify and expand the tourism offering creates the opportunity for women and rural / remote communities to engage in the economy.

The development of this Maritime Economy Plan has included consideration of how gender equality currently affects the maritime economy sectors as part of the multicriteria analysis carried out (see section 4.1).

Maritime Economy Plan
Belize

UKaid
from the British people

4. Analysis and Plan Development

Commonwealth Marine Economies Programme
Enabling safe and sustainable marine economies across Commonwealth Small Island Developing States (SIDS)

4. Analysis and plan development

This Plan has been produced as a result of several months of desk work combined with a consultative mission to Belize, during which intensive discussions were scheduled with a wide range of Government, NGO, and private sector stakeholders. It is, therefore, very much a strategic overview of Belize's maritime economic potential. Such swift approaches and taking a 'helicopter view' can be a highly beneficial mechanism for succinctly cutting through detail and prioritising needs.

This document is presented as a basis for further dialogue and to support Belize along the difficult but necessary pathway towards the realisation of a Blue Economy.

The draft Plan was subject to wide-ranging scrutiny and consultation and following associated revisions, it is anticipated that it will ultimately assist Belize in the implementation of its Integrated Coastal Zone Management Plan and support the strategic objectives of 'Plan Belize'.

4.1. Methods

The following methods were developed and applied to assist consultation and discussions with stakeholders and the analysis of information:

- To help gather information during country visits and seek the views and opinions of stakeholders to inform the development of the maritime economy plan, a series of **structured questions** were developed. Questions were grouped by sector (e.g. fisheries) or theme / issue that is common to many Small Island / Coastal States or that has the potential to affect the maritime economy (e.g. disaster risk, infrastructure and engineering).
- Where appropriate, stakeholders where aided in the process of prioritising maritime sector issues with the help of a **card sorting exercise (see Figure 5)**. 'Card sorting' prioritisation of maritime economy sectors and discussions of priorities were held with stakeholders, either individually, in groups, or in workshops. Discussions focussed on four 'key drivers' for the country's maritime economy, their relative importance and any potential tensions between the key drivers, to understand the over-arching issues of importance affecting all maritime economy sectors. Figure 5 overleaf presents the key drivers.
- Information collected through the structured interview questions, along with a desktop study of published and grey literature and reports and data provided by the departments and ministries contacted, was subjected to a **bespoke multicriteria analysis** developed to help inform the Maritime Economy Plan process. The multicriteria analysis was termed a **GESTER analysis (see Table 4)**.
- Traditional and emerging maritime economy sectors were subject to a GESTER analysis of the current situation or status of the sector, considering both positive and negative aspects of the sector in question. The analysis served **to expose the process to basic environmental and social screening**.

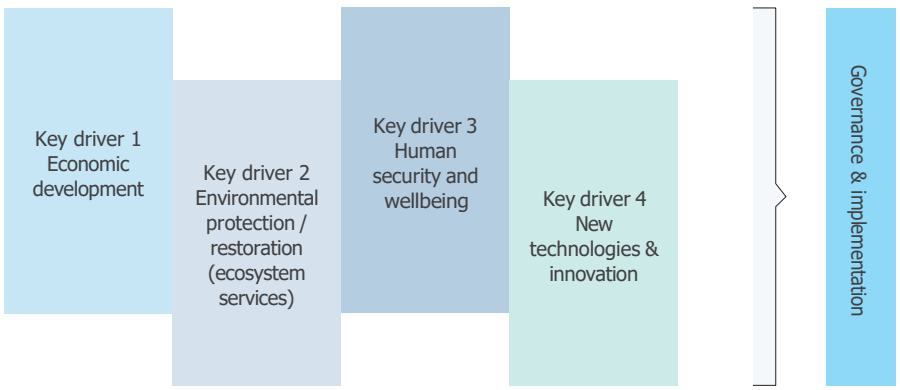
The criteria against which each sector was considered are shown in Table 4. Card sorting (Figure 5) provided a series of lenses for examining different sectors. The Maritime Economy Plan was then drafted following this analysis.

Kayaking at Glover's Reef Atoll in Belize

Table 4 – Multicriteria (GESTER) analysis

Criteria	What is considered / included?
Governance	Regulation, management, monitoring, enforcement, resources (human and technology)
Environment	Impacts / risks to the environment from the sector, dependency on environmental quality / risks from other sector impacts to the environment
Social	Consider gender, rural and urban, educational factors, health and safety, community issues, skills and training of workers today, access to training / education for future workforce, availability of workforce locally, loss of workforce overseas, influx of workers from overseas
Technology	Consider impacts of new technology on the sector, technology requirements for the sector, if low tech can achieve similar outcomes
Economy	The effects on the economy, or economic effects on this sector – local and global factors, resilience to economic change
Resilience & Risk	To / from natural hazards (earthquake, tsunami, extreme weather) and climate change (increase in extreme weather, sea level rise, ocean acidification, sea temperature rise), preparedness and response to events, integration across policy / government

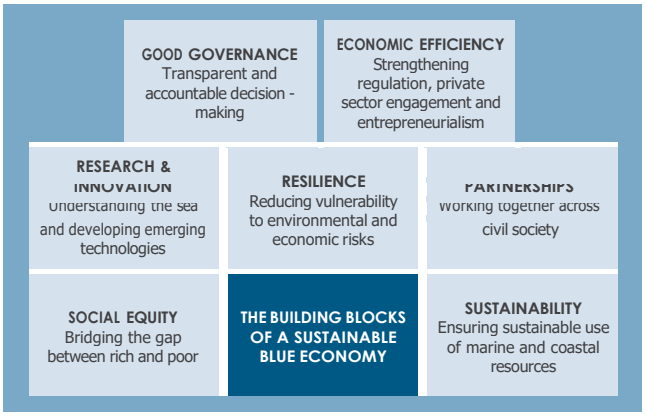
Figure 5 – Card sorting key drivers



Building a vibrant and productive Blue Economy may be assisted by a concerted focus upon key maritime economic sectors. These sectors may then be aligned with a series of over-arching principles that, once adhered to, will assist a country to follow a clear and inclusive pathway to sustainable maritime economic growth (see Figure 6).

The United Nations has adopted ocean development as part of its **Sustainable Development Goals (SDGs)**. SDG 14 aims to *"Conserve and sustainably use the oceans, seas, and marine resources for sustainable development."* The Blue Economy interlinks with the majority of the SDGs. Aquatic and marine resources play a crucial role in supporting maritime economic sectors. Progress towards a Blue Economy can help achieve a range of SDGs. Figure 7 illustrates some of the linkages between Blue Economy development and the 17 SDGs[49].

Figure 6 – Principles of a sustainable Blue Economy[48]



[48] Adapted from OECD, 2016, The Ocean Economy in 2030, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264251724-en
[49] UN Commission for Africa, 2016, Africa's Blue Economy: A Policy Handbook

Figure 7 – The Blue Economy and achieving SDGs

Potential POSITIVES of proper development of the Blue Economy	SDG	Potential NEGATIVES of improper development of the Blue Economy
Improved livelihoods and employment Investment in enterprises		Space conflict Marginalization
Enhanced sustainable food production Improved food distribution		Increased food waste Harmful commoditization of food
Improved water quality Increased funding to health services Improved occupational safety of seafarers		Pollution Weak revenue capture at national level
Enhanced knowledge infrastructure Increased funding for the education sector Skill development		Outsourcing of skilled labor Unwillingness to invest in local training and education Brain drain
Increased equal rights to economic resources Increased participation in decision making		Increased gender disparity in wages Proliferation of income gap
Increased funding for access to clean water and sanitation Investments in nature-based water provision services		Water pollution Destruction of nature-based water provision services
Enhanced access to renewable energy Improved knowledge base to build and maintain infrastructure		Continued incentivisation of carbon-based energy Population displacement Environmental impacts
Job creation Economic diversification		Wealth concentration Over-reliance on quantitative growth
Increased and improved infrastructure Technological progress		Environmental impacts High dependency on technology
Enhanced benefit distribution Enhanced participatory engagement of all stakeholders		Business as usual Concentration of influence
Improved cycling, harvesting, and use of water Cities have access to dean renewable energy		Increased pressure on freshwater resources Pollution
Removal of inefficient fossil-fuel subsidies Promotion of more equitable trade of goods and services		Unsustainable production practices Increased waste flows Transition to low carbon economies Resilience to uncertain climate future
Enhanced health of aquatic and marine ecosystems Increased stock abundance supporting sustainable fisheries		Overexploitation of aquatic and marine resources Environmental degradation
Increased water security Enhanced sustainable transboundary water sharing		Nutrient pollution Biodiversity loss
Improved governance Promotion of continental peace and security		Resource conflicts Failure to implement and enforce laws and regulations Dutch disease and resource curse
Improved partnerships between public, private, and civil society actors Strengthened continental cooperation		Insufficient partnerships Bureaucratic complexity

Maritime Economy Plan
Belize

UKaid
from the British people

5. Key messages, Priorities and Actions

Commonwealth Marine Economies Programme
Enabling safe and sustainable marine economies across Commonwealth Small Island Developing States (SIDS)

5. Key Messages, Priorities and Actions

This section of the plan sets out the key messages and priorities for the maritime economy of Belize. It highlights the overarching messages and key drivers for the country and for each of the maritime economy sectors, taking account of the current economic activities, opportunities and risks, and consultation with stakeholders.

5.1. Key messages and drivers for Belize's Maritime Economy

The overarching key messages for Belize's maritime economy are:

- **Tourism** is the most important economic sector in Belize, with the total contribution accounting for over 40% GDP (2017) and almost 40% employment (2018). Travel earnings account for 40% of total exports of goods and services. Although the economy is highly reliant on this sector (making it potentially vulnerable to events such as the COVID-19 pandemic and other changes in the market), the tourism offering is diverse with potential to expand and diversify further.
- **Maintaining a high quality coastal and marine environment underpins the tourism sector.** Ensuring tourism development is sustainable and does not adversely affect the environment is paramount.
- **Maritime transport is of strategic importance** but lacks a focussed development plan. The main ports are privately owned and government influence over or ability to set strategic direction for maritime transport facilities is not strong.
- **Fishing is an important bedrock sector** that provides employment for around 2% of the workforce and contributes approximately 4% of GDP. Inshore fisheries are well managed, with management plans in place for key species, and provide an important food source and export commodity, contributing at least one third of fishery exports by value.
- **Environmental regulation enforcement is critical.** Laws are all in place, though effective enforcement is very limited. Public awareness in best environmental practices is also poor. Marine litter, for example, is an emerging issue for which enforcement needs to be targeted.

5.2. Priorities

The overarching priorities for Belize are set out primarily in the Horizon 2030: National Development Framework for Belize 2010-2030, the 'Plan Belize', and the Growth and Sustainable Development Strategy (GSDS) for Belize (2016 – 2019)[50]. The 'Plan Belize' includes a clear set of strategic goals to grow and spread development in Belize, namely: to reduce poverty; to transform and grow the economy; to reduce the trade deficit; to have citizen security; and to protect the environment. In turn, this is complemented by the GSDS, which adopts an integrated, systemic approach to important issues of poverty reduction and sustainable development through three notable aims, namely 1. a proactive role for the State; 2. tapping into global markets; and 3. innovative social policy. The Government of Belize has started work to turn the 'Plan Belize' into a Medium Term Development Strategy to guide the country over the next four years.

This MEP is centred on the blue economy and encapsulates the same principles of low carbon, resource efficiency and social inclusion as the Rio+20 Green Economy concept. In so doing, it is aligned with the approach of the GSDS but is focused on the marine area.

The action plans for each sector seek to support the achievement of the Critical Success Factors (CSFs) set out within the GSDS.

Critical Success Factor (CSF) 1 – Optimal National Income and Investment

Belize aims to achieve real output growth of 5% a year over a sustained period. Over a 10 year period, this would achieve an improvement in per capita income of ~33%, assuming population growth remains at around 2%. Supporting existing and developing maritime economy sectors will help to contribute to this aim.

Critical Success Factor (CSF) 2 – Enhance Social Cohesion and Resilience

This CSF seeks to reduce by at least half the proportion of people living in poverty by 2030, to achieve a more equitable income distribution and to maintain or increase life expectancy. Part of the delivery mechanism for this CSF is to ensure that citizens feel actively involved in awareness events and social outreach initiatives that help to improve national understanding, appreciation and importance of the ocean. Initiatives are needed to facilitate sustainable use and management of ocean resources, including financing mechanisms.

The MEP will help support CSF2 by providing the 'maritime signposts' from which to build a society where individuals feel a sense of belonging, a society that is inclusive and that provides opportunities for social mobility.

Critical Success Factor (CSF) 3 – Sustained or Improved Health of Natural, Historical and Cultural Assets

The continued value of Belize's natural capital should be maintained. From a planning perspective, an integrated

[50] GSDS (2016-2019) Ministry for Economic Development, Petroleum, Investment, Trade and Commerce

ecosystem ('ridge to reef' approach) is essential to ensure that land-based activities do not negatively impact marine ecosystems and maritime related sector activities do not adversely impact the wider marine environment.

The current regulatory system of marine environmental management and requirements set out in the GSDS (2016-2019) should be reviewed, gaps identified and actions to make improvements identified. This should include a better understanding of the value of marine ecosystem services through a natural capital valuation exercise.

The outcomes will provide the basis for the coordinating mechanism with the Coastal Zone Management Authority and Institute (CZMAI) to provide a link between land and marine planning in Belize, including the link to the Shoreline Management Plans (SMPs) for Corozal and Toledo Districts and Caye Caulker.[51]

Critical Success Factor (CSF) 4 – Enhance Governance and Citizen Security

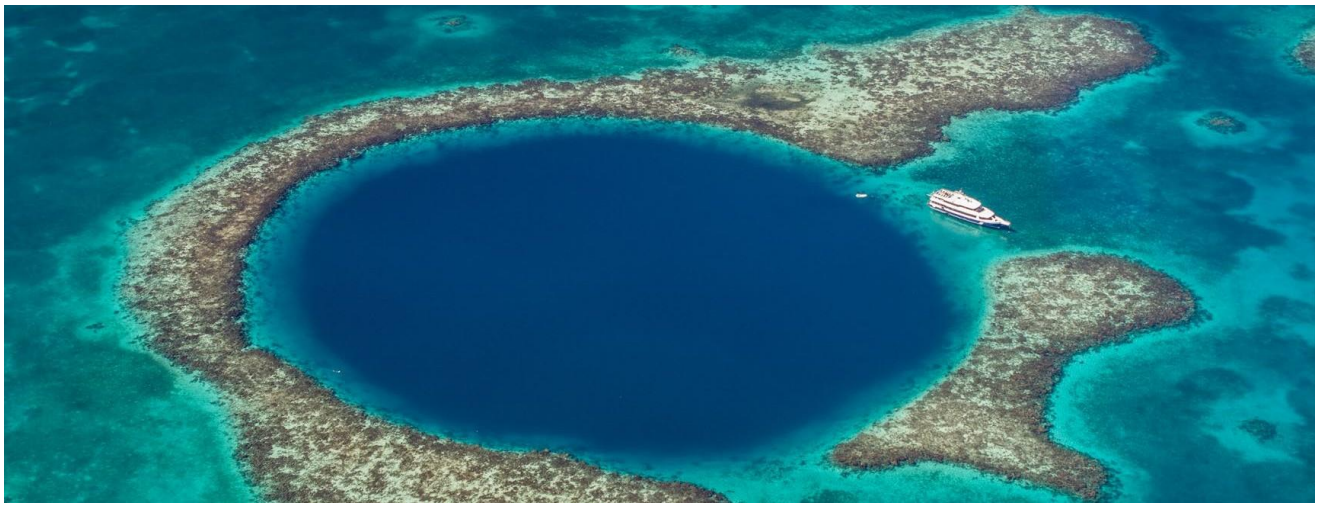
Belize's varied marine assets (coral reefs, etc.) support maritime economic sectors and livelihoods and contribute to a sense of national identity and their unique characteristics contribute to the country's profile in the international community. They must be safeguarded to sustain the promise of future economic growth.

Actions in this MEP will require increased cooperation and collaboration across all Ministries and statutory agencies, as well as non-governmental stakeholders and communities. Many will require continuous improvement and enhancement in the capacities and skills of governmental organisations (on maritime economy related issues) as well as the Civil Servants who work with them. This needs to be articulated in such a way that it is understood and able to be incorporated into departmental business with minimal impact.

5.3. Action Plans

Actions, primary actors and desired outcomes are presented for each maritime economy sector in the following pages. Recommendations and actions have been drafted to be relevant and applicable to both women and men, and to all of Belize's communities. Key messages and recommendations that could provide opportunities for women are highlighted. Each sector is given a prioritisation for action based on the categorisation below.

■	This work is urgent. It is critical to both GDP and /or Belize's ability to adapt to climate change.
●	This work is new / needs attention. Sustainably developing it further now would help to build a future sustainable maritime economy 'game changer" for Belize.
▲	This work is well established and already very important to Belize's sustainable maritime economy. Attention to implementation plan suggestions will further strengthen the sector.



Great Blue Hole, a giant sink hole off the coast of Belize

[51] SMPs produced by Halcrow Group (2017) for Corozal and by Smith Warner International (2018) using IDB funds

5.3.1. Coastal Development

Status – Bedrock (Established)

SUGGESTED PRIORITY
This work is urgent. It is critical to both GDP and the ability to adapt to climate change

Coastal development is integral to tourism, Belize's key economic sector. To ensure development is environmentally sensitive and does not undermine the quality of the marine and coastal environment, the principles set out within the Belize Integrated Coastal Zone Management Plan (2016) must be reflected in an integrated approach.

Key messages:

- Tourism development on islands and in less developed coastal areas must take an integrated development approach, taking account of all the necessary utilities (energy, water, sanitation) and transportation connections (piers, jetties, etc.) needed to support new initiatives. Disaster Risk Management and climate change adaptation must be incorporated into the decision-making process, along with designs and building codes for all developments (e.g. location, style, design, energy/water supplies and associated emergency procedures).
- Consider and apply all relevant enforcement regulations, taking account of climate resilience and coastal management plans, policies and Environmental Impact Assessments (EIA), including implementing the principles and policies in the Belize ICZM Plan 2016 (and any updates), the Shoreline Management Plans for Corozal / Toledo Districts and Caye Caulker, and awareness raising/capacity building to strengthen understanding of sustainable coastal development policies across Government.
- Take a precautionary and risk-based approach, including using EIA to ensure that activities and developments in the coastal zone are climate resilient and sustainable.
- Coordinated implementation of the National Sustainable Tourism Master Plan, the National Climate Change Policy, Strategy and Action Plan, and other planning documents within the wider national planning efforts.
- Building institutional capacity to support understanding of development control, including EIA and climate change resilience. Training of current and future human resources (e.g. through University of Belize Environmental Research Institute), and integration with EIA and engineering capacity building.
- Awareness raising and greater understanding of sustainable coastal development policies amongst representatives on the Economic Development Council (EDC).
- EIA Regulations have been updated to reflect the World Heritage Status and associated legislation is planned to be updated, though this is not yet complete. Environmental Compliance Plans (ECPs) are not being followed and EIAs only address project by project issues (not cumulative issues).

An integrated approach to coastal development is needed that incorporates the value of coastal ecosystems and the application of planning and development control measures to take account of climate change predictions.

Belize Maritime Economy Plan — COASTAL DEVELOPMENT— Implementation Pathway

Suggested Strategic Requirement	The GSDS and ICZM Plan are fully integrated into the decision-making process for all coastal developments. Coastal risk management strategies and plans follow on from these. Decision making at the coast is climate resilient.			
Track	**Description**	**Primary Issues**	**Primary Actors**	**Years**
Track 1	Manage the risk of coastal hazards from climate change. Develop ISM process to apply to coastal development. Link to ICZM plan and specific SMPs. Develop SMPs for strategic development areas.	Coastal policies, plans and climate / shoreline hazards are not integrated into decision making.	Ministry of Economic Development and Petroleum, CZMAI, Ministry of Tourism and Diaspora Relations, Dept of Environment.	1
Track 2	Raise awareness and capacity for EIA, development control and climate change.	Lack of awareness / resource for EIA and climate resilient decisions in development.	Ministry of Economic Dev. and Petroleum, CZMAI, Dept of Environment, University of Belize, EDC, Ministry of Tourism and Diaspora Relations.	3
Track 3	Undertake ecosystem valuation and integrate into decision making to maximize benefits of coastal ecosystems.	Ecosystem services are not fully included in decision making, incl. water quality, erosion management, tourism, fisheries.	Ministry of Economic Development, CZMAI, Ministry of Tourism and Diaspora Relations, Dept of Environment, Statistical Institute of Belize	5
Desired Outcomes	**Protection of life and properties from coastal risks and climate change**	**Ecosystem services are fully integrated into coastal planning and decision making**		

5.3.2. Shipping and Ports

Status – Bedrock (Established)

SUGGESTED PRIORITY
This work is well established and already very important to Belize's sustainable maritime economy. Attention to implementation plan suggestions will further strengthen the sector.

Shipping in Belize is a mature sector that is of strategic economic importance and which is guided by the Belize National Transportation Master Plan (2018). This policy recommends the Government enter into Public-Private Partnerships (PPP) with ports but continues with the private sector Service Port model. It also calls for an increase in the number and quality of available jetties and marinas for water-taxis, to improve inter-island connectivity and help tourism, and the construction of a tourism terminal in (or near) Belize City, funded by the private sector.

The Belize Cruise Tourism Policy sets the goal of increasing the number of cruise ship calls, either in Belize City or by exploring potential in other ports and harbours along the coast (e.g. Big Creek, Placencia). This sector is foreseen to grow, and the country is trying to explore avenues for increasing revenue without causing detrimental impacts to the rich natural environment. Currently, cruise ships must anchor in the bay and passengers must use water taxis to reach land. While this creates work and jobs linked to the water taxis some shoreside facilities can miss out. Furthermore, the movement of people and restocking of the cruise ship is less efficient than it would be with a dedicated pier.

Key messages:

- Belize has ambitions to improve island connectivity, encourage decentralisation of resources and the distribution of economic benefits to more areas of the coast and islands. These are linked to tourism development. There is a need to increase capacity at current sites of all sizes (e.g. Belize, Big Creek, Punta Gorda, Corozal and San Pedro), including onshore facilities, infrastructure, shipping / navigation routes and human resource to support an increasing shipping sector.
- Maritime transport requires effective maritime situational awareness to allow for monitoring, control and surveillance of human activity and to provide data to assess the social and environmental impacts of any increase in freight and passenger volumes. The ability to monitor, control and respond to human activity at sea needs to be improved in order to manage and plan marine resources, protect the marine environment and enforce the rule of law.
- Belize must ensure that adequate and up-to-date nautical charts and hydrographic services are available, in line with national, regional and international commitments. This requires developing hydrographic capabilities through capacity building programmes, regional cooperation and training, and ensuring effective hydrographic governance is in place. New hydrographic surveys are needed to help develop plans that determine appropriate locations for tourist vessels and charter boats to temporarily moor away from environmentally sensitive areas. These shall help to avoid vessels grounding on reefs and minimise risk of pollution events and damaging the reefs and the important ecological functions they provide.
- There is a need to enhance maritime capacity and to encourage training in new skills within the sector, e.g. training more marine pilots and developing in-country skills for dredging operations. Increasing the numbers of hydrographers and raising the available skills sets would also help the sector to grow. There are currently only two such specialist at the Belize Port Authority, and although two private companies undertake similar survey work, neither does it to IMO Category A or Category B standards. There is also a need to improve environmental safeguarding within the BPA to help support the National Environmental Appraisal Committee (NEAC). In addition, as BPA are regulators, they need capacity to help de-carbonize the shipping sector (MARPOL Annexes 1-6).
- Marine litter needs attention, focusing on encouraging cruise ships, trawlers and commercial vessels to bring their waste to shore for appropriate disposal.

An understanding of the future infrastructure, technical and human capacity needs of the shipping sector is required to inform effective investment and development of the sector.

5.3.2. Shipping and Ports (continued)

Belize Maritime Economy Plan — SHIPPING AND PORTS — Implementation Pathway

Suggested Strategic Requirement: Shipping and ports capacity is increased, and island connectivity improved in a way that does not put the environment at risk, while current impacts are managed and reduced.

Track	Description	Primary Issues	Primary Actors	Years
Track 1	Strategic assessment of port and human capacity to understand and prioritise requirements to improve connectivity to support tourism goals. Include current and future locations, facilities and human and technical resources needed.	Need to increase capacity and facilities at all sizes of port. New facilities needed. Waste / wastewater improvements required. Navigational improvement, human, technical and equipment capacity required.	Ministry of Works and Transport, Port of Belize Ltd, Belize Ports Authority, Belize Infrastructure Limited, Statistical Institute of Belize.	1 – 3
Track 2	Ensure marine pollution contingency planning, monitoring and response capabilities are in place, in line with relevant international and regional conventions.	Port waste / wastewater management is not compliant with international treaties. Water quality is at risk.	Ministry of Works and Transport, Port of Belize Ltd, Belize Ports Authority, Belize Infrastructure Limited.	1 – 5
Track 3	Partner with Belize Statistics Institute to collate new figures on the maritime sector (employment, etc.) to inform decision making on capacity and training needs.	There are no data on employment in the maritime sector in Belize.	Statistical Institute of Belize, Dept of Environment.	1 – 3
Track 4	Develop and implement a strategy to enhance capacity-building and training of marine professionals and seafarers, in line with international standards and national needs.	Need for hydrographic survey training (at least level B), maritime engineering, port waste management, EIA to support environmentally sensitive sector growth.	Ministry of Works and Transport, Port of Belize Ltd, Belize Ports Authority, Belize Infrastructure Limited, BELTRADE.	3 – 10

Desired Outcomes: **Infrastructure and human capacity for the sector is improved and supports other sectors** | **Opportunities for a wide range of jobs and careers for all, in direct and supporting roles**

5.3.3. Fisheries

Status – Bedrock (Established)

SUGGESTED PRIORITY
This work is well established and already very important to Belize's sustainable maritime economy. Attention to implementation plan suggestions will further strengthen the sector.

Fishing is an important bedrock sector that provides employment for around 2% of the workforce and contributes approximately 4% GDP[52]. It provides an important food source and export commodity, as well as being of significant cultural value in coastal communities underpinning livelihoods and wellbeing.

As a CARICOM member, Belize has been receiving technical assistance from the CARICOM Caribbean Regional Fisheries Mechanism (CRFM). The Government of Belize is supportive of the recently endorsed Caribbean Community Common Fishery Policy (CCCFP).

Key messages:

- Inshore fisheries are well managed, with management plans in place for key species, but human resources and equipment are needed to implement patrols / awareness raising, and education of the measures and benefits. Co-management of enforcement with fishers is a positive action that needs further development.
- The persistent presence of *Sargassum* and of some Invasive Non-Native Species (INNS), particularly lionfish, are challenges for the fisheries sector, presenting risks to catches and livelihoods, although lionfish may also present opportunities. *Sargassum* control and management is a cross-cutting issue affecting fisheries, tourism and ports / harbours; collaboration is needed across government and sector participants to address this. Using *Sargassum* to produce bio-fuel/ fertilizer may be possible in the future, but more studies are required, as some assessments suggest it has potential to bioaccumulate arsenic and would need to be managed carefully.
- Fishery accreditation could offer an opportunity for adding value to products. However, as such a large proportion of the conch and spiny lobster fishery is already exported, the added value of embarking on an accreditation programme should first be explored[53].
- There is potential for competition for space between the fisheries and tourism sectors to be resolved (e.g. through sports fishing enhancement, etc.), although there is no formal Marine Spatial Planning regulation in place to help support co-management initiatives.
- Improved coordination mechanisms for coastal and marine resource management and for providing timely advice to government bodies, through a 'Blue Cluster' or similar initiative.
  For example, one instance that requires improvement, is the need for strengthening institutional arrangements and cooperation between the CZMAI and the Fisheries Department (e.g. over the implementation and collection of Sport Fishing fees).
- There is a need to better engage youth in new fishing technologies. Often communities that were traditionally dedicated to agriculture, are now seeing youth (mainly young men) turn to fisheries. This has been most apparent in the Corozal District but is not exclusive of this area.
- The Fisheries Department should focus on the emerging red snapper sector and in developing the deep-slope fisheries market and other value chain niche markets that may require new fishing technologies. However, to achieve this, the lobster and conch fishers need to change their mind-set, efforts and fishing gears. This could help the diversification of the sector currently highly reliant on lobster and conch sales in the US market.

[52] "Ocean Economies and Trade Strategy (UNCTAD) for Belize" (2020)

[53] A Fisheries Improvement Programme is currently ongoing with the lobster fishery engagement programme (The Nature Conservancy). This initiative is focusing on traceability and is expected to include a range of major exporters.

5.3.3. Fisheries (continued)

Belize Maritime Economy Plan — FISHERIES — Implementation Pathway

Suggested Strategic Requirement: Recognition of the economic and social importance of the sector. Safeguarding fisheries for the future.

Track	Description	Primary Issues	Primary Actors	Years
Track 1	Capacity building for the Fisheries Department to improve fisheries management and stock assessment. Improve cooperation across Govt. to benefit natural resource management and economic opportunities.	Improve data acquisition, monitoring control and surveillance; collation / management of data. Comply with regional fisheries policies.	Fisheries Department, The Belize High Seas Fisheries Unit (BHSFU), Statistical Institute of Belize.	1 – 3
Track 2	Address issues of Sargassum, Lionfish and INNS. Continue targeting lionfish as a food. Support products that provide opportunities for women.	Invasive species management action nationally and regionally. Belize can show leadership.	Fisheries Department, Partners in Belize Lionfish Project and Sargassum Task Force.	3 – 10
Track 3	Develop and implement ocean governance training programme including MPA management, fisheries management and to develop marine spatial planning.	Capacity gaps in training for fisheries and natural resource managers. Competition for space.	Fisheries Department, CZMAI, Dept of Environment.	3 – 10
Track 4	Focus on the emerging red snapper sector and in developing deep-slope fisheries and other value chain niche markets that may require new fishing technologies. Acquire and adopt new fishing gear and technologies to help target species besides lobster and conch, to support diversification in the fisheries sector.	Current overreliance on lobster and conch fishery with strong dependency on US market.	Fisheries Department, The Belize High Seas Fisheries Unit (BHSFU).	1 – 3
Track 5	Improve coordination mechanisms such as a Blue Cluster or similar instance to provide advice to Govt. bodies (Fisheries, MBECA).	With increase demand for marine and coastal resources, timely coordination is crucial for resource management.	MBECA, Fisheries Department, Dept of Environment, CZMAI.	3 – 5

Desired Outcomes: **The Government of Belize remains committed to the sustainable use of fisheries resources**; **The fisheries sector offers opportunities for employment for all people**

5.3.4. Aquaculture & Mariculture

Status – Bedrock (Not Established)

SUGGESTED PRIORITY
This work is new / needs attention. Sustainably developing it further now would help to build a future sustainable maritime economy 'game changer' for Belize.

Key messages:

- The Belize National Aquaculture Policy is currently in draft so there is no adopted, clear guidance on where aquaculture should take place and what resource should be provided for its development. A National Protected Areas System, related policies and action plans could support the policy and align to the National Environmental Policy and Strategy 2014-2024 and the National Biodiversity Strategy and Action Plan.
- Shrimp farming could enable diversification from fishing / tourism, especially in more remote / rural areas. It is relatively low tech / extensive but does require investment to start up and shrimp farms are vulnerable to weather events. Development must be resilient to weather, compatible with tourism developments and not damage the natural environment.
- Commercial marine cage farming, cultivation of seaweed (*Euchuma isoforme, Kappaphycus,* and *Gracelaria spp.*), sea cucumber, common snook, cobia, and octopus present opportunities for mariculture development.
- Consider the location of fish aggregating devices and other marine infrastructure, along with their interaction with other uses of the sea.

Belize Maritime Economy Plan — AQUACULTURE & MARICULTURE — Implementation Pathway

Suggested Strategic Requirement	Develop the potential for aquaculture and mariculture development in Belize in line with the vision and goals of Plan Belize.

Track	Description	Primary Issues	Primary Actors	Years
Track 1	Feasibility assessment to determine location, species and market for aquaculture / mariculture industries (e.g. shrimp, seaweed). Build on existing studies.	Incomplete information on the mariculture / aquaculture sector and market potential.	Fisheries Department, Ministry of Agriculture (Aquaculture Unit), Statistical Institute of Belize, CZMAI.	1 – 3
Track 2	Implement the new Mariculture Policy and the pending Belize National Aquaculture Policy in line with findings from Track 1, ICZM and ISM approaches and 'Plan Belize'.	Need to ensure mariculture development does not impact the environment and is climate resilient. EIA / climate change not fully integrated into decision making.	Fisheries Department, Ministry of Agriculture (Aquaculture Unit), CZMAI, Dept of Environment.	3 – 5

Desired Outcomes	**Opportunities outside of fisheries and tourism that complements / supports these sectors**

5.3.5. Tourism

Sector Status – Bedrock (Established)

SUGGESTED PRIORITY
This work is well established and already very important to Belize's sustainable maritime economy. Attention to implementation plan suggestions will further strengthen the sector.

Tourism activities are the major contributor to the Belize economy. The sector is heavily reliant on the marine environment in terms of cruise ship tourism, beach side hotels, scuba diving, recreational bathing and yachting. The quality and status of the marine environment has a significant impact on the value of this sector, depending on how tourists perceive the quality of the marine environment and the experience it offers, relative to other countries.

Key messages:

- A diversity of tourism opportunities exists in Belize - high value / low volume, ecotourism, 'traditional' beach, cruise tourism – and the sector offers potential employment opportunities to women and communities outside of traditional sectors and locations. The Government wants to encourage diversification to other sectors and areas to address current problems, such as the concerns over parking, berthing and traffic management for road vehicles and boats in San Pedro.
- Infrastructure is needed in areas identified as strategic for tourism development but the lack of infrastructure is a limiting factor outside of traditional tourism areas. This should be tailored to the specific development needs (e.g. small scale jetties for low impact ecotourism areas).
- Tourism development must be environmentally sensitive and sustainable and must not undermine the quality of the marine and coastal environment. There are concerns that some coastal developments are being progressed without issues being given proper consideration in EIAs, or EIAs not being given appropriate weight in the balance of decision making. Development in islands / less developed coastal areas must take an integrated approach, taking account of utilities (energy, water, sanitation, waste management, etc.), transportation connections (piers, jetties, etc.), DRM and climate change (ensuring resilience in location, buildings, energy/water supplies and emergency procedures). This should build on and develop the progress made in the ICZM Plan. There is also a need to stress the importance of creating a new Land Use Zoning Plan in tandem with the need to address marine pollution matters.
- There is a need for better cross-departmental coordination on tourism development e.g. with the Belize Chamber of Commerce in Belize City to better incorporate business opportunities in the maritime sector and how entrepreneur-related opportunities in the country may be developed.
- Natural capital valuation of marine tourism ecosystems and interactive Climate Smart public awareness activities will support integrated Island Systems Management and sustainable tourism development.
- Water quality poses a potential risk to sustainable tourism development in terms of risks to environmental and human health. Water quality monitoring and improvements are required to meet regional / international standards for recreational water quality and to reduce the risk to ecosystems and food fisheries. Marine litter is becoming a major problem that requires attention.
- *Sargassum* control and management is a cross-cutting issue affecting fisheries, tourism and ports / harbours. Belize's Sargassum Task Force is an example of best practice, but *Sargassum* is an issue that is greater than Belize. Finding the source of and the solutions to the issues posed by *Sargassum* are most appropriately dealt with at a **regional level** as they are likely to be outside of Belize (and the Caribbean) and beyond Belize's immediate and direct control. Engagement with regional Caribbean / international projects is required.
- Opportunity to improve the formal network of Marine Protected Areas (MPAs)[54] and the role they can play in economic livelihoods diversification (for tourism) as well as their role for fisheries conservation. This is needed as the revenue opportunity that MPAs bring is often not maximised. The tourism sector should be consulted in order to establish the optimal financing mechanism.

Sustainable tourism and recreation can only thrive with a well-managed, healthy and safe marine environment.

[54] APAMO exists but this is not specific to MPAs.

8 DECENT WORK AND ECONOMIC GROWTH

5.3.5. Tourism (continued)

Belize Maritime Economy Plan — TOURISM — Implementation Pathway

Suggested Strategic Requirement

Tourism continues to be a major contributor to blue economy growth in line with the National Tourism Policy. Development is based on integrated climate, planning and environmental policies and decision making.

Track	Description	Primary Issues	Primary Actors	Years
Track 1	Identify strategic areas for tourism development. Adopt an ISM approach to development. Include climate impacts, EIA in development decisions.	Tourism related infrastructure is a key limiting factor outside traditional tourist areas. There is inadequate control of development at the coast.	Ministry of Tourism and Diaspora Relations, Dept of Environment Economic Development Council (EDC), and CZMAI.	1 3
Track 2	Human capacity needs assessment to inform training programme for planners, engineers, operators, etc.	Tourism development must be environmentally sensitive. Staff / Depts. Lack resource / training for planning, control, enforcement.	Ministry of Tourism and Diaspora Relations, Dept of Environment, EDC, CZMAI, University of Belize.	5
Track 3	Manage the risk of coastal hazards / climate change to tourism facilities. Develop guidance and building codes to ensure resilience.	Lack of compliance with existing plans / policies to manage coastal risk – ICZM, SMPs. Increase awareness of climate resilient building.	Ministry of Tourism and Diaspora Relations, Dept of Environment, CZMAI Statistical Institute of Belize, Ministry of Infrastructure Development and Housing.	10

Desired Outcomes

- A climate resilient and sustainable tourism sector
- A trained, skilled workforce to plan and manage sustainable tourism development

5.3.6. Energy (including Renewable Energy)

Bedrock (Established) – diesel import / Emerging (Not Established) – renewables

SUGGESTED PRIORITY
This work is well established and already very important to Belize's sustainable maritime economy. Attention to implementation plan suggestions will further strengthen the sector.

There is a moratorium on oil and gas (O&G) exploration and exploitation in Belize's waters. On a global scale Offshore Renewable Energy (ORE) is attracting new technology and increased interest for project development. Small islands and coastal states can make great cases for piloting new technologies or showcasing new technological solutions, attracting investors and sponsors.

Key messages:

> The priority for Belize is on energy security, connectivity and a move to low carbon energy generation. The focus should be on onshore and small-scale renewables generation and improved resilience to extreme events.

> Renewable energy resources include hydro power and biomass (e.g. sugar cane at the Santander plant) from the interior.

> This is a terrestrially driven priority but one that will support the maritime economy in the future.

Belize Maritime Economy Plan — ENERGY — Implementation Pathway

Suggested Strategic Requirement	The sector is in total compliance with the CARICOM Energy Policy and the Caribbean Sustainable Energy Roadmap and Strategy (C-SERMS).

Track	Description	Primary Issues	Primary Actors	Years
Track 1	The Belize National Energy Policy (2014-2030) is updated to set out a clear policy direction in this area, including any marine renewables.	Primary focus of renewable development is terrestrial. ORE has potential but its role is not clearly defined.	Ministry of Energy, Belize Electricity Limited, Public Utility Commission.	1
Track 2	Support for private sector research, development and investment into marine renewable energy technologies.	Commitment and private sector engagement into the energy portfolio.	Ministry of Energy, Belize Electricity Limited, Public Utility Commission, Statistical Institute of Belize.	5 / 10

Desired Outcomes	**Reduced reliability on fossil fuels in Belize**	**Energy security for all citizens and businesses**

5.3.7. Ecosystem Services

Status – Emerging (Not Established)

SUGGESTED PRIORITY
This work is new / needs attention. Sustainably developing it further now would help to build a future sustainable maritime economy 'game changer' for Belize.

While ecosystem services are ubiquitous and support both bedrock and emerging maritime economy sectors, their integration into decision making and attempts to quantify their value are not yet mainstreamed. They are, therefore, described as 'emerging'. A stronger focus on improved data and information management is needed to support communication on ecosystem service provision. Natural capital valuation, for example, is being developed through the Wildlife Conservation Society (WCS), which is doing standard baseline studies. From this work, recommendations are being made to change future environmental policy, especially linked to lobster and conch fisheries. Likewise, WCS completed work in 2020 with The Nature Conservancy (TNC) to expand strictly protected areas, in partnership with the Fisheries Department[55].

Key messages:

- Ecosystem services underpin the tourism industry, which is fundamentally important to the economy of Belize. The sector also puts pressure on these ecosystem services from activities such as coastal development, water use, waste / wastewater disposal, accidental / deliberate damage. An integrated Island Systems Management (ISM) approach and integration with EIA, planning and mainstreaming of DRR / climate resilience into decision making is important to deliver tourism policy aims sustainably and ensuring that all sectors are given sufficient consideration in the decision-making process.
- Efforts continue to improve sewage disposal in key coastal locations including Placencia and San Pedro. Studies are being undertaken for improving sewage disposal in other priority areas. Grey water disposal and the impact this is having on coastal communities in Belize City is an important focal area for the future.
- Strategies should be developed that mitigate the impacts of land based and marine pollution[56], especially those generated by domestic and industrial activities.
- Improve data and information management systems to convey ecosystem service value to decision makers. To this end, use natural capital valuation to understand the value of ecosystem goods and services and use this information to inform decision making. Research and data collection from mangroves and seagrass could support the development of a blue carbon product in the near future.
- Ensure that any coastal or marine spatial planning process aligns with existing mechanisms by considering areas and features of importance for nature conservation and wider biodiversity in developing policies and locations for other marine activities, and in permitting new development[57].
- Take account of any existing spatial management for conserving biodiversity and comply with obligations associated with them.

The value of ecosystem services needs to be better understood and incorporated into decision making.

Belize Maritime Economy Plan — ECOSYSTEM SERVICES — Implementation Pathway

Suggested Strategic Requirement: Ensure that marine and coastal ecosystems are sustainably managed and protected to minimise impacts, improve resilience, and restored, to achieve healthy and productive oceans.

Track	Description	Primary Issues	Primary Actors
Track 1	Expand natural capital valuation work, building on work from WCS, to inform decision making and sustainable use of marine resources, such as lobster and conch fisheries.	Lack of data / understanding on the value of ecosystem services that support maritime economy sectors.	Fisheries Department, CZMAI, NGO Community, Statistical Institute of Belize.
Track 2	Manage impacts to coastal / marine ecosystems through ISM / EIA and planning processes influencing decision making.	Concerns that coastal developments take place without EIAs, or EIAs are not given appropriate weight during decision making.	Fisheries Department, CZMAI, Dept of Environment, Economic Development Council (EDC).
Track 3	Use planning and marine spatial planning to support ecosystem services through MPAs, management of activities / development, terrestrial activity impacts on coast / seas.	Development / activity on land affects the sea (e.g., sewage, land use). EIA is not applied consistently. Potential for conflict between activities at the sea / coast.	Fisheries Department, CZMAI, Dept of Environment, Economic Development Council.

Years: 1 – 3 – 5 – 10

Desired Outcomes: **Ecosystem Based Management principles are mainstreamed into national decision making, ensuring the sustainable use of coastal and marine resources of the Meso-American System.**

[55] CZMAI has undertaken Marxan Analysis to support these conclusions.
[56] Marine Pollution Bill is still pending at the time of writing.
[57] Developing further the existing coastal habitat assessment work being undertaken by CZMAI and University of Alabama (habitat classifications etc.).

5.3.8. Summary of all actions

The table below summarises the recommended actions and outcomes for all maritime economy sectors in Belize.

SECTOR	PRIORITY	ACTIONS	OUTCOMES
Coastal development Bedrock (Established) 	This work is urgent. It is critical to both GDP and the ability to adapt to climate change.	> Manage the risk of coastal hazards from climate change. Develop ISM process to apply to coastal development. Link to ICZM plan and specific SMPs. Develop SMPs for strategic development areas. > Raise awareness and capacity for EIA, development control and climate change. > Undertake ecosystem valuation and integrate into decision making to maximize benefits of coastal ecosystems.	> Protection of life and properties from coastal risks and climate change. > Ecosystem services are fully integrated into coastal planning and decision making.
Shipping and ports Bedrock (Established) 	This work is well established and already very important to Belize's maritime economy. These actions will help strengthen the sector.	> Strategic assessment of port and human capacity to understand and prioritise requirements to improve connectivity to support tourism goals. Include current and future locations, facilities and human and technical resources needed. > Ensure marine pollution contingency planning, monitoring and response capabilities are in place, in line with relevant international and regional conventions. > Partner with Belize Statistics Institute to collate new figures on the maritime sector (employment etc.) to inform decision making on capacity and training needs. > Develop and implement a strategy to enhance capacity-building and training of marine professionals and seafarers, in line with international standards and national needs.	> Infrastructure and human capacity for the sector is improved and supports other sectors. > Opportunities for a wide range of jobs and careers for all, in direct and supporting roles.
Fisheries Bedrock (Established) 	This work is well established and already very important to Belize's maritime economy. These actions will help strengthen the sector.	> Capacity building for the Fisheries Department to improve fisheries management and stock assessment. Improve cooperation across Govt. to benefit natural resource management and economic opportunities. > Address issues of Sargassum, Lionfish and INNS. Continue targeting lionfish as a food source. Support products that provide opportunities for women. > Develop and implement ocean governance training programme including MPA management, fisheries management, and to develop marine spatial planning. > Focus on the emerging red snapper sector and in developing deep-slope fisheries and other value chain niche markets that may require new fishing technologies. Acquire and adopt new fishing gear and technologies to help target species besides lobster and conch, to support diversification in the fisheries sector. > Improve coordination mechanisms such as a Blue Cluster or similar instance to provide advice to Govt. bodies (Fisheries, MBECA).	> The Government of Belize remains committed to the sustainable use of fisheries resources. > The fisheries sector offers opportunities for employment for all people.

SECTOR	PRIORITY	ACTIONS	OUTCOMES
Aquaculture and mariculture Emerging (Not Established) ●	This work needs attention. Sustainably developing it further would help to build a maritime economy 'game changer'.	> Feasibility assessment to determine location, species and market for aquaculture / mariculture industries (e.g. shrimp, seaweed). Build on existing studies. > Implement the new Mariculture Policy and the pending Belize National Aquaculture Policy in line with findings from Track 1, ICZM and ISM approaches and 'Plan Belize'.	> Opportunities outside of fisheries and tourism that complements / supports these sectors.
Tourism Bedrock (Established) ▲	This work is well established and already very important to Belize's maritime economy. These actions will help strengthen the sector.	> Identify strategic areas for tourism development. Adopt an ISM approach to development. Include climate impacts, EIA in development decisions. Use existing plans and policies (ICZM, SMPs), ensure they are followed and build on them. > Human capacity needs assessment to inform training programme for planners, engineers, operators, etc. Links to coastal development, shipping / ports – ISM approach for all development is required. > Manage the risk of coastal hazards / climate change to tourism facilities. Develop guidance and building codes to ensure resilience.	> A climate resilient and sustainable tourism sector. > A trained, skilled workforce to plan and manage sustainable tourism development.
Energy (incl. Renewable energy) Bedrock (Established) ▲	This work is well established and already very important to Belize's maritime economy. These actions will help strengthen the sector.	> The Belize National Energy Policy (2014-2030) is updated to set out a clear policy direction in this area, including any marine renewables. > Support for private sector research, development and investment into marine renewable energy technologies.	> Reduced reliability on fossil fuels in Belize. > Energy security for all citizens and businesses.
Ecosystem services Emerging (Not Established) ●	This work is needs attention. Sustainably developing it further would help to build a maritime economy 'game changer'.	> Expand natural capital valuation work, building on work from WCS, to inform decision making and sustainable use of marine resources, such as lobster and conch fisheries. > Manage impacts to coastal / marine ecosystems through ISM / EIA and planning processes influencing decision making. > Use planning and marine spatial planning to support ecosystem services through MPAs, management of activities / development, terrestrial activity impacts on coast / seas.	> Ecosystem Based Management principles are mainstreamed into national decision making, ensuring the sustainable use of coastal and marine resources of the Meso-American System.

This page has been intentionally left blank

Maritime Economy Plan
Belize

UKaid
from the British people

6. Implementation

Commonwealth Marine Economies Programme
Enabling safe and sustainable marine economies across Commonwealth Small Island Developing States (SIDS)

6. Implementation

6.1. Transition to a Blue Economy

Applying Blue Economy principles and strengthening the contribution made by the maritime sector to national GDP is one of the most positive interventions that small island and coastal states can make in response to climate change. With numerous people and businesses located on the cayes, islands, and throughout the coastal zone, Belize is at risk of sea level rise and negative climate change impacts. The more the country is able to look out to sea for its climate adaptation solutions the more resilient it will be. This approach will serve to truly embrace the vision of a Large Ocean State.

Figure 8 shows an example of a desirable Blue Economy framework. This shift in the way of thinking about the maritime economy allows a country to move away from a linear, compartmentalised and sectoral approach to ocean management, with its associated weak connections, linkages, and synergies between various scales of intervention (global, international, and national). It facilitates a move towards a more integrated, systemic, dynamic, inclusive, participatory, and ecosystem-based approach, in which sectoral barriers are minimised, at both the participants' and governance levels. This new way of thinking recognises that environmental, social, and economic dimensions are intertwined and pursued collectively for all maritime economy activities.

The Blue Economy (of which this Maritime Economy Plan represents a key building block) adheres closely to the principles of Integrated Coastal Zone Management (ICZM). This centres on the ecosystem approach and embeds the principles of the UNEP 'Green Economy in a Blue World' report and sustainable development. It takes into account the three pillars of environmental, economic, and social sustainability, as highlighted in the 2012 Rio+20 outcome document, 'The Future We Want', and the UN 2030 Agenda for Sustainable Development.

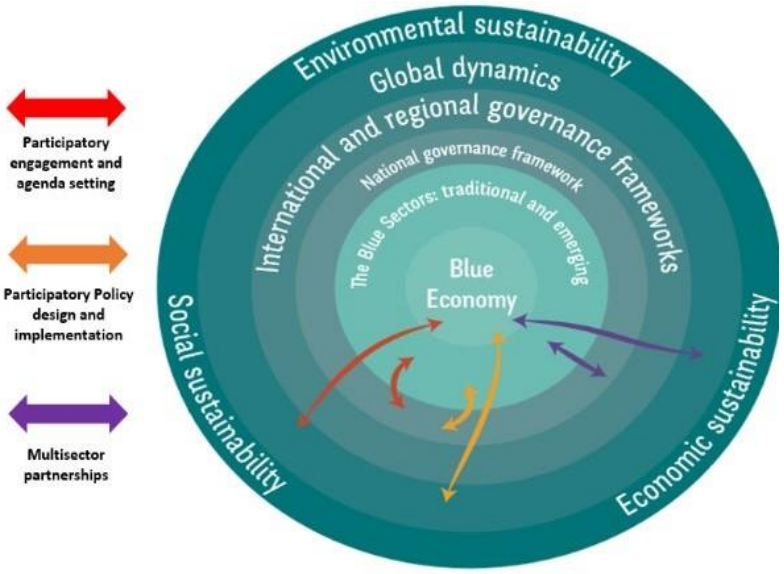
The Blue Economy promotes the conservation of aquatic and marine ecosystems and the sustainable use and management of resources. It builds on principles of equity, low carbon development, resource efficiency, and social inclusion.

The concept integrates the Blue Economy sectors through a socially inclusive process aimed at sparking a structural transformation, promoting integrated development, and improved regional cooperation and coordination.

The transformative work required to move towards full application of Blue Economy Planning principles in Governmental Strategy, Policy and Implementation is potentially a difficult but necessary step. Whilst Blue Economy concepts are beginning to become mainstream, particularly across Island Nations, very few countries have begun to prepare national level Maritime Economy Plans, and all remain some way off implementation.

As a nation that is on the climate change front line but is also growing in terms of overall national GDP, Belize is well-placed to play an exemplary role in blue economic transformation. This Maritime Economy Plan explores briefly the critical subject of accessing finance. It concludes with a brief review of the potential situation and the distance left to travel in embedding the Principles of a Sustainable Maritime Economy in societal decision-making. This is presented diagrammatically in Section 6.3.

Figure 8 – A Desirable Blue Economy Framework



6.2. Accessing Oceans and Climate Finance

A key benefit of strategic planning of any kind is that it can provide greater clarity and strength as a basis for coordinated bilateral and multilateral funding. This Maritime Economy Plan has been drafted with an eye to potential funding streams and it is anticipated that, following consultation and finalisation, it may be used by the Government of Belize to assist bid prioritisation and coordination.

Belize already receives external funding support and has experienced success in this area. It recently started receiving funding from the UK Blue Planet Fund to tackle climate change and address marine pollution through technical assistance. Besides this fund, the following instruments and types of funds, are likely to prove valuable at implementation stage:

- Many development partners operate in the region and most include aspects of the maritime sector in their areas of support. Major development partners in the region include the **Caribbean Development Bank (CDB)**, **Inter-American Development Bank (IDB)**, **EU**, **UN**, **World Bank** as well national agencies such as **USAID (USA)**, **GIZ (Germany)**, **JICA (Japan)** and the **UK (FCDO**, **CME Programme).**
- Belize has gained access to climate and sustainable development finance from a range of international funding sources. The following funds are particularly relevant to the implementation of this Maritime Economy Plan - **Global Environment Facility**; **Special Climate Change Fund (SCCF)**, **Green Climate Fund (GCF) and the Global Climate Change Alliance (GCCA).**
- A **Blue Bond** is a debt instrument issued by governments, development banks or others to raise capital to finance marine- and ocean-based projects that have positive environmental, economic and climate benefit. Other small island and coastal nations are already exploring the potential of Blue Bond creation and revenue as part of their maritime economy support mechanisms e.g. Seychelles and Fiji.

Assuming they remain a priority consideration for Belize, following consultation on the Maritime Economy Plan, it is recommended that the following suggested **Implementation Pathway Activities** will benefit from coordinated proposals for development assistance:

- Adoption of an Island Systems Management approach (ISM) to development planning, development control and decision making that builds on ICZM. Awareness raising of the importance of EIA, climate resilience in decision making and the application of existing risk management plans is important. CZMAI requires support (e.g. staff, training) to improve collaboration across Government.
- Update and implementation of environmental regulation for EIA and integration into planning / development process, along with a training and development programme / scheme to ensure it has cross-departmental understanding, uptake and enforcement to deliver strategic development outcomes as well as inform individual planning decisions. All departments need better training in the use and application of EIA and an integrated risk-based approach. Assistance is needed to create the capacity needed to deliver such a programme and needs to address basic points such as who can do the training in country and on what topics.
- Strategic assessment of port and human capacity to understand and prioritise requirements to improve connectivity to support tourism goals. Include current and future locations, facilities and human and technical resources needed. Include necessary waste and waste water infrastructure to ensure water quality is maintained and improved.
- Increased resources for the Fisheries Department for stock assessment, data management, monitoring, control and surveillance, to support inshore and offshore fisheries and inform decisions regarding accreditation and INNS management.
- Continued support for the Sargassum Task Force to address the cross-sectoral issues it poses for tourism, shipping and fisheries.
- Undertake a natural capital valuation to understand the value of ecosystem goods and services and integrate this into decision making and planning.

6.3. Achieving the Principles of a Blue Economy

Blue Economy Principles	Belize GSDS Critical Success Factors	Considerations for Belize
GOOD GOVERNANCE	CSF4: Governance and citizen security	Improve institutional, policy and legal arrangements through improved coordinating mechanisms for GSDS (CSF4) delivery in Belize. Improve the collaboration between sectors, institutions and stakeholders to better enable and support a more integrated approach to planning and decision making. ICZM, SMPs and wider adoption of an ISM approach to development is needed to protect important coastal areas / ecosystem services to support maritime economy sectors. Awareness raising and engagement of members of the public to better engage with marine management is needed. The CZMAI has an important role to play.
ECONOMIC EFFICIENCY	CSF1: Optimal national income and investment	Alignment with the GSDS CSF1 to support foreign investment and promote entrepreneurial approaches that are based on Belize's strengths. This includes the promotion of efficient markets and adequate infrastructure to support economic growth, development, and resilience (e.g., transport, energy, water, telecoms).
RESILIENCE	CSF2: Social cohesion and resilience	Alignment with the GSDS CSF2 by maintaining the integrity of national borders (enforcement, monitoring, data, resources) and the introduction of programmes to support opportunities in maritime economy sectors. With indirect social protection including gender, youth matters and social inclusion. Awareness raising and engagement of maritime economy sectors and members of the public to better engage with marine management and decision making is needed.
SOCIAL EQUITY		
PARTNERSHIPS	CSF3: Natural, environmental, historical and cultural assets	There is a need to improve awareness on the importance of good ocean governance for all aspects of society from the highest level of government to local communities on all related issues and using a range of communication tools and techniques (CSF3).
RESEARCH & INNOVATION		There is a need to develop a marine research strategy framework for Belize that supports the GSDS (CSF3). Working with University of Belize and regional neighbours to share knowledge and best practice that affect several countries e.g. Sargassum. Belize can share knowledge / lessons learned from INNS management actions.
SUSTAINABILITY		A ridge to reef approach is essential to ensure that activities on land do not adversely impact the marine environment. This must be incorporated into policy development, ICZM and SMPs being prepared for Belize with strong linkages between different planning and management regimes (delivery of CSF3).

UKaid
from the British people