Promoting Sustainable Growth in the Blue Economy Program

BL-L1042

Strategic Environmental and Social Assessment

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ABBREVIATIONS AND ACRONYMS

ACP	African, Caribbean, and Pacific Group of States
ALDFG	Abandoned, Lost, or otherwise Discarded Fishing Gear
BAHA	Belize Agricultural Health Authority
BBRRS	Belize Barrier Reef Reserve System
BCMR	Bacalar Chico Marine Reserve
BE	Blue Economy
BFD	Belize Fisheries Department
BOD	Biochemical Oxygen Demand
BTB	Belize Tourism Board
BTFS	Bit Torrent File System
BZD	Belizean Dollar
CAIS	Central American Integration System
CAMAI	Coalition of Ancestral Martial Arts International
CANARI	Caribbean Natural Resources Institute
CARICOM	Caribbean Community
CATHALAC	Water Center for the Humid Tropics for Latin America and the Caribbean
CBD	Convention on Biological Diversity
CBOs	Community-Based Organizations
CCCCC	Caribbean Community Climate Change Centre
CCMR	Cayo Calker Marine Reserve
CCSI	Climate Change Solutions International
CFCs	Chlorofluorocarbons
CFD	Critical Factors for Decision
CFU	Capture Fisheries Unit
CIAT	International Center for Tropical Agriculture
CITES	Convention for the Regulation of International Trade of Endangered Species
CO	Carbon monoxide
CO2	Carbon dioxide
CRFM	Caribbean Regional Fisheries Mechanism
CRI	Climate Risk Index
CSA	Climate-Smart Agriculture
CSOs	Chief Security Officer
CZMAI	Coastal Zone Management Authority and Institute
DAI	Direct Area of Influence
DOE	Department of the Environment
DSF	Deep Slop Fishing
EDF	Environmental Defense Fund
EEZ	Exclusive Economic Zones
ENSO	El Niño Southern Oscillation
EPA	CARIFORUM-European Union Economic Partnership Agreement
ESMF	Environmental and Social Management Frameworks
ESMS	Environmental and Social Management System
ESPF	Environmental and Social Policy Framework
ESPS	Environmental and Social Performance Standards
FAO	Food and Agriculture Organization of the United Nations
FPIC	Free, Prior and Informed Consent
GAI	Global Adaptation Index
GBV	Gender-Based Violence
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environmental Facility

GHG	Greenhouse Gas
GIZC	Integrated Coastal Zone Management
GoB	Government of Belize
GRMR	Glover´s Reef Marine Reserve
GSSCMR	Gladden Spit and Silk Cayes Marine Reserve
GWP	Global Water Partnership
HACCP	Hazard Analysis and Critical Control Points
HCFCs	Hydrochlorofluorocarbons
HCMR	Hold Chan Marine Reserve
HRI	Healthy Reefs Initiative
IAI	Indirect Area of Influence
IATTC	Inter-American Tropical Tuna Commission
ICCAT	International Commission for the Conservation of Atlantic Tunas
ICP	Informed Consultation and Participation
ICRAN	International Coral Reef Action Network
ICZM	Integrated Coastal Zone Management
IDB	Inter-American Development Bank
IFAD	International Fund for Agriculture Development
IGN	National Geographic Institute
IIA	Indirect Influence Area
ILO	International Labour Organization
IMF	International Monetary Fund
INEGI	Instituto Nacional de Estadística y Geografía
INFOPESCA	Centre for Marketing Information and Advisory Services for Fishery Products in Latin America and the Caribbean
IPAs	Indian People American
IPCC	Intergovernmental Panel on Climate Change
ITCZ	Inter-Tropical Convergence Zone
IWC	International Whaling Commission
LDN	Land Degradation Neutrality
LFS	Labor Force Survey
LIC	Land Information Centre
MA	Managed Access
MAFFSD	Ministry of Agriculture, Fisheries, Forestry, the Environment, and Sustainable Development and Immigration Services and Refugees
MAPs	Managed Access Program
MAR	Meso-American Reef
MAWG	Managed Access Working Group
MBECA	Ministry of Blue Economy and Civil Aviation
MCCAP	Marine Conservation and Climate Adaptation Project
MDGs	Millennium Development Goals
MEP	Maritime Economy Plan
MFFSD	Ministry of Forestry, Fisheries, and Sustainable Development
MHWM	Mean High Water Mark
MIT	Massachusetts Institute of Technology
MLW	Mean Low Water
MLWM	Mean Low Water Mark
MODIS	Moderate-Resolution Imaging Spectroradiometer
MPAs	Marine Protected Areas
MRA	Mesoamerican Reef Alliance
MRE	Mesoamerican Reef Ecosystem
NBSAP	National Biodiversity Strategy and Action Plan
NCCO	National Climate Change Office

NDC	Nationally Determined Contributions
NEMO	National Emergency Management Organization
NGOs	Non-Governmental Organizations
NMHS	Hydrology Unit of the National Weather Service
NMS	National Meteorological Service
NOAA	National Oceanic and Atmospheric Administration
NSPA	National System Protected Areas
ODS	Ozone-Depleting Substances
OETS	Ocean Economy Trade and Strategies
ORE	Offshore Renewable Energy
OSPESCA	Organization of the Fisheries and Aquaculture Sector of the Central American Isthmus
PAHO	Pan American Health Organization
PHMR	Port Honduras Marine Reserve
PM	Particulate Matter
PPP	Policies, Plans, and Programs
RAMSAR	Convention Relative to Wetlands of International Importance, especially as Waterfowl Habitat
RHI	Reef Health Index
SA	Socio-environmental Aspects
SCMR	Sapodilla Cayes Marine Reserve
SDGs	Sustainable Development Goals
SEA	Strategic Environmental Assessment
SEMS	Socio-environmental Management System
SEP	Stakeholders Engagement Plan
SESA	Strategic Environmental and Social Assessment
SF	Strategy Formulation
SGBV	Sexual and Gender-Based Violence
SIB	Statistical Institute of Belize
SO2	Sulfur dioxide
SRF	Strategic Reference Framework
SWOT	Strengths, Weaknesses, Opportunities, and Threats
TAMR	Turneffe Atoll Marine Reserve
TURF	Territorial User Right for Fisheries
UK	United Kingdom
UN	United Nations
UNCCD	United Nations Convention to Combat Desertification
UNCLOS	United Nations Convention on the Law of the Sea
UNCSD	United Nations Conference on Sustainable Development
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Program
UNEP	United Nations Environment Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations International Children's Emergency Fund
USAID	United States Agency for International Development
VOCs	Volatile Organic Compounds
WB	World Bank
WECAFC	Western Central Atlantic Fishery Commission
WHO	World Health Organization’s
WRI	World Resources Institute
WTO	World Trade Organization
WWF	World Wildlife Fund

CHAPTER 1: EXECUTIVE SUMMARY

CHAPTER 1: Executive Summary

ES1.1. Background

To diversify the country's economy through the growth of the productive sectors and subsectors of the blue economy, the Government of Belize (GoB) requested the support of the Inter-American Development Bank (IDB) to promote investments and improve productivity towards sustainable growth. The operation identified as the "Promoting Sustainable Growth in the Blue Economy" Program as BL-L1042 is prepared by the Ministry of Blue Economy and Civil Aviation (MBECA) and the Belize Fisheries Department (BFD). The main objective of this Program is to contribute to the sustainable growth of the country's blue economy by improving the income of fishermen and exports within the framework of the country's Maritime Economy Plan (MEP).[1]

Following the IDB's new Environmental and Social Policy Framework (MPAS), operation BL-L1042 was classified as Category "C" for estimated minimal adverse environmental and social impacts. However, in the final part of the design of the Program and the preparation of the Strategic Environmental and Social Assessment, subproject activities of the Program were identified that could generate negative socio-environmental impacts of a moderate nature. Because of this, the IDB reclassified the Program to Category "B."

The Strategic Environmental and Social Assessment (SESA) has been formulated to guarantee, in a preventive manner, the balance between abiotic, biotic, social, economic, and institutional aspects to integrate environmental and social considerations in decision-making. This evaluation is carried out in parallel with the design of operation BL-L1042.

ES1.2. Objective

The objective of this report is to identify and evaluate the possible risks and socio-environmental impacts of the activities proposed in the " Promoting sustainable growth in the blue economy Program" as well as to propose socio-environmental measures to guide its implementation, complying with the Social Performance Standards (ESPS) and the IDB Environmental and Social Policy Framework (ESPF).

ES1.3. Structure of the Report

This report is structured into eight (8) chapters: **Chapter 1** includes the Executive Summary. **Chapter 2** continues with the introduction, objectives, and methodologies for developing socio-environmental studies. **Chapter 3** contains aspects such as the Program Description at the level of components, projects, and activities to be implemented in the execution, operation, and closure stages. The regulatory and legal framework is found in **Chapter 4**, which includes the description of national laws, international agreements, the fishing regulatory framework, specific permits, and the regulatory framework for socio-environmental aspects. The socio-environmental characterization is found in **Chapter 5**, which includes the description of the current socio-environmental conditions of the Program Area and the determination of the Direct Influence Areas (AID) and the Indirect Influence Area (AII). Likewise, this chapter includes

[1] IDB, 2022. Project Profile Promoting Sustainable Growth in the Blue Economy Program (BL-L1042).

characterizing the abiotic, biotic, and socioeconomic aspects. **Chapter 6** refers to the socio-environmental strategic options derived mainly from analyzing the Policies, Plans, and Programs (PPP) related to the Program. The Socio-environmental Impact Assessment is presented in **Chapter 7**, in which the possible environmental, social, occupational health, and safety impacts and risks of the Program, following the provision of the Environmental and Social Performance Standards (ESPS) 1 to 10. Finally, **Chapter 8** includes the Environmental and Social Management System (SGAS) linking aspects such as i) the specific environmental and social framework of the project; (ii) identification of risks and impacts; (iii) management programs; (iv) organizational capacity and competence; (v) emergency preparedness and response; (vi) stakeholder participation; and (vii) monitoring and review.

ES1.4. Program Description[2]

The general objective of the Program is to improve the income generation capacity of artisanal fisherfolks and to maintain export levels of fisheries products while ensuring the sustainable use of marine resources. As specific objectives, it has: (i) To enhance the Government's ability to manage the critical species in the fisheries sector sustainably; (ii) To promote the adoption of sustainable technologies and best fishing practices by artisanal fisherfolks. The Program will be inserted within the framework of the Blue Economy, which promotes economic growth, social inclusion, and the improvement of livelihoods, in addition to seeking to guarantee the environmental sustainability of the oceans and coastal zones. It will be structured around the following components:

Component 1. Institutional strengthening for the sustainable and resilient management of the fisheries sector (IDB: US$ 4,549,288). To support scientific evidence-based decision-making, better accountability to third parties, and more efficient public services provision at MBECA and the Belize Fisheries Department (BFD). This component is divided into three subcomponents, and they are: Subcomponent 1: Knowledge management for the sustainable development of the finfish fishing industry; Subcomponent 2: Knowledge management for the sustainable development of spiny lobster and queen conch fisheries industry; Subcomponent 3: Information Management System for the fisheries sector

Component 2. Direct support to artisanal fisherfolk (IDB: US$1,684,072). To support individual or group-based investments in sustainable, environmentally friendly, and climate-smart technologies or equipment, the project will finance a matching grant program. The matching grant program will finance technical assistance to all participants: beneficiary fisherfolk will receive tailored technical assistance focused on elaborating and improving their Individual or Group Business Plans and training on best practices in sustainable fisheries for the Belizean context.

Other costs (IDB: US$766,640). This category includes administration, monitoring, evaluation, and auditing costs

[2] IDB, POD (BL-L1042), 2022. Promoting Sustainable Growth in the Blue Economy Program (BL-L1042)

ES1.5. Socio-environmental characterization

▪ Physical environment

The intervention areas of the Program are located in the Coastal and Marine zone of Belize. The national territory covers a total area of 46,620 square kilometers (18,000 square miles), of which the mainland constitutes 95% of the region, and 5% is represented by more than 1,060 small islands or Cays. The Managed Access Program (territorial use rights regime for fishermen known as TURF) divided the territorial sea into eight closed fishing areas and a ninth open area for deep-slope fishing. The total TURF areas declared as fishing zones have an extension of 37,127 square kilometers, of which Area 9, which is the central area of interest of the Program, has approximately 25,998 square kilometers, which represents 70% of the total area declared as the fishing zone.

The delimitation of zone 9 includes areas of international recognition by UNESCO, such as Glover´s Reef Marine Reserve, Bacalar Chico National Park and Marine Reserve, Half Mon Caye Natural Monument, Blue Hole Natural Monument, and the Marine protected area of Turneffe Atoll Marine Reserve. (Chapter 5: Item 5.2.3. Marine Protected Areas). As species of importance in these areas, the BFD, 2019 identifies the spiny lobster (Panulirus argus) and the queen conch (Strombus Gigas) as critical commercial species to support the Belizean fishing industry. It is important to note that the queen conch is included in Appendix II of CITES. Therefore, exports and trade of any products derived from the species are subject to strict regulation. The BFD has established a season, size limits, and quota system to ensure compliance. A special permit is also required to export any queen conch product from Belize. Some other deep-sea finfish species are identified in Annex 3.

Belize's climate is influenced by three major global/regional climate systems: the Atlantic Ocean Climate System, the Pacific Ocean Climate System, and periodically by North American climate systems changes. The average temperature in Belize is approximately 80°F, with average highs of 85° and lows of 73°[3]. The rainy season occurs from June to November, bringing around 60 inches (1524mm) of rain in the north to 160 inches (4064mm) in the south[4].

Belize's continental shelf lies below the coast of Belize and extends seaward for 15 to 40 km from the coast. In it, there are three relevant northeast-southwest escarpments[5]. An extensive reef system has developed on the first escarpment that runs parallel to the coast, forming the **Belize Barrier Reef[6].** The second escarpment supports Turneffe Atoll and joins the prominent Barrier Reef escarpment north of South Water Caye Marine Reserve. The third escarpment provides the foundation for Lighthouse Reef and Glover's Reef Atolls[7].

Land use change in Belize results from converting natural landscapes to artificial ones, predominantly through deforestation, filling freshwater and mangrove wetlands, and dredging

[3] Ministry of Agriculture and Forestry, Fisheries, Belize, 2016. National Biodiversity Strategy and Action Plan, Belize.
[4] NCCO, 2016. Belize´s third National Communication to the United Nations Framework Convention on Climate Change.
[5] Belize Fisheries Department, (n.d). Management Plan South Water Caye Marine Reserve 2019 – 2023
[6] NOA, 2010. Sapodilla Cayes Marine Reserve management plan 2011 - 2016: a component of Belize's world heritage site
[7] Ministry of Tourism & Diaspora relation, Caye Caulker Marine Reserve Management Plan. 2021-2026

seagrass. Two primary drivers have been identified at the national scale: i) Agricultural Expansion (including aquaculture) and ii) Population Expansion/Coastal - Cayes Development.[8]

The coastal zone and cays are the most vulnerable areas in Belize concerning development impacts, with the potential to affect the long-term viability of coastal biodiversity and the provision of ecosystem services. The loss of natural coastal vegetation is accelerating as development value, and demand for beach fronts increases, resulting in the removal of natural habitats along the entire Belizean coastline and cays, leading to increased beach erosion, beach loss, and increased sedimentation impacts[9].

The country has **four hydrographic regions**[10] that contain 39 identified river basins, of which 16 are classified as primary and 23 as sub-basins[11]. Within the 16 primary basins, **five transboundary basins** are shared with Guatemala, and one (Río Hondo) has significant portions that drain both Guatemala and Mexico[12]. Some of the leading causes of the deterioration of water quality in the coastal areas of Belize are related to the presence of sediments and nutrients delivered by the basins of the Mesoamerican Reef Alliance (MAR) region and marine intrusion[13].

The primary sources of **marine pollution** in Belize are related[14] to i) Poor sewage system in population centers; ii) Cruise tourism with increased wastewater production, development activity, and solid waste[15]; iii) Farming practices with the use of fertilizers and pesticides to increase crop yields; iv) Exploration and extraction of oil. (NBSAP, 2016).

Belize is highly susceptible to natural disasters. The country's history has been marked by numerous devastating tropical depressions, storms, hurricanes[16], floods, and droughts, which have affected the country periodically[17]. The government has paid a high price for atmospheric disasters in recent years as it is located within the path of Tropical Atlantic Cyclones. Tropical storms affect Belize between June and November every year, and they usually bring extreme weather conditions: heavy rain and destructive winds. Although many hurricanes have highly concentrated paths of destruction, their effects are far-reaching, particularly in coastal and marine environments[18].

Climate change has significantly increased the rising sea level, the increasing frequency and intensity of tropical storms, the increasing temperatures, and the changing patterns and observed climatic trends in Belize are considered alarming[19]. The IPCC's 2050 projections for Central America predict increasing temperatures causing increasing evaporation losses, decreasing precipitation, shorter rainy seasons and longer dry seasons, increased frequency

[8] Ministry of Agriculture, Forestry, Fisheries, the Environment and Sustainable Development, 2016. National Biodiversity Strategy and Action Plan. Belize, 2016-2020.
[9] Ministry of Agriculture and Forestry, 2016. National Biodiversity Strategy and Action Plan. Belize, 2016-2020.
[10] GWP, (Global Water Partnership) et al., 2011. Situación de los recursos hídricos en Centroamérica.
[11] GWP, (Global Water Partnership) et al., 2011. Situación de los recursos hídricos en centroamerica.
[12] GEF CReW 2015. Baseline Assessment Study on Wastewater Management Belize
[13] ICRAN, MAR. 2016. http://pdf.wri.org/mar_exec_spanish.pdf
[14] Coastal Zone Management Authority and Institute (CZMAI). 2016. Belize Integrated Coastal Zone Management Plan
[15] BTB, 2013-2019. Tourism´s Economy. Impact indicators.
[16] 2019, Green Climate Fund. Consideration of funding proposals - Addendum III.
[17] Belize Fisheries Department, (n.d). Management Plan South Water Caye Marine Reserve 2019 – 2023
[18] Belize Fisheries Department, (n.d). Management Plan South Water Caye Marine Reserve 2019 – 2023
[19] 2019, Green Climate Fund. Consideration of funding proposals - Addendum III

and intensity of heavy rain events causing rapid runoff or flash floods with consequently increasing erosion, more intense hurricanes and a general rise in extreme events like droughts and floods[20].

- **Biotic Environment**

Belize has a variety of terrestrial, marine, and freshwater ecosystems[21]. The country has been more classified explicitly as having eighty-five (85) terrestrial ecosystems, fifteen (15) marine ecosystems, and forty-three (43) different river ecosystems[22]. The country is recognized as having global Biodiversity, with a continuous dependency on natural resources[23]. Running parallel to the coast, Belize's barrier reef, identified as a Belize World Heritage Site, is among the valuable resources for traditional fishing communities and the sea-based tourism industry (BFD et al., 2019). Belize has 103 protected areas within the NPAS (National Protected Areas System), within which 52 protected areas are under the administration of the Forest Department, with another nine marine reserves and 12 aggregation sites spawning (many of which overlap existing marine reserves), administered by the Belize Fisheries Department (BFD)[24].

The Belize Barrier Reef Reserve System (BBRRS) was inscribed as a UNESCO World Heritage Site in 1996 *"...in recognition of the uniqueness of their contribution to the Belizean reef system, the largest and possibly the least impacted reef complex in the Atlantic-Caribbean area."* (BFD et al., 2019). BBRRS contained seven protected Areas; Bacalar Chico National Park and Marine Reserve, Blue Hole Natural Monument, Half Moon Caye Natural Monument, South Water Caye Marine Reserve, Glover's Reef Marine Reserve, Laughing Bird Caye National Park, and Sapodilla Cayes Marine Reserve. The seven protected areas constituting the BBRRS comprise 12% of the entire Reef Complex and are dispersed across 235 km of the Belizean coast[25].

Among the marine species classified as "high risk" within the Belize Marine Protected Areas System, according to BFD et al., 2019 are Goliath Grouper (Epinephelus itajara), Nassau Grouper (Epinephelus striatus), Sea Cucumber (Isostichopus badionotus), Great hammerhead shark (Sphyrna mokarran), Spiny Lobster (Panulirus Argus) and Queen conch (Strombus Gigas). These last two commercial species are vital to supporting the Belizean fishing industry. It should be noted that the Queen Conch was declared in Annex II of CITES for being listed as a species that is not necessarily threatened with extinction but could be unless its trade is strictly controlled.

The principal pressures and threats to Biodiversity and Ecosystems in Belize are related to Land-use change (deforestation, forest fragmentation, mangrove clearance, wetlands filling); Climate Change; Unsustainable exploitation of natural resources; Pollution (agrochemicals, industrial/urban effluent, solid waste, sewage, sedimentation); Anthropogenic fires; Invasive species; Unsustainable Tourism Practices (exceeding guide/visitor ratios, exceeding limits of

[20] Kongsager, R. 2017. Barriers to the adaptation of Alley Cropping as Climate-Smart Agriculture. University College Copenhagen
[21] NCCO, 2016. Belize´s third National Communication to the United Nations Framework Convention on Climate Change.
[22] NCCO, 2016. Belize´s third National Communication to the United Nations Framework Convention on Climate Change.
[23] Ministry of Agriculture and Forestry Belize, et al., 2016. National Biodiversity Strategy and Action Plan 2016-2020.
[24] National Protected Area System Plan. (2015). Belize National Protected Area System Plan
[25] BDF, 2019.The status of protected areas – Belize.

acceptable change, poor boating practices, illegal wildlife interactions, negative impacts from large-scale cruise ship tourism) and Natural disasters.[26]

- **Social-economic context**

Belize scored 0.720 on the Human Development Index (HDI), which placed the country in the high human development category, ranking 103 out of 189 countries. The average life expectancy for Belizeans is 74.5 years. The Gender Inequality Index (GII), which calculates the loss of achievement in reproductive health, empowerment, and labor market participation due to inequality between men and women, ranked Belize 103 out of 162 countries.

Belize´s population by 2021 was projected to be 430,191 people, including rural and urban areas[27]. The population of Belize is ethnically diverse and multicultural, consisting of four main ethnic groups: Creole, Garifuna, Maya, and Mestizo[28]. Indigenous peoples of Mayan origin are present in all six districts. According to the 2010 Belize Institute of Statistics Census, the indigenous population comprises 11.3%.

The Maya and Garifuna communities have maintained their cultural and linguistic heritage in Belize. The following indigenous languages are spoken in the country: i) Yucatecan Mayan: now being displaced by Spanish; ii) Mopan Mayan: 86 percent of Mopan Maya people consider this their first language; iii) 3. Q'eqchi' Mayan: 96 percent of Q'eqchi' Maya people consider this their first language; and iv) Garifuna: now being displaced by Creole.

Belize, in 2010 was in the last position (131) on the Global Gender Gap Index in the political empowerment of women. In addition, the United Nations has classified Belize as out of place regarding the promotion of gender equality and the empowerment of women, goal #3 of the Millennium Development Goals (UNDP 2013). This classification was based on the proportion of women employed in the non-agricultural sector and the proportion of women's seats in the National Parliament.

Agriculture and Fishing continue to be one of Belize's vital economic sectors. While primary industries account for Belize's second-largest share of workforce production, totaling 20,2060 workers in 2015, 93.3% of workers in the sector are men, or 18,907, compared to 6.7 % or 1,353 women. The sexual division of labor in agriculture and Fishing, in part, underlines the differential impact of policy decisions on women and men. The highest levels of labor force participation were observed in males between 35 and 44 years old, with 92.6 percent, while the lowest levels were found in the groups of men older than 55 years, with 48.3%. In Fishing activity, the distribution of fishermen by gender is 97% men and 3% women, according to the data registered by the BFD.

According to data from the Belize Fisheries Department (BFD), as of July 2022, **2,411 fishermen were registered**. Artisanal fisheries, dominated by queen conch (Lobatus gigas) and Caribbean spiny lobster (Panulirus argus), account for 95% of national fish landings and generate more than USD 13 million per year in revenue(BFD, 2018). As a form of resource management as of June 2016**, Managed Access** has been implemented throughout Belize's

[26] NBSAP, Ministry of Agriculture, and Forestry Belize, et al., 2018. National Biodiversity Strategy and Action Plan 2016-2020.
[27] Statistical Institute of Belize, 2010. Abstract of Statistics projected for 2019-2021
[28] Ministry of Health, 2014. Belize Health Sector Strategic Plan

territorial waters and now secures tenure for anglers to fish in two of eight designated fishing areas, called **TURFs** (Rights of the territorial user for fishing), with the additional option of Area 9 which is designated for high seas fishing[29].

Belize is unusual in the Caribbean for its strong and active fishermen's cooperatives (Brown and Pomeroy 1999). Cooperatives were essential in enabling a fairer distribution of profits from the industry, which has generated wealth and created opportunity in local communities (Gordon 1986, Sutherland 1986). Four cooperatives are operating: Northern Fishermen's Cooperative Society and National Fishermen's Producers' Cooperative Society based in Belize City, Placencia Producers' Cooperative Society in Placencia, and Caribbean Producers' Cooperative in San Pedro.

The World Bank's 2009 **Belize Country Poverty** Assessment shows that the population living below the poverty line increased from 34% in 2002 to 41% in 2009. The proportion of households living below the poverty line increased from 25% in 2002 to 31% in 2009[30]. The poverty rate in rural areas increased slightly in 2018 to 59%, compared to 55% in 2009.

ES1.6. Environmental and Social Impacts and Risks

The IDB has classified the operation as Category "B," where the environmental and social impacts are likely to be moderate, temporary, and localized, for which mitigation measures are readily available. The effects identified correspond to direct impacts because, according to the analysis, the Program will not have indirect effects, nor will it contribute to their generation.

Due to the nature of the Program aimed at strengthening institutional capacities and supporting Belizean fishermen within the framework of environmental sustainability, most of the socio-environmental impacts have been identified as positive. However, it is essential to highlight that some projects include actions that can generate negative impacts. In the event of possible negative and unforeseen impacts, it is clear that these may arise in compliance with the well-intentioned objectives of the Program.

ES1.6.1. Potential Positive Impacts

Execution stage

- **Institutional strengthening:** The development, validation, and updating of the different management plans for fisheries, spiny lobster, and conch management, among others, will allow the Executing Agency to have planning tools for better resource management. Carrying out exploratory campaigns will allow the collaborators of the Executing Agencies to improve their knowledge of the scientific way of obtaining data when carrying out this work. Likewise, acquiring equipment such as fishing gear, emergency plants, software, and hardware for systems will improve the institutional capacity to meet the demands of fishermen.

[29] Martinez, Virginia et al., (n.d). Managed Access: A Rights-Based Approach to Managing Small Scale Fisheries in Belize
[30] CIAT; World Bank. 2018. Climate-Smart Agriculture in Belize. CSA Country Profiles for Latin America and the Caribbean Series.

- **Improvement of sustainable economic activities:** The support of the Program to the fishermen through technical assistance for the elaboration of individual plans in phases 1 (lobster), 2 (snail), and 3 (deep-sea species) will gradually allow the incorporation of actions aimed at improving their livelihoods life and resilience to climate change. Likewise, technical assistance in group business plans will strengthen the association to enhance the fishing value chain and strengthen the maritime economy and environmental sustainability.

- **Increased partnership dynamics:** Technical assistance by formulating business plans will allow organized groups to have better social participation where associativity can be strengthened. Likewise, this assistance will serve the groups to propose development projects to improve the fishing sector, environmental sustainability, and resilience to climate change.

- **Sustainable management of living resources:** The preparation of different studies related to management plans, frameworks, protocols, and updated to national evaluations of the population of spiny lobster and queen conch, as well as the implementation of digitized fishing databases and traceability systems, will allow MBECA and the BFD sustainable management of living natural resources through the application of sound management practices and available technologies.

Operation/close stages

- **Institutional strengthening:** The exploratory campaigns' operational activities will allow the Executing Agencies' collaborators to improve their knowledge about the scientific way of working with the data collected during the different tasks.

- **Improvement in the production chain:** Refilling refrigeration equipment will improve the cold production chain and compliance with international phytosanitary standards, boosting activity toward opening new markets.

- **Participation of vulnerable groups:** The Program will open participation to vulnerable groups such as women, the indigenous population, Afro-descendants, and youth in activities related to implementing individual Plans and business plans for groups. With the implementation of these plans, new economic opportunities can be generated that will support the socio-economic conditions of these groups and resilience to climate change.

- **Strengthening the dynamics of associativity:** Implementing the Business Plans will allow the generation of added value to fishing products and the search for new market niches. This dynamic will enable the establishment of social participation processes where associativity will be the basis of the common good, strengthening and creating new organizations that will help promote the development of the fishing sector.

ES1.6.2. Negative potential impacts

- **Execution Stage**

- **Solid waste generation:** Fisheries waste is the household solid waste from fishing vessels and is deposited in bins and collection points on docks. The garbage generated on ships

includes plastics (polluted and clean), fishing gear waste, and household waste such as paper, cardboard, fluorescent lamps, synthetic material, sheets, metal cans, lids, glass, pantry packaging waste, etc. This waste can deteriorate the soil resource and marine areas near the collection points.

- **Generation of oily liquid waste:** Oily waste generated through shipping includes oily bilge water, oily residues (sludge), washed oily tanks (slops), and some types of operational waste such as used cooking oil, used lubricants, and oil rags. This waste can affect water quality and aquatic ecosystems, especially in invertebrates and larval forms of vertebrate fish.

- **Wastewater generation:** Wastewater can be generated mainly by commissioning the Reefers of the refrigeration system and by operating the vessels in the exploratory campaigns, which can generate waste from sources such as toilets and urinals, drainage of sinks and washing tubs, among others. These wastewaters can contain bacteria and other components that can affect seawater quality and, in turn, biodiversity**.**

- **Discharge of setine liquids:** Inside the hull of the ships, in the lower part, liquid waste of seawater, cleaning water, oil, and fuel, generated in the different operations carried out in navigation, repair, or maintenance, usually accumulates. This mixture of effluents is generally called bilge liquids. The effects of the discharge of bilge liquids into the sea can affect marine flora and fauna.

- **Gas emissions:** During exploratory fishing campaigns, boat engines can generate exhaust gas emissions from diesel engines. These gases contain nitrogen oxides (NOx), sulfur dioxide (SO2), hydrocarbons, carbon monoxide (CO), carbon dioxide (CO2), and particulate matter (PM) that can cause air pollution.

- **Noise pollution:** The noise of fishing boats, amplified under the sea, and the variation of sound pressure in the vicinity can affect marine mammals that use sounds to communicate and find food or as an alarm signal. Noise pollution can disrupt their normal behavior and force them to flee to calmer waters.

- **Bycatch:** During the fishing exploration campaigns, activities that include mortality due to incidental capture and discarding of species that are not the object of the studies will be carried out. Species commonly found in bycatch include birds and mammals. Likewise, endangered species such as the Queen Conch species registered in CITES list II can do incorporated by incidental capture. (Annex 3).

- **Overexploitation of fishing resources:** This temporary impact can occur during the execution of exploratory campaigns when implementing the population evaluation methods. These methods include (i) the stock reduction method, ii) models structured by size/age, and iii) the distance method. These methods are applied temporarily to know the availability of resources and their utilization rates. The purpose of this population assessment is to guarantee the sustainability of the fishing system by carrying out activities following the principles and criteria of sustainable fishing.

- **Disruption of spawning time, migration, and peak abundance of fish:** The determinants of marine ecosystems interact at different spatial and temporal scales, and any change generates a network of interactions between the other factors. The exploratory fishing campaigns where the fishing gear is drifting longline can generate changes in migration times and peaks in fish abundance.

- **Fish processing waste:** Fish processing can be presented in exploratory campaigns. This processing involves grading, slimming, heading, washing, scaling, evisceration, finning, meat-from-bone separation, and filleting. Throughout the process, a significant amount of waste is generated (20 to 80% depending on the level of processing and the type of fish), which is thrown into the sea, causing the BOD to enter the water with implications for water quality.

- **Temporary loss of access and use of the fishing zone:** The implementation of fishing research campaigns requires, during the time that the investigations are carried out, the use of some areas of Fishing Zone 9 without disturbance by the fishermen who use it as a traditional fishing site.

- **Temporary affectation to maritime traffic**: Implementing fishing research campaigns in some areas of Zone 9 may affect the marine traffic of water taxi routes, navigation lanes, and cruise ships since this activity requires special conditions for its execution.

Operation/close stages

- **Solid waste generation:** The generation of solid waste may appear in implementing some projects to support individuals and groups of fishermen in obtaining alternative non-extractive resources that support their livelihoods. These activities can generate household solid waste such as paper, cardboard, plastic, sheets, lids, glass, pantry packaging waste, etc. This type of waste can cause deterioration of the soil resource.

- **Wastewater generation:** The wastewater source can be the implementation of subprojects to promote alternative non-extractive resources to the livelihoods of fishermen. These subprojects may generate some liquid waste, such as gray and black water, that may lead to the deterioration of water quality.

ES1.6.3. Potential Risks

- **Risk of discarding fishing gear:** During exploratory fishing campaigns, there may be a risk of losing or discarding fishing gear. These losses can have particularly damaging impacts at sea, producing the effect known as 'ghost fishing,' where accidentally lost nets continue to fish and trap animals. Abandoned fishing gear, such as nets or pots, is one of the main types of litter that affect marine protection areas.

- **Risk of underwater noise emissions.** The industrial fishing vessels used in exploratory campaigns can be sources of underwater noise due to using engines and hydro sonometers

to locate stocks. These emissions can cause physiological or behavioral effects on marine fauna, specifically marine mammals[31].

- **Risk of mechanical damage to the reef by deployment and recovery of the anchor:** The fishing campaigns, when carrying out the anchor deployment and recovery activity in the anchoring system of the boats, can cause mechanical damage to the corals and their rupture.

- **Risk of generation of ozone-depleting substances (ODS):** The operation of refrigeration systems can generate risks of air pollution due to fugitive emissions due to breaks or leaks of refrigerant gas such as chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs). These emissions are causing the depletion of the ozone layer.

- **Risk of displacement of economic activities:** The restriction of access to the fishing zone 9 of the group of fishermen who use it as a means of subsistence can generate the displacement of economic activities and the risk of impoverishment for this group. This economic displacement is temporary and may occur when it is necessary to close the entry of fishermen to the areas of zone 9, where the exploratory fishing campaigns will be carried out.

- **Risk of low participation of women:** It is expected that there will be a risk of low participation of women in the execution of the projects. This situation is generated both by the low participation of women in fishing activities and by sociocultural aspects where the role of women in their homes, as mothers and wives, prevents them from leaving their daily activities to participate in projects**.**

- **Risk of work accidents:** Fish exploration campaigns and implementation of individual or business plans may involve physical exertion, improper postures, repeated movements, and handling loads in all their forms (lifting, transport, pushing, dragging). These aspects influence the possibility of suffering accidents while working, such as slips, falls, or animal attacks. Work accidents during the adaptation of the site and installation of refrigeration equipment can occur due to environmental factors such as noise, vibrations, high temperatures, humidity, etc., which can generate problems for workers' health.

- **Risk of delay in the start and execution of Program projects:** The implementation of the Program will require both institutional coordination between the Ministry of the Blue Economy and Civil Aviation (MBECA), the Ministry of Finance, Planning, Economy, the Department of Belize Fisheries (BFD), the Program Executing Unit (UEP) and the participation of stakeholders. The group of stakeholders will include the participation of vulnerable groups that will require different time and socio-cultural conditions than regular development times, which may delay or inhibit the development of the projects.

- **Risk of social conflicts due to unequal accessibility to areas:** According to the BFD, the fishermen's territorial use rights regime known as "TURF" is divided into nine fishing zones (Zone 1 to 9) where each fisherman has a license to fish in two (2) fishing zones, including Zone 9. The Program will benefit fishermen interested in fishing in Zone 9 with counterpart

[31] SEA, 2022. Prediccion y evaluación de impactos por ruido submarino.

subsidies, and for this, the BFD must grant fishing licenses. Due to the preceding, it is expected that a possible conflict could arise between fishermen who have two licenses and those who, through the Program, could have access to one more license.

- **Risk of change in the social environment due to expectations for matching grants:** Change in the social environment is related to implementing individual plans, technical assistance, and matching grants that provide for using new fishing technologies by the Program. This implementation can generate social conflicts due to the competition between the traditional knowledge of fishing that some communities have and the latest fishing technologies they want to implement, as well as the possible expectations that these technologies can generate about the socioeconomic conditions of the fishermen.

- **Risk of low participation of vulnerable groups:** The implementation of the projects may have the risk of the non-participation of some people belonging to vulnerable groups, such as women, youth, Afro-descendants, or indigenous people. This situation can occur due to two efforts that these people must make: the first is economical since people must leave their daily activities to join the projects, and the second effort is cultural, especially for women, where they must go their role in the home to participate in the Program's projects.

- **Risk of disturbing national monuments and marine reserves** located in zone 9 due to implementing the exploratory campaigns that will be carried out in areas close to these sites.

- **Risk of spill into the Ocean by the ship:** Considering that the exploratory fishing campaigns will be carried out using a vessel in the Ocean, the risk of fuel spillage may occur in the event of a grounding, collision, or sinking, which could affect Areas close to where the boat route is, such as Maritime Areas of the National System of Protected Areas (NSPA) and areas near world-renowned sites.

- **Risk of Collision Accidents:** Exploratory campaigns may risk collision accidents with cetaceans and other maritime transport vessels when: i) they are anchored at sea in fishing grounds at night or ii) against another type of vessel, elements of nature.

- **Risk of sinking and grounding of the ship:** The risk of running aground or sinking the boat can be generated by the excessive approach of the vessel to the insular platform, where an accident can occur that causes damage to the hull of the ship. This risk can lead to the sinking of the vessel and fuel spillage.

- **Risk of fire on the ship:** The risk of fire during exploratory fishing campaigns can arise from causes such as overheating of electrical circuits, excess load, rusty plugs, improperly sized fuses, or fuel leaks, among others.

- **Risk of increase in energy consumption:** The installation of refrigeration equipment will require electricity for its operation. However, there may be a risk of increased electricity consumption due to inadequate refrigerant charging, which can compromise efficiency and increase the risk of early failures of equipment components; when a system loses more refrigerant, the higher energy costs.

- **Risk due to natural disasters and Climate Change:** At the level of risk of natural disasters and Climate Change, it is considered that the projects evaluated may present a moderate exposure to this type of risk. This risk can generate interruptions in the operation's development and loss of assets.

ES1.7. Socio-environmental management measures

The environmental and social measures establish a set of actions to prevent, mitigate, restore, or compensate for the different environmental and social impacts and risks evaluated in the SESA. The environmental and social measures for the ESPS Program are detailed below:

Program 1. Waste management and air pollution control program. The Program seeks to prevent the handling of hazardous and non-hazardous waste and accidental spills and to prevent possible ODS leak emissions that exploratory fishing campaigns and the commissioning of the refrigeration system may generate. This Program includes (i) Solid and hazardous waste management; (ii) Hazardous Materials Management and Accidental Spill Prevention Measures; (iii) Management of atmospheric emissions.

Program 2. Sustainable Management of Living Resources Program. This program seeks to establish actions to prevent and control the possible effects that may occur on protected areas and marine fauna through activities such as exploratory fishing campaigns. This Program includes (i) Protection of living resources; (ii) Prevention of affectation of protected areas; (iii) Control to prevent the introduction of alien species.

Program 3. Alternatives to avoid the impact of economic displacement during fisheries research activities. This program seeks to establish actions to prevent and control the possible effects that may occur on protected areas and marine fauna through activities such as exploratory fishing campaigns. This Program includes (i) the Substitution of fishing areas; (ii) the Design of an access plan for zone 9; (iii) Consultation workshops on accessibility to zone 9.

Program 4. Occupational Health Program. This Program aims to guide mitigation actions on the health, safety, and well-being of the people who work in fishing research, artisanal fishing, and retrofitting of the refrigeration system. This Program includes managing accidents and occupational hazards, the stakeholder participation plan, and the complaints and claims mechanism.

Program 5. Participation of vulnerable groups. This program aims to improve the responsiveness of projects for the inclusion of vulnerable groups in individual and group plan projects. (i) Linking vulnerable groups; (ii) Planning for Indigenous Peoples[32] ; and (iii) Plan of Action on Gender and Diversity[33].

ES1.8. ESPS´ IDB applies to the Program

Below are the ESPS that apply to the program:

[32]IDB, FAO. BL-L1042
[33]IDB, FAO. BL-L1042

ESPS 1. Assessment and Management of Environmental and Social Risks and Impacts: In compliance with ESPS 1, a Strategic Environmental and Social Assessment (SESA) was prepared with its respective Environmental and Social Management Plan. Likewise, the Environmental and Social Management System (ESMS) of the Program did develop, which is composed of the following elements: (i) Specific environmental and social framework of the Program (MGAS), (ii) Identification of risks and impacts, (iii) Management programs, (iv) Organizational capacity and competence, (v) Preparedness and response to emergencies, (vi) Participation of stakeholders and (vii) Monitoring and evaluation.

ESPS 2. Labor and Working Conditions: The Program will generate labor engagement opportunities by addressing aspects such as labor conditions, labor organizations, non-discrimination, and equal opportunities, reduction of the labor force, grievance mechanisms, protection of the labor force (not child labor and not forced labor), health and safety at work during the life cycle of the Program. The Program will provide participation opportunities for vulnerable groups by establishing eligibility criteria with specific weights that ensure the inclusion of these groups. Contractors and suppliers, in turn, must generate mechanisms to include the participation of vulnerable groups. The measures contemplated in this operation will fully align with the IDB Group Measures to Address the Risk of Forced Labor in the Supply Chain of Solar Panels and the IDB's procurement and contracting policies.

ESPS 3. Efficiency in the Use of Resources and the Prevention of Contamination. The Program focuses on research, strengthening institutional capacities, improving the artisanal fishing value chain, and supporting fishermen. The Program excludes the use of highly toxic products and hazardous substances prohibited by international conventions, IDB, and World Bank Group policies. However, some activities of the Program, such as fishing exploration campaigns, improvement of the refrigeration system, solar panels, and support for fishermen, may have impacts related to i) the generation of solid and liquid waste and (iii) contamination by fugitive emissions from GHG. These possible impacts and risks will require measures for adequate environmental management.

ESPS 4. Community Health and Safety: The Program will not finance large vessels or equipment at the commercial level. However, some project activities may be exposed to risks due to natural hazards and climate change. The actions of the Program correspond to research studies to determine the status of stocks and the development of a demersal fishery. At a general level, this evaluation did not find evidence of a worsening of risks due to implementing the program project activities.

ESPS 5. Land Acquisition and Involuntary Resettlement: The actions of the Program will not generate physical displacement. However, there is a risk of economic displacement and impoverishment of a group of fishermen due to restricted access to zone 9, where they fish due to restricted access when carrying out fishing exploration campaigns. Therefore, the Program must implement actions to prevent this risk.

ESPS 6. Conservation of Biodiversity and Sustainable Management of Living Natural: The Program will support fishermen by providing them with equipment, tackle, fishing boats, low-consumption motors, and safety equipment to make the activity in established fishing areas more efficient. The Program will not support actions that could significantly convert or degrade natural habitats or affect sites of biological importance. The activities of the Program will not be

affected by the use or introduction of invasive alien species. The Program will carry out exploratory fishing campaigns to determine the status of the populations, find out what types of fisheries exist, and establish the management measures required for marine resources. The exploratory fishing campaigns will be implemented in sites outside the National System of Protected Areas (NSPA) and outside internationally recognized sites. However, the exploratory campaigns are expected to be carried out near the previously mentioned areas.

ESPS 7. Indigenous Peoples: The implementation of the subsidies will allow the participation of individuals or groups that belong to indigenous groups as beneficiaries of the Program. In this context, the following risks may arise: i) Restriction of access and use of traditional sites or ecosystem services (cultural/traditional); ii) Generation of conflicts of inequality in the distribution of access to the benefits of the Program; iii) Delay in the start of projects because execution with indigenous peoples requires more planning and execution time.

ESPS 8. Cultural Heritage: The Program excludes direct actions that may impact cultural sites. However, in study area 9, four sites are part of the Belize Barrier Reef Reserve System (BBRRS), registered as a World Heritage Site by UNESCO in 1996. There is a risk of disturbing two national monuments and a marine reserve located in zone 9 due to implementing the exploratory campaigns that will be carried out in areas close to these sites. Likewise, in 2007, Belize ratified the Convention for the Safeguarding of Intangible Cultural Heritage. The "Proclamation of Masterpieces of the Oral and Intangible Heritage of Humanity" is a part. The Garífuna people were one of the recipients of this proclamation because of their language, dance, and music. Thus, considering that implementing individual and group matching subsidy plans may include people from the Garífuna people, it is necessary to establish culturally appropriate actions for their proper management.

ESPS 9. Gender Equality: The Program seeks to be inclusive in the participation of men and women in the different activities it will develop, prioritizing support for vulnerable groups (women, youth, Afro-descendants, and indigenous women) and gender equality. No impacts of exclusion against women's participation have been identified. However, there is a risk of exclusion from the participation of women as beneficiaries due to socio-cultural conditions and the multiple activities carried out by women as wives, mothers, and caretakers of the household that prevents them from leaving their daily activities to participate in projects.

ESPS 10. Participation of Stakeholders and Information Disclosure: During the Program's life cycle, the participation of the interested parties will be a process to be developed continuously. In compliance with ESPS 10, the Stakeholder Participation Plan (SEP) is included as part of the SGAS. It will contemplate a gender-sensitive approach and methodology to promote the equal participation of men, women, the community, and vulnerable groups. The SEP includes (i) identification of actors; (ii) Participatory strategies; (iii) Public Consultation; (iv) Grievance and grievance mechanisms**.**

ES1.9. Conclusions

- As a result of the assessment process, it was verified that operation BL-L1042 continues to be classified as "Category B," where the socio-environmental impacts are of a small and medium scale of intervention. Likewise, it is expected that the impacts resulting from the different activities implemented by the Program will be temporary and localized and that socio-environmental measures will be available for their management

- As a result of the negative impact analysis, the following ESPSs are activated: ESPS 1: Assessment and Management of Environmental and Social Risks and Impacts; ESPS 2: Labor and Working Conditions; ESPS 3: Efficiency in the Use of Resources and the Prevention of Contamination; ESPS 4: Community Health and Safety; ESPS 5. Land Acquisition and Involuntary Resettlement; ESPS 6: Conservation of Biodiversity and Sustainable Management of Living Natural Resources; ESPS 7: Indigenous Peoples; ESPS 8: Cultural Heritage; ESPS 9: Gender Equality and ESPS 10: Participation of Stakeholders and Information Disclosure

- After identifying impacts and the socio-environmental evaluation of the activities of the Program projects, it is concluded that these projects are socio-environmentally viable and essential to support research in the fishing sector and the development of fishermen's livelihood.

- Once the assessment of the impacts was carried out, it was determined that no impact qualifies as a "Severe impact." The potential impacts in the execution, operation, and closure stages are due to specific interventions in spatial terms. Later, the environment will return to the initial conditions quickly. For this reason, the impacts are considered internally and can be fully controlled by the prevention and correction measures contemplated within the Environmental Management Plan.

CHAPTER 2: INTRODUCTION

CHAPTER 2: Introduction

2.1. Objectives[34]

2.1.1. General Objective

The general objective of this consulting was to prepare a Strategic Environmental and Social Assessment to identify the Program's environmental and social risks and impacts, following the framework of the IDB's socio-environmental policy and the Environmental and Social Performance Standards (ESPS).

2.1.2. Specific Objectives

The specific objectives of the consultancy were: (i) Prepare the Environmental and Social Management System (ESMS) specific to the Program. (ii) Prepare the Strategic Environmental and Social Assessment (SESA) and the Environmental and Social Management Frameworks (ESMF). (iii) Support the preparation and execution of a public consultation process with stakeholders.

2.2. Methodological Framework

The methodological process for carrying out the study was structured in four stages: i) Description of the Program and characterization of the national context; ii) Analysis of strategic options; iii) Assessment of impacts and risks; iv) Socio-environmental Management System(ESMS). The study's Baseline corresponds to secondary information on Belize obtained from different institutional web pages, specialized studies, database analysis, and reports from various information sources according to the needs of the topics. The primary information of the study corresponds to the field visits to the Borrower, areas of influence, and information provided by the actors related to the Program.

The methodological framework used for the Strategic Socio-environmental Assessment is based on adapting the guidelines developed in the course: "Concepts, evolution, and perspectives of the Strategic Environmental Assessment" (Partidario, 2011), where the SESA is an instrument to support decision-making decisions of a strategic nature, in policies, plans, and programs. The methodology implemented in the ESMS combines the vision of a planning process with the logic of environmental evaluation, which systematically works through consecutive stages within a strategic framework to achieve the proposed objectives.

The methodological process for carrying out the study was structured in four stages: i) Description of the Program and characterization of the national context; ii) Analysis of strategic options; iii) Assessment of impacts and risks; iv) Socio-environmental Management System.

[34] IDB, ToRs, 2022. Promoting Sustainable Growth in the Blue Economy Program (BL-L1042).

2.2.1. Strategic Environmental and Social Assessment (SESA)

For the elaboration of the SESA, the guidelines developed in "Concepts, evolution, and perspectives of the Strategic Environmental Assessment" were taken as a starting point. (Supporter, 2011). Under this methodological framework, the Strategic Environmental Assessment is a systematic instrument for the identification, analysis, and prior assessment of strategic impacts that will support decision-making. The methodological process includes the following phases:

- **Phase 1: Description of the Program and characterization of the national context**

  - **Definition of the scope of the SESA**

The selected model is the "parallel model," depending on how the evaluation object is designed in parallel, independent, but coordinated with the SEA (Partidario, 2011). In this case, "the object of the evaluation" is the "Promoting sustainable growth in the Blue Economy Program," designed while the Strategic Environmental and Social Assessment was developing.

  - **Characterization of the national context**

The first step to characterizing national context is establishing the socio-environmental area of influence. The socio-environmental area of influence of the Program corresponds to the geographic area resulting from the analysis of the identification and evaluation of the socio-environmental impacts and potential risks. This area spatially determines the Program's implications on the vulnerability of the socio-environmental components in a specific geographical framework according to the Physical, Biotics, Social, Economic, Management, Legal, and Heritage topics.

The study's Baseline corresponds to secondary information on Belize obtained from different institutional web pages, specialized studies, database analysis, and reports from various information sources according to the needs of the topics. The primary information of the study corresponds to the field visits to the Borrower, areas of influence, and information provided by the actors related to the Program.

The national context is characterized by the development of the socio-environmental Baseline and the knowledge of the national regulatory framework based on the perspective of sustainable development. The systemic perspective of sustainable development postulates that development results from balanced management between the environmental, social, economic, and institutional dimensions where the following functions:

- The environmental subsystem guarantees the environmental sustainability of the development.
- The social subsystem has special priority since it contains the end of development, that is, improving the quality of life of human beings.
- The economic subsystem includes production, trade, goods and services, infrastructure, and settlements.
- The institutional subsystem seeks to promote and control, under laws, regulations, and instruments, the organization of society toward the proposed development objective.

- **Phase 2: Analysis of Strategic Options**

The Analysis of Strategic Options is an essential part of SESA and focuses on applying strategic analysis tools to guide decision-making under the following activities:

- Characterization of the Strategic Reference Framework comprises the scope of the plans, policies, and programs (PPP) in which the Program is evaluated.
- Definition of the strategic objectives: This activity includes identifying, discussing, and analyzing those critical issues to achieve the Program's Strategic Objective.
- Identifying the main socio-environmental aspects is based on the national context and the analytical framework of the different systems, resulting in the main aspects of the problem that characterize the environment in which the Program will be developed.
- Stablish of Strategic Options and critical factors for decision

- **Phase 3: Assessment of Impacts and Risks**

The methodological process for the environmental and social evaluation is based on a matrix evaluation and works in interdisciplinary groups. The matrix includes the definition of the actions or projects of the program and the environmental components that may have a potential impact or risk. The analysis is carried out for the Execution, Operation,/Closing stages. Below is an overview of each step:

1. Identification of environmental factors: The critical environmental factors were identified in Chapter 6, taking the strategic reference framework and the environmental and socioeconomic characterization as a starting point.

2. Socio-environmental impact interaction matrix: The identification of impacts was carried out by preparing an interaction matrix whose entries in the columns correspond to the projects or actions of the Program with the potential to cause a change or impact, either positive or negative. The interaction between the actions or projects and the environmental factors according to the development stage of the Program makes it possible to identify and describe the perceived changes. Each interaction is assigned a code consisting of a consecutive letter that identifies the project activities and the following number that identifies the environmental factor.

3. Identification and characterization of impacts: The identification and characterization of the impacts allowed them to be classified into direct, indirect, and cumulative impacts under the following definitions: i) Direct Environmental Impact refers to that impact that is appreciated immediately or in a short period; ii) Indirect environmental impact refers to the effect's perceptible after a long time; iii) Cumulative Environmental Impact is an impact whose effect results from past impacts or what is happening in the present.

- **Phase 4: Socio-environmental Management System (ESMS)**

The ESMS[35] is oriented toward systematically managing the program´s environmental and social performance throughout its lifecycle. The ESMS will incorporate the following elements: i) project-specific environmental and social framework: ii) Identification of risks and impacts, iii) Management programs; iv) Organizational capacity and competency; v) Emergency preparedness and response; vi) Stakeholders engagement and viii) monitoring and evaluation. After formulating the SGAS as part of the methodology, it is necessary to develop an activity related to public consultation with stakeholders to validate the results of the analysis of impacts, risks, and socio-environmental measures.

2.2.2. Premises and limitations of the study

a. Premises

P1. The socio-environmental evaluation corresponds to the evaluation of Components I and II operation projects BL-L1042, which establishes actions aimed at contributing to the sustainable growth of the country's blue economy and improving fishermen's income. The evaluation does not apply to specific works or physical activities to be carried out by each Program beneficiary since the particular actions must comply with national environmental regulations.

b. Limitations

L1. One of the main limitations of this study is the lack of updated statistical information since most of the secondary information records are outdated, and the available information is not detailed for the fishing sector.

L2. The maps presented in the document correspond to secondary information because, at the level of Geographic Information Systems, no free-use digital files were found, which did not allow better spatialization of the data.

[35] IDB, 2020. Environmental and Social Policy Framework

CHAPTER 3: PROGRAM DESCRIPTION

CHAPTER 3. Program Description

The information prepared by the IDB 2022[36] corresponds to the justification, objectives, and scope of the Program transcribed below.

3.1. Background[37]

The Government of Belize (GoB) requested the Bank's support through a Specific Investment Loan to promote sustainable growth-enabling investments that would enhance the competitiveness of productive sectors and sub-sectors in the blue economy, with an initial focus on offshore marine fisheries.

Pre-pandemic, Belize witnessed years of slow economic growth, stagnant per capita income, rising poverty rates, and limited progress in social development indicators[38]. Belize's economy is highly concentrated in two sectors, tourism, and agriculture, which considerably heightens the country's vulnerability to domestic and international shocks, such as natural-hazard-driven disasters and the COVID-19 pandemic. In 2020, tourism arrivals plummeted by 72%, significantly impacting the rest of the economy, as tourism comprises around 60% of all foreign exchange earnings and 40% of GDP[39]. A sharp decline in fiscal revenues and increased expenditures related to the health and economic crises also exacerbated an already fragile fiscal situation. GDP fell by 13.1%[40] in 2020, with employment rising to 13.7% and the labor force shrinking to 55%. The GoB implemented a fiscal consolidation plan aligned with IMF recommendations[41] which improved the primary and overall balances from - 8.5% and -10.3% of GDP in 2020 to 1.7% and -0.7% of GDP in 2021, respectively.

The demonstrated vulnerability of the country's main productive sectors necessitates a diversification strategy to increase resilience and enhance sustainable and inclusive economic growth. In addition to promoting more competitive and sustainable models within established critical economic sectors, Belize must also enhance the business environment to develop promising and upcoming sectors[42]. In 2020, the Government established a new Ministry of Blue Economy and Civil Aviation (MBECA) with the mission to "increase the gross domestic product through a thriving Blue Economy (BE) development pathway that is harmonized, innovative, and socially just, supported by a robust, science-based management region of our aquatic resources and spaces to improve the livelihood of all Belizeans[43]." MBECA is presently finalizing its policy instruments, including a Maritime Economy Plan (MEP)[44] and Belize Blue Economy Development Policy, Strategy, and Implementation Plan (BBEDPSIP) 2022-2027 for this purpose. Eight pillars underpin the MEP plan focusing on aquaculture, blue carbon, renewable

[36] IDB, 2022. Project Profile Promoting Sustainable Growth in the Blue Economy Program (BL-L1042).
[37] IDB, 2022. Project Profile Promoting Sustainable Growth in the Blue Economy Program (BL-L1042).
[38] IDB Group Country Strategy with Belize 2022-2025 (2021).
[39] MF Article IV 2021.
[40] Statistical Institute Belize, 2021.
[41] IMF Staff Country Report (2021).
[42] IDB (2020): Developing a Sustainable and Resilient Belize.
[43] Government of Belize Press Release #333 June 15, 2021.
[44] Draft Maritime Economy Plan – Belize (2021) jointly developed between the Government of Belize and the Commonwealth Marine Economies Program supported by UK AID.

energy, fisheries, marine protection/management, maritime transport, shipping, ocean and coastal tourism, and marine research and development.

3.2. Objectives[45]

The general objective of the Program is to improve the income generation capacity of artisanal fisherfolks and to maintain export levels of fisheries products while ensuring the sustainable use of marine resources. The specific objectives of the Program are:

- To enhance the Government's ability to manage the key species in the fisheries sector sustainably.
- To promote the adoption of sustainable technologies and best fishing practices by artisanal fisherfolks.

The Program will be inserted within the framework of the Blue Economy, which promotes economic growth, social inclusion, and the improvement of livelihoods, in addition to seeking to guarantee the environmental sustainability of the oceans and coastal zones. It will be structured around the following components:

➢ Beneficiaries of the Program[46]

In the case of Component 1, the beneficiaries are government institutions, specifically MBECA and the Belizean Fisheries Department. Component 1 will benefit fisherfolk directly through the FDs new website and the new e-catch log program. For the former, fisherfolk can obtain a license or permit through a new e-services platform. In contrast, for the latter, fisherfolk will be able to report their fishing landings through a new cellphone-based application instead of reporting it through paper. Moreover, the component will indirectly benefit all those working in the fisheries sector through the updated Management Plans for lobster and conch, contributing to the sustainable exploitation of these species. Component 2 will benefit 200 artisanal commercial fisherfolks (approximately 1,000 people) through the matching grants program. Suppose the outcome of the new stock assessment for finfish and pelagic facilitates the possibility of opening these new fisheries. In that case, this component will provide an additional source of income for those able to do deep slope fishing.

3.3. Components[47]

The operation will finance two components:

Component 1. Institutional strengthening for the sustainable and resilient management of the fisheries sector (IDB: US$ 4,549,288). To support scientific evidence-based decision-making; better accountability to third parties; and more efficient public services provision at MBECA and the Fisheries Department (FD); it will finance the following:

[45] IDB, 2022. Project Profile Promoting Sustainable Growth in the Blue Economy Program (BL-L1042).
[46] IDB, 2023. POD (BL-L1042).
[47] IDB, 2023. POD (BL-L1042).

Subcomponent 1: Knowledge management for the sustainable development of the finfish fishing industry. It will include (i) Exploratory fishing campaigns in Area 9 to collect data on finfish and (ii) The preliminary assessment of the population of fish resources in Area 9 using results from the exploratory fishing campaigns. The stock assessment will consider the effect of climate change on the biological health of the biomass of the different species targeted by the sector and (iii) A preliminary regulatory framework for finfish fishing in Area 9.

Subcomponent 2: Knowledge management for the sustainable development of the spiny lobster and queen conch fisheries industry. It will include (i) Evaluations (including consideration on CC impact) of the lobster and conch stocks in deep waters (Area 9) to assess the connectivity of these species with their respective populations in shallow waters; (ii) Based on the latter, the update of the respective Management Plans.

Subcomponent 3: Information Management System for the fisheries sector. It will include (i) The creation of an information management system (including hardware, software, personnel, and training to the FD); (ii) the Digitalization of historical (past) fisheries data; (iii) the Development and implementation of a communication and outreach strategy for the program, (iv) Revamping of the FD's website with capabilities to improve service provision (e-platform to request and emit licenses, permits, etc.); and (v) A refrigeration system to support activities related to monitoring and reporting of fish landings.

Component 2. Direct support to artisanal fisherfolk (IDB: US$1,684,072). To support individual or group-based investments in sustainable, environmentally friendly, and climate-smart technologies or equipment, the project will finance a matching grant program. The maximum grant per fisherfolk (or individual cap) will be US$5,000. Fisherfolks will contribute at least 20% of their Individual or Group Business Plan value, either in-kind or cash. Minimum cash contributions (as opposed to in-kind), if any, and possible incentives to encourage higher cash contributions will be defined before the Program's start. The value of the matching grant awarded to each fisherfolk will depend on two factors: innovation and environmental/social sustainability of the business plans submitted.

The number of disbursement tranches and their respective amounts will be defined based on the needs of each Plan. The disbursement of each tranche will be conditional on the successful implementation of a set of pre-defined activities included in each Plan, which will be closely monitored.

The matching grant program will finance technical assistance to all participants: beneficiary fisherfolk will receive tailored technical assistance focused on elaborating and improving their Individual or Group Business Plans and training on best practices in sustainable fisheries for the Belizean context. Those Plans will include (i) An objective, expected results, an action plan with a timeline and a detailed budget (with sources of financing identified), (ii) A Technical Assistance Plan that identifies topics to be covered, a calendar for when the training will take place, and a monitoring and evaluation plan to ensure the plans (Individual or Group-based) are implemented appropriately and on a timely basis. (iii) A list of climate-friendly and sustainable practices and technologies needed to improve angler's efficiency, sustainability, and climate resilience, (iv) A financial analysis to assess the viability of the implementation of the business plan; and (v) A strategy to co-finance the grant (i.e., counterpart contribution). During this process, the technical assistance will also ensure, among other things, that (i) the counterpart

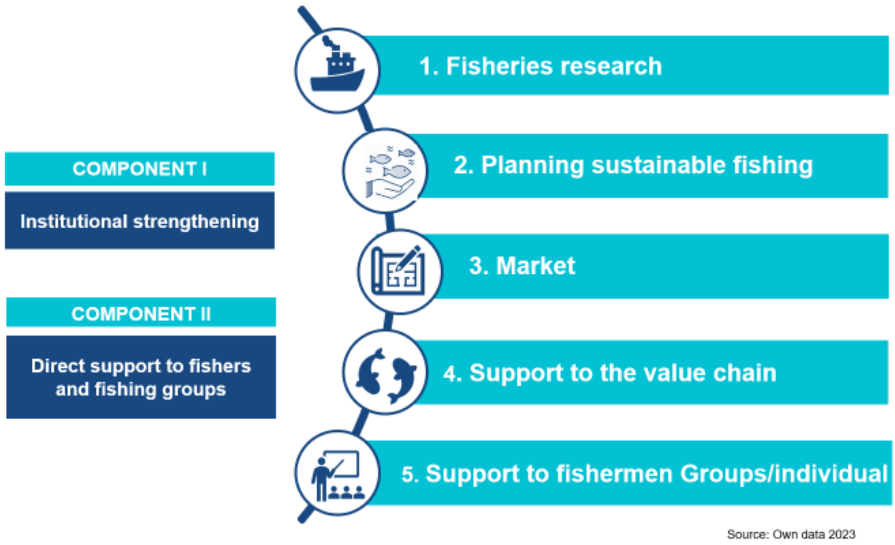
contribution is available, (ii) the technologies included in the Plan are available on the market, and (iii) the Plan complies with national and international regulation and standards (and relevant fishery Management Plans, in particular). In addition, the technical assistance will supervise and oversee this entire process.

Other costs (IDB**: US$766,640).** This category includes administration, monitoring, evaluation, and auditing costs.

3.4. Program Projects

The projects planned to be implemented in the Program were grouped according to their characteristics under a "Project Typology." Figure 1 shows the types of projects defined.

Figure 1. Typology of Projects



1. Fisheries research

This project seeks to support the sustainable development and resilience of the Belizean fishing industry under the following projects:

- Data on finfish collected via exploratory fishing campaigns in Area 9.
- A preliminary stock assessment of finfish resources in Area 9 was conducted using data from exploratory fishing campaigns.

The general aspects of these projects are presented below, highlighting two alternatives for their implementation. Since no decision has been made on which Executing Agency would

implement an option, the analysis considered the two alternatives' general aspects to define the possible risks and impacts.

Alternative 1: Preliminary cost assessment for new fisheries in Belize[48]

a. Fishing methodology

The proposed exploration design is as follows:

Phase 1 shall be performed during the first exploratory fishing trip and should occur at the beginning of each semester. Phase 1 is an exploratory regime where fishing effort is artificially distributed along different fishing blocks (previously reported). The vessel can search and fish in any manner consistent with Belize's conservation measures. Fishing sets based on blocks regularly spaced could be helpful when there was no a priori information about the distribution of the target species. This stratified approach based on fishing blocks has distinct advantages because it allows the concentration of sampling effort into regions of the highest abundance. Since Phase 1 artificially distributes fishing effort over a large spatial area, it is possible that the distribution patterns of target species could be mapped, and the location of any aggregation centers can be defined (e.g., rapid depletion CPUE experiments).

In Phase 2, the vessel is required to deplete several deep-slope areas. The vessel must fish continuously within each local fishing area or deep-slope zone until the average catch has been reduced to a % of its initial value from Phase 1. These depletion experiments occur at the start of the second fishing trip. They are followed by a period of regular operation in areas distinct where exploratory regimes (i.e., depletions experiment) were performed. The period of normal operations continues until the vessel returns to port. For Phase 2, the blocks delineated in the first phase were divided into feasible fishing grounds, and the vessel master is responsible for selecting local fishing areas.

During Phase 3, the vessel must return to the depleted fishing ground during Phase 2 and expend the remaining semi-annual time in proportion to avoid surpassing the % limit point setup during Phase 2. Phase 3 will require a maximum of catch, and after completing the depletion experiments, each vessel can begin operating normally. During normal operations, the vessel should not be necessary to fish in certain places at certain times.

b. Boat type

This alternative uses vessels between 10 and 15m in length (less than 18m) for its analysis, using artisanal fishing gear on the slope substrate.

c. Fishing gear

The fishing gear will depend on the type of fishery to implement. In this alternative, the following are established:

- Finfish: Vertical or horizontal longlines.
- Lobster: Artisanal fishing gear on the slope substrate

48 Quiroz et al. 2023. Preliminary cost assessment for new fisheries in Belize

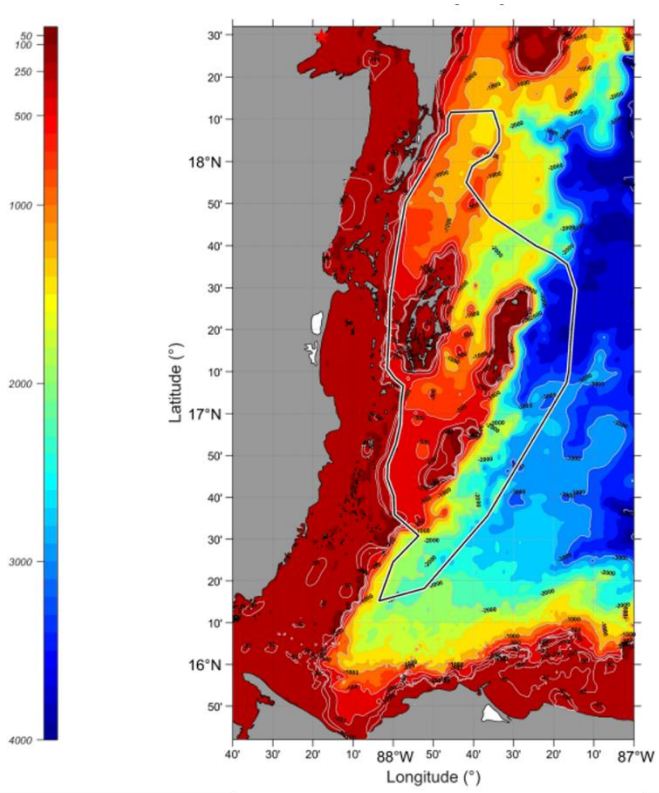
- Conch: Artisanal fishing gear on the slope substrate

d. Route or navigation log

Fish: Due to fishing tactics (vertical or horizontal longline), this alternative calculates middle latitudinal distances (19 transects to the north and south of Area 9) within the Area 9 polygon. Thinking about the navigational characteristics of vessels between 10 and 15 meters in length, fishing hauls could be deployed covering the entire Area 9 as a feasible way to maximize the total possible distance from fishing paths (Figure 2).

- North zone Area 9 — transect: 10 — total distance: 502 km
- South zone Area 9 — transect: 9 — total distance: 445 km
- Longitudinal Area 9 — transect: 20 — total distance: 214 km
- Average travel distance1 to Area 9 — transect: 2 — total distance: 91 km
- Depth-based contour distance: 1,252 km (sum of transect)

Figure 2. Bathymetry of Area 9



Source:Quiroz et al. 2023

Lobster: This alternative assumed that lobster fishing shots could be performed along depth contours where it is viable to obtain lobster. Therefore, fishing tracks around islands' territories, and deep-slope areas were mapped to explore possible seafloor areas at a depth of up to 200 meters (Figure 2).

– Depth-based contour distance: 536 km

Conch: Similar to Lobster criteria, but restringing areas at a depth of up to 100 meters (Figure 2).– Depth-based contour distance: 409 km

Alternative 2: Assessment of potential fishery resources deep water in Belize[49]

a. Fishing methodology

The proposed fishing methodologies differ between one type of fishery and another, according to mobility needs; For example, diving activities necessarily require the boat to move continuously alongside the divers, while in lobster fishing (using trap trains) and fish (using long lines) there are launching and recovery activities of fishing gear. Fishing between which there is a waiting time. In all scenarios, to a greater or lesser degree and with different programming, there are boats whose activity combines two different types of fishing, accommodating the activity according to the case.

b. Boat type

This alternative uses 18 m in length analysis vessels with the necessary mechanical equipment for fishing operations, considering lifting longlines and deceiving the trains.

c. Fishing gear

The fishing gear will depend on the type of fishery to implement. In this alternative, the following are established:

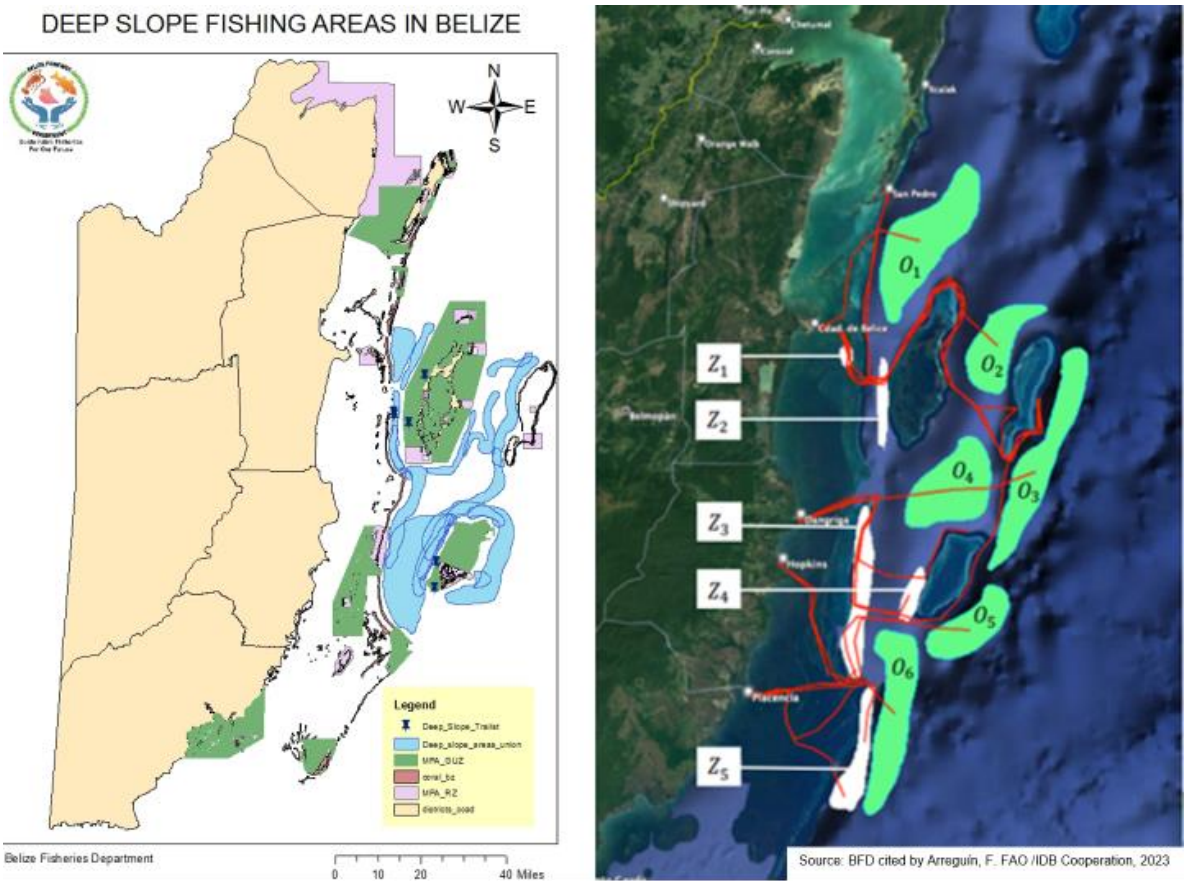
- Pelagic Finfish: longline.
- Lobster: cheat trains
- Conch: Exploit the resource deeper, potentially up to 50 to 60 m. For this purpose, equipment is required professional immersion and, of course, the provision of air for the tanks.

d. Route or navigation log

Based on the potential fishing areas in zone 9 reported as background information (JICA 2012, BFD 2018, Grant 2019b), this alternative built a map locating potential fishing areas for the project, highlighting possible access routes (Figure 3). In this map, tentative areas for oceanic pelagic fish are also proposed, highlighting that these have not yet been explored.

Figure 3. Possible fishing areas

[49] FAO, IDB. 2023. BL-L1042. Evaluación de recursos pesqueros potenciales de aguas profundas en Belice



In this figure, Z1 to Z5 corresponds to the previously recorded areas (reference); 01 to 06 corresponds to marine areas considered convenient to explore. The red lines suggest navigation routes or routes to follow to access the different fishing areas.

2. Planning sustainable fishing

This line aims to provide the tools to organize future actions through evaluating, updating, and validating plans and strategies concerning the fishing sector. It includes the implementation of the following projects:

- Regulatory framework and management plan for finfish fishery in Area 9 developed and validated.
- Data on lobster was collected via exploratory fishing campaigns in Area 9.
- National stock assessment for lobster conducted.
- The lobster management plan has been updated and validated.
- Data on conch collected via exploratory fishing campaigns in Area 9.
- National stock assessment for conch conducted.
- Conch management plan updated and validated.
- Communication and Outreach Strategy for the Program implemented.
- Data management system for the Fisheries Department implemented.
- Blue Economy MRV Framework and Protocols developed.

Due to their characteristics at the level of studies and specific plans, the projects listed above are considered to have positive impacts at the socio-environmental level.

3. Market

- Market feasibility analysis of finfish fishery developed and validated.

Due to its characteristics at the specific studies level, this project does consider to have positive impacts at the socio-environmental level.

4. Support to the value chain

- Refrigeration system to meet sanitary standards acquired and installed.

This project aims to retrofit a system of refrigeration containers with a generator plan to improve the value chain of the fishing industry.

a. Location

This project will be located in Belize City on the site of the Belize Fisheries Department.

b. Equipment Acquisition, Assembly, and installation

Table 1 presents the general characteristics of the refrigeration system

Table 1 General characteristics of refrigeration system

Operations and Maintenance fees	*BZD 1.5k / year in electricity costs, 500 / year in maintenance for project duration
Backup generator	*40 kwh diesel generator; to be used 18 hrs/day in event of sustained outage

Source: MBCA, 2023

The procurement department will carry out the administrative procedure to ensure that the supplied equipment and the company that will carry out its installation comply with what is required at the international level[50], BID standards, and DOE national standards.

5. Support to fisherman groups/individual[51]

- Individual and Business Plans were developed with the support of technical assistance.
- Grants for Individual and Business Plans approved and financed.
- Technical assistance to anglers to implement Individual and Business Plans was provided.

a. Objectives

[50] IFC- World Bank,2007. Environmental, Health, and Safety (EHS) Guidelines
[51] IDB, BL-L1042. Component 2. Technical note. Final version

The projects of Component 2 are expected to promote the adoption of sustainable and climate-friendly fishing technologies and practices through the implementation of Individual and Business Plans, which, in turn, are expected to contribute mainly to:

- Restore pre-Hurricane Lisa production capacity
- Reduce postharvest losses/rejections
- Diversify sources of income (even outside the fishing sector)
- Diversify fishery products.
- Reduce production costs and, in particular, fuel costs.

Other expected results, although more challenging to measure, could include the following:

- Improve the conservation and long-term sustainability of living aquatic resources
- Prevent irreversible or unacceptable damage to the environment caused by inappropriate fishing practices
- Enhance the social and economic benefits derived from fishing
- Improve the safety and working conditions of fishing workers

b. Location

The projects may be located in i) The maritime zone of Belize, specifically in the Zones of the Managed Access Program (the territorial use rights regime for fishermen known as TURFs-Zones 1 to 9); ii) In any of the Districts of Corozal, Orange Walk, Belize, Cayo, Stann Creek y Toledo.

c. Fishing technologies

FAO defines fishing technologies as “equipment and practices for finding, harvesting, handling, processing and distributing aquatic resources and their products.” Individual and Business Plans, which will be elaborated with the support of the Program, will include new technologies and the associated training for their acceptable use. Preliminary eligibility criteria for technologies to be included in Individual and Business Plans include the following:

- Being climate-friendly and climate-resilient
- Sustainability: (i) compliance with relevant management plans and (ii) does not increase fishing effort in the absence of new rigorous evidence suggesting that it can be done in a viable manner
- Contribute to the implementation of approved Individual and Business Plans

Based on this, the following positive list of eligible technologies has been pre-identified:

- Small post-harvest conservation technologies improve product quality and sanitary and food safety, such as coolers (or iceboxes) and crushed ice makers.
- Fuel-efficient engines, as well as engine parts, were destroyed or damaged by Hurricane Lisa.
- Fishing boats/vessels, as well as boat parts, for boats, destroyed or damaged by Hurricane Lisa.
- Productive fishing gear destroyed or damaged by Hurricane Lisa.
- Non-productive fishing gear to improve regulatory compliance.
- Gear for safety at sea, such as handheld radios (for inter-vessel communication), life vests, waterproof pockets for phones and documents, first aid kits, etc.

- Technologies to provide complementary income to fishers:

  - Within the fishery sector (in conservation and transformation, for instance): small ice plants, cold storage services, technologies to add value to fishery products beyond the sole delivery of whole and gutted fish, etc.
  - Outside the fishery sector: outfitting fishing boats to carry tourists, agricultural technologies, etc.

It is worth reminding here that, depending on the outcome of the new stock assessments of key species to be conducted as part of Component 1 and on ensuing resource management recommendations, Component 2 might also come to provide support to fishers to invest in productive gear and equipment (including boats and engines), that was neither damaged nor destroyed by Hurricane Lisa, to target existing and new fisheries (e.g., deep slope fishery).

A negative list of non-eligible technologies will have to be drafted before the start of the Program. It will include any investment that could negatively affect the fishery's sustainability, such as purchasing fishing gear that can be considered nonselective and predatory.

d. The Matching Grant System

The following set of critical preliminary principles structuring the matching grant system has been set out:

- **Many beneficiaries:** At least 300 commercial fishers will benefit from the matching grant system and will be distributed as follows: 100 in the second year of Program execution (phase 1), 100 in the third (phase 2), and 100 in the fourth (phase 3). If the outcome of the new stock assessments opens the possibility of targeting new fisheries such as finfish, the matching grant system might only provide direct support to anglers interested in this new resource in phase 3. However, the final breakdown of grants will depend on the identified demand. Fisherfolks will also be encouraged to organize and team up to receive a joint grant based on their caps (see below). Indeed, as shown in the literature, collective investments via fishers' groups entail significant benefits such as risk diversification and economies of scale (Abdulsalam, 2013 cited).

- **Program contribution:** The Program's contribution will range from 10% to 50% of each Individual or Business Plan value's total value. The more environmentally sustainable and innovative each Plan is, the higher the Program contribution's share will be. In terms of US$ value, the Program's maximum contribution per fisher (or individual cap) will be US$ 5,000. On the other hand, the Program's minimum contribution will be defined in the operations manual and consultation with the Government of Belize, based, among other things, on (i) the final positive list of technologies and (ii) cost-effectiveness factors related to the provision of technical assistance.

- **Counterpart (or fisher) contribution**: Fishers will contribute at least 50% of their Individual or Business Plan value, either in-kind or in cash. Minimum cash contributions (as opposed to in-kind), if any, and possible incentives to encourage higher cash contributions will be defined before the start of the Program.

- **Disbursements:** The matching grant system will provide anglers with cash. The number of disbursement tranches and their respective weights will be defined based on the needs of each Plan. The disbursement of each tranche will be conditional on the successful implementation of a set of pre-defined activities included in each Plan. The technical assistance will supervise and oversee this entire process.

3.4. Socio-environmental Area of influence

A project's socio-environmental Area of influence determines by the spatial Area where the present and potential impacts are manifested. These impacts result from the interaction between the execution and operation of project activities and the socio-environmental components. The socio-environmental areas of influence established by this consultancy do present below, which are the result of the analysis and identification of the potential socio-environmental impacts and risks that the projects of the BL-L1042 Program may cause on the different media. The influence areas are:

Direct Area of Influence (DAI): This Area defines within the limits of the physical space where the project activities affect the socio-environmental components of the Area, considering the direct impacts, including those of greater or lesser magnitude and intensity.

Indirect Area of Influence (IAD): This Area is the physical space where the project could generate indirect impacts, which occur in a different space from where the action that generated the socio-environmental impact occurred.

▪ Direct Area of Influence (DAI)

The criteria for the delimitation of the Area of Direct Influence (DAI) do present below:

- **Criterion 1: Research priority area**

Belize has fisheries management/conservation measures that include an extensive system of Marine Protected Areas (MPAs), some of which are co-managed by Community-Based Organizations (CBOs) and Non-Governmental Organizations (NGOs) with oversight from the Government. This management includes the establishment of nine marine reserves, the protection[52]. The research priority area of the Program is MAPs number 9 (Figure 4).

[52] IDB, Project Profile (BL-L1042), 2022. Promoting Sustainable Growth in the Blue Economy Program (BL-L1042).

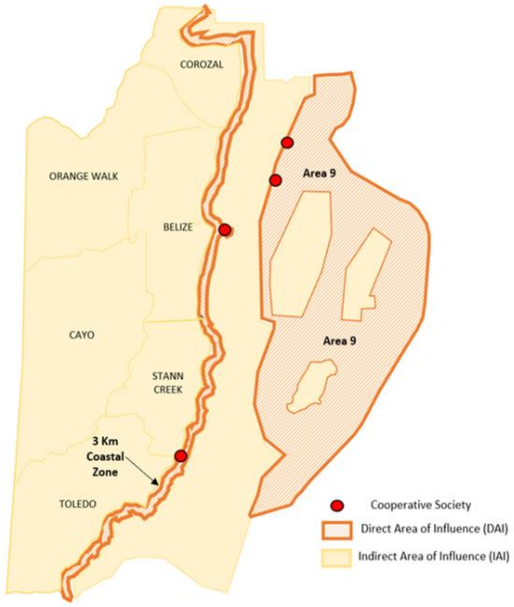
The information from this planning unit makes it possible to identify the area limits on which Program activities may generate direct impacts.

- **Criterion 2: Location of infrastructure**

This criterion corresponds to the geographic space where the Program will develop the infrastructure could be located.

The importance of the location of the infrastructure lies in the fact that it will function in distribution centers for the sale of products or sources of services for the development of fishing activities. According to the Coastal Management Plan (2016), this zone covers all the coastal communities which have the following characteristics: (i) the action of the tides influences them, (ii) they are contiguous at sea level, (iii) they have a saline influence; (iv) facilitate the migration of fauna between freshwater and saltwater (Figure 4).

Figure 4. Areas of socio-environmental influence



Source: Own elaboration, 2022.

- **Indirect Area of Influence (IAI)**

The delimitation of the Indirect Area of Influence (IAI) has the following criterion:

- **Criterion 1: Coastal Zone**

This zone corresponds to the geographical space that includes the eight zones established by the Coastal Management Plan (2016) close to zone 9. This Area consists of those zones contiguous to the Area of direct influence on which indirect impacts due to project activities could be evidenced. (Figure 4).

- **Criterion 2: Belize's Districts**

Belize's political-administrative districts are considered an area of indirect influence (Figure 4). This Area has indirect socioeconomic effects derived from the fishing activity at the country's economic level and the indirect support of the families of fishermen who live inland. The districts are Corozal, Orange Walk, Belize, Cayo, Stann Creek, and Toledo.

CHAPTER 4: REGULATORY FRAMEWORK

CHAPTER 4. Regulatory Framework

The Program for the Promotion of Sustainable Growth in the Blue Economy is governed by the regulatory framework of the National Constitution of Belize, its laws, and regulations. The Constitution is the supreme law under Article 2 and takes precedence over subnational or sectoral laws and regulations. The following is Belize's regulatory and institutional framework related to the fishing sector and socio-environmental aspects related to the Program.

4.1. Regulatory Framework applicable to Program

➢ International Agreement

Belize is a party to the three principal global fisheries treaties: the 1982 United Nations Convention on the Law of the Sea, the 1995 UN Fish Stocks Agreement, and the FAO Compliance Agreement[53]. Likewise, Belize is a party to many international agreements and participates in various regional and international organizations about fisheries management[54], for which it has adopted necessary regulations under international treaties and agreements within which the following stand out[55]:

- Convention on Biological Diversity (CBD)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- United Nations Convention on the Law of the Sea (UNCLOS)
- Ramsar Convention on Wetlands of International Importance (RAMSAR)
- Code of Conduct for Responsible Fisheries(FAO).
- Caribbean Regional Fisheries Mechanism (CRFM)
- Central America Fisheries and Aquaculture Organisation (OSPESCA)
- Centre for Marketing Information and Advisory Services for Fishery Products in Latin America and the Caribbean (INFOPESCA)
- Inter-American Tropical Tuna Commission (IATTC)
- International Commission for the Conservation of Atlantic Tunas (ICCAT)

53 USAID, 2011. Belize National Fisheries Act Analysis.
54 UNCTAD and DOALOS, 2019. Draft report. Oceans Economy and Trade Strategy: Belize
55 CANARI, 2021. Institutional Analysis of enabling conditions for ecosystem stewardship in the fisheries sector of Belize.

- International Whaling Commission (IWC)
- Western Central Atlantic Fishery Commission (WECAFC)

Likewise, Belize is part of several international institutions and agreements to regulate and monitor international trade related to fishing. Below are some of the relevant agreements[56]:

- United Nations Conference on Trade and Development (UNCTAD)
- World Trade Organization (WTO)
- Caribbean Community (CARICOM)
- CARIFORUM-European Union Economic Partnership Agreement (EPA)
- African, Caribbean, and Pacific Group of States (ACP)
- Central American Integration System (SICA)
- FAO Code of Conduct for Responsible Fisheries (1995).
- MARPOL Convention and Annexes I,II,III,IV,V & VI.
- CITES Belize Trade in Endangered Species Bill 2022 (July 11, Final House Version).
- Belize is part of the OSPESCA and OLDEPESCA agreements regarding regional cooperation and the formulation of agreements, standards, and practices that include preparing fishing plans for resources such as conch.
- International Maritime Organization:

  Belize is a member of IMO and has become a party to the following Conventions: Safety of Life at Sea, 1974, as amended; Loadlines, 1966 and amendments; Prevention of Pollution by Ships, 1973 as modified by the Protocol of 1978, Tonnage Measurements of Ships, 1969, Civil Liability for Oil Pollution Damage, 1969, Establishment of an International Fund for Compensation for Oil Pollution Damage 1971, 1976 and 1992 Protocols, Civil Liability Convention (CLC) 1969, 1976, 1992 Protocols, Regulations for Preventing Collisions at Sea, 1972, Limitation of Liability for Maritime Claims, 1976, Standards of Training, Certification and Watchkeeping, 1978/1995, SOLAS Protocol 1988, MARPOL Protocol 1997, LOADLINES Protocol of 1988.

Table 2 shows the relevant International agreements applicable to the socio-environmental assessment with a brief description.

[56] UNCTAD, 2020. Oceans Economy and Trade Strategy: Belize Marine Fisheries and Seafood Processing

Table 2. International Agreements

Reference	Date	Level of Goverment	Key points	Description	Requirements applicable to the Project	Responsible Authority
INTERNATIONAL AGREEMENTS						
Paris Agreement (Framework Convention on Climate Change)	22-Apr-16	National	The mitigation or reduction of CO2 emissions, where governments made national action plans according to the situation of each country and its economic capacities to contribute to the main objective. Transparency and global balance. Here it is sought that countries report on their progress and meet every five years to set more ambitious objectives. The adaptation of governments, at which point it is intended to strengthen the capacity of societies to face the consequences of climate change.	It aims to keep global temperature rise below 2 °C, increasing resilience to the adverse effects of climate change and promoting climate resilience and low-carbon development.	The project aligns with this agreement with the implementation of climate resilience/decarbonization actions and environmental sustainability.	Minister of Agriculture, Food Security and Entrepreneurship, Minister of Tourism and Diaspora Relations.
United Nations Framework Convention on Climate Change..	31-Oct-94	National	It provides a general framework for intergovernmental efforts to address the challenges caused by climate change	The United Nations Framework Convention on Climate Change (UNFCCC) aims to stabilize greenhouse gas concentrations in the atmosphere to combat climate change.	The project will develop activities aimed at protecting resources and supporting resilience efforts to climate change.	Ministry of Agriculture, Food Security and Entrepreneurship, Ministry of Tourism and Diaspora Relations.
Convention on International Trade in Endangered Species of Wild Fauna and Flora.	19-Aug-86	National	Regulation of trade in species specimens. Permits and certificates Exemptions and other special trade-related provisions Actions to be taken by the Parties Administrative and Scientific Authorities Trade with States not parties to the Convention.	The convention aimed at ensuring that international trade in specimens of wild animals and plants does not constitute a threat to their survival.	The project will develop activities in the fisheries sector following the indications of protection of national species, and avoid trade in endangered species.	Ministry of Agriculture, Food Security, Entrepreneurship, Tourism, and Diaspora Relations.
Vienna Convention for the Protection of the Ozone Layer.	6-Jun-97	National	Rights and obligations of the parties. Actions in case of non-compliance. Basic principle of good faith Autonomy of the will of the parties. Reasonableness of the behavior of the parties.	The Convention aims to encourage Parties to promote cooperation through systematic observations, research and exchange of information on the impact of human activities on the ozone layer and to adopt legislative or administrative measures against activities that may affect the ozone layer	The Project will follow the recommendations of the agreement to avoid the depletion of the ozone layer	Ministry of Agriculture, Food Security and Entrepreneurship, Ministry of Tourism and Diaspora Relations.
Convention on Biological Diversity.	30-Dec-93	National	Conservation of biological diversity; The sustainable use of components of biological diversity. The fair and equitable sharing of benefits arising from using genetic resources.	The convention on Biological Diversity (CBD) is the first global agreement on the conservation and sustainable use of biological diversity.	The Project will seek the conservation of biological diversity through sustainable use.	Ministry of Agriculture, Food Security and Entrepreneurship, Ministry of Tourism and Diaspora Relations.
Cartagena Protocol on Biosafety to the Convention on Biological Diversity.	11-Sep-03	National	Focused specifically on the transboundary movement of LMOs (living modified organisms) promoting biosafety by establishing standards and procedures that allow the safe transfer, handling and use of LMOs.	The Protocol on Specially Protected Areas and Wildlife (SPAW) is dedicated to the protection of biodiversity. It provides a single legal framework for the conservation of regional biodiversity. The SPAW Protocol is also recognized as an important tool for achieving the objectives of the global agreement, such as the Convention on Biological Diversity (CBD) or the Ramsar Convention. Other important regional initiatives have been launched under SPAW auspices, namely the strengthening of protected areas and the conservation of keystone species, with the participation and involvement of all stakeholders (governments, NGOs, local	The Project will follow the Cartagena protocol, avoiding the misuse, handling and transfer of living organisms.	Ministry of Blue Economy and Civil Aviation
Inter-American Convention for the Protection and Conservation of Sea Turtles.	30-Dec-93	National	Conservation and protection of sea turtles. Recovery of sea turtle populations and the habitats on which they depend.	The Convention addresses the need to implement harmonious measures among nations, multilateral coordination of conservation and protection actions, and supervision of the implementation of a regional agenda that allows the recovery of these species.	The Project will seek the conservation and protection of sea turtles, following the protocol procedure.	Ministry of Blue Economy and Civil Aviation

Source: Own data compiled using information from UNCTAD (2020), CANARI (2021), and USAID (2011).

➢ Regulatory framework of fisheries

The Belize Department of Fisheries (BDF) monitors the fishing sector and seafood processing. In the mid-1980s, the Fisheries Administration, the predecessor of the BFD, realized that fisheries were collapsing around the world due to overexploitation, poor management strategies, habitat destruction, and climate change, and, therefore, decided that fisheries management in Belize should incorporate an ecosystem management approach by establishing a territorial use right in fisheries regime for all artisanal fishers in Belize.[57]

The Managed Access program began in early 2008 with two pilot sites in the Glovers Marine Reserve on Glover Reef Atoll and the Honduran Marine Reserve Port in the south seas off Punta Pueblo Gordo. Management of these pilot sites granted access to fishing within the general use zone or marine reserve fishing areas to customary or "traditional" users by incentivizing anglers to be good stewards of marine resources and ensuring that they are the beneficiaries of sustainable management.

In 2009, Belize began reforming fisheries practices and including fisherfolk in management decisions. The Managed Access (MA) Program was implemented in 2011 as a Territorial User Right for Fisheries (TURF), where fishermen under a license had access and extraction rights to fish in selected areas. This MA program spanned over a decade of planning and involved stakeholders, including the Belizean Government, the Environmental Defense Fund (EDF), and Belizean non-governmental organizations (NGOs)[58]. Following a preliminary assessment of documented declines in illegal fishing and increased reported catches (N.Catzim, Z Walter, 2013 cited by Alves Catherine et al. 2022), the Belizean government and partner NGOs began a national campaign in 2014 to educate fishers and the public about the proposed national expansion of MA[59].

In 2016, the Department transitioned from an open-access fishery to implementing the Managed Access Program (the regime of territorial use rights in fishers known as TURFs). This regime aims to empower traditional fishers by enabling them to participate and contribute to managing fishing areas. Divided into seven principal components, the new regime was developed in response to illegal fishing, the decline in landings, and the increasing number of fishers in Belize[60]. The Managed Access program was implemented nationwide across Belize, adding seven fishing areas to the pre-existing two pilot sites (Area 8:Glovers Marine Reserve and Area 5: Honduran Marine Reserve Port)[61]. The territorial sea is now divided into eight closed fishing areas and a ninth area open for deep slope fishing where fishers can register for two areas[62]. Within the nine (9) TURFs, the area of interest for the Program is Area 9, which in turn contains the marine reserves of South Water Caye (Area 7), Glover's Reef (Area 8), and Turneffe Atoll (Area 6).

[57] UNCTAD, 2020. Oceans Economy and Trade Strategy: Belize Marine Fisheries and Seafood Processing
[58] Alves Catherine et al. (2022). Fisher's perceptions of Belize's Managed Access program reveal overall support but a need for improved enforcement
[59] Alves Catherine et al. (2022). Fisher's perceptions of Belize's Managed Access program reveal overall support but a need for improved enforcement
[60] UNCTAD, 2020. Oceans Economy and Trade Strategy: Belize Marine Fisheries and Seafood Processing
[61] Alves Catherine et al. (2022). Fisher's perceptions of Belize's Managed Access program reveal overall support but a need for improved enforcement
[62] UNCTAD, 2020. Oceans Economy and Trade Strategy: Belize Marine Fisheries and Seafood Processing

The legal framework for sustainable marine fishing in Belize is the Fisheries Resources Law No. 7 of 2020. This Law details the management provisions for commercial and subsistence fishing in inland waters, territorial seas, and Exclusive Economic Zones (EEZs) of Belize through licenses granted by the Fisheries Administrator and validating licenses for fishing areas under the system of managed access areas. Although the Fish Resources Act of 2020 repealed the Fisheries Act of 2003, some statutes and regulations related to species regulation (Part II of the Fisheries Regulations) refer to the criteria for fishing certain species in Belizean waters. Focus species in the seafood processing sector (lobster and queen conch) have criteria related to size limits, gear restriction, seasons, and total allowable catch[63].

- Legal framework for updating management plans and regulation of fishing sites

  - Declaration of fishing zones: Fisheries Act and Regulation Chapter 210 of the Laws of Belize Revised Edition 2000-2003, under the provisions made following Statutory Instrument number 54 of 2012 (Regulation 24 A (1)).
  - Sharks and Lobster Amendment Regulations Statutory Instrument No. 128 of 2021.
  - Statutory Instrument No. 69 of 2022 Fisheries Resources (High Protection for Biodiversity Marine Reserves) Order, 2022.
  - Statutory Instrument No. 70 of 2022 Fisheries (South Water Caye Marine Reserve) (Amendment), Order, 2022.
  - Statutory Instrument No. 71 of 2022 Fisheries (Turneffe Atoll Marine Reserve) (Amendment), Order, 2022.
  - Statutory Instrument No. 72 of 2022 Forests (South Water Caye Forest Reserve, Sapodilla Cayes Forest Reserve, and Bacalar Chico Forest Reserve) Order, 2022.
  - Statutory Instrument No. 73 of 2022 Fisheries Resources (High Protection For Biodiversity Marine Reserves) Regulations, 2022.
  - Statutory Instrument No. 74 of 2022 Fisheries (South Water Caye Marine Reserve) (Amendment) Regulations, 2022.
  - Statutory Instrument No. 75 of 2022 Fisheries (Turneffe Atoll Marine Reserve) (Amendment) Regulations, 2022.
  - Statutory Instrument No.78 of 2011 about the use of nets and traps.

- Exporting fisheries

Concerning exporting fisheries and seafood products, section 20(1) of the Fisheries Resources Act 2020 states that a person or entity wishing to export, attempting to export, or purchasing to

[63] UNCTAD, 2020. Oceans Economy and Trade Strategy: Belize Marine Fisheries and Seafood Processing

export any fish must be the holder of a valid fish exporter's license. (Order 2 of the Fish -Export Duty- Order) (UNCTAD, 2020).

The Fisheries Regulations[64] part IV outlines regulations about the processing of fish and fish products, including providing for quality assurance (section II); labeling requirements (section III); Construction of equipment for fish processing establishments (section IV); and operating requirements (section V) (UNCTAD, 2020). Below are the most relevant aspects regarding sessions IV and V of this regulation.

- **Section IV: Construction of Equipment for fish Processing:**

The regulation establishes guidelines related to structures used by fishing activities, such as floor surfaces, Drains, Wall covers, Ventilation, Space free of cracks, Windows with meshes, Automatic closing doors, Sanitary sinks, Sanitary water, Disinfection of protective equipment, Skinning boards, non-corrosive materials, use of metal frames, construction of tables, containers for preparing fish, storage of giblets, channels for transporting fish, sanitary facilities, among others.

- **Section V: Operating Requirements**

This section establishment topics related to the processing of fish, Ice, Food handler's certificate, Washing of hands, No nail polish, Disinfection of hand coverings, overalls, waterproof garments, Cleaning, Insect control, etc.

Table 3 shows the relevant legal framework for the fisheries sector applicable to the socio-environmental assessment with a brief description.

[64] Chapter 210, Fisheries regulations. 2003.

Table 3. Laws and Regulations for the Fisheries Sector

Reference	Date	Level of Goverment	Key points	Description	Requirements applicable to the Project	Responsible Authority
FISHERIES SECTOR						
Fisheries Resources Act (2020)		National	Establish the Fisheries Council. Promotes the conservation, management, and development of fisheries. Declaration of fishery areas and marine and inland water reserves. Establishes the requirements for Fishing Licenses and Conditions. Establish regulations for scientific research, trial fishing operations.	Fishing must follow the regulations of the law to be a rational and sustainable use of fishery resources.	The project will develop activities in the fishing sector, following the guidelines for use and fishing prohibitions established by this law.	Ministry of Blue Economy and Civil Aviation
Fisheries Act, Chapter 210	Revised Edition 2000	National	It establishes the prohibitions and uses of fishing in Belizean waters. Issues licenses for vessels fishing on the high seas. It creates prohibitions for commercial fishing without a boat license. It establishes prohibitions for commercial fishing without a personal request. Regulations to the processing of fish and fish products including providing for quality assurance Labeling requirements. Construction of and equipment for fish processing establishments. Operating requirements	Fishing must follow the regulations of the law to be a rational and sustainable use of fishery resources.	The project will develop activities in the fishing sector, following the guidelines for use and fishing prohibitions established by this law. Fishing restrictions are regulated by: Size, weight, and dimensions of fishing. Export restrictions on fishing by size and fisheries. Ban on fishing areas and times. Issuance of licenses for the processing of fishery products.	Ministry of Blue Economy and Civil Aviation
Maritime Areas Act, Chapter 11	Edition, 2001	National	It defines the territorial sea and exclusive economic zones of Belize. It establishes sovereign rights and jurisdiction over the conservation and management of resources found in the waters adjacent to the seabed, on the seabed, and in the subsoil.	All developed projects must comply with the indications of management and conservation of the seabed and adjacent areas, according to this Law.	The activities to be developed by the project must take into account fisheries management on deep and pelagic oceanic slopes.	
Coastal Zone Management Act, chapter. 329, Section 3	Revised Edition 2000	National	It establishes the Coastal Zone Management Authority and the Institute for Coastal Zone Management. It coordinates actions related to the use and conservation of marine resources. It stimulates research and protection of marine resources for the economic and social benefit of the people of Belize.	In coastal areas, all developed projects must seek the economic benefit of the region and follow the guidelines of this Law, as they refer to the protection and conservation of marine resources.	The activities developed by the Project must follow the regulations of the Coastal Zone Management Authority for the conservation and protection of marine resources.	
Fishery Resources Act No. 7	Edition 2020	National	Defines policies aimed at greater group participation. Defines managed access and implementation of Regulation of sport and commercial fishing. Establish marine reserve areas. Establishes the requirements for the issuance and conditions of the Fishing License.	The developed fishing projects must comply with the fishing regulations regarding prohibited methods and species of this Law. Fishermen must obtain licenses to carry out this activity.	The activities to be developed in the project must consider the guidelines of this Law.	Ministry of Blue Economy and Civil Aviation
Fishery Resources (Gillnet Prohibition) Regulations, SI 158	Edition 2020	National	Prohibition of gill nets. Ban on possession of gill nets. Prohibition of selling or buying fish caught by the gillnetting method. Anyone who contravenes this regulation commits a crime and is subject to a fine or imprisonment.	This regulation states that no person shall use a gillnet of any mesh size or length to catch fish in fishing waters.	In the actions to implement the Project, the gillnet method may not be used for fish catch.	Ministry of Blue Economy and Civil Aviation
Deep Sea Fishing No. 210:01	Edition 2003	National	Regulation for uses and prohibitions of fishing on the high seas. Issuance of fishing licenses.	Regulations are established on fishing bans and uses in Belizean waters. Issues licenses to vessels for fishing on the high seas.	The project must take into account this law in case of developing activities on the high seas, in the process of transition from artisanal fishing to fishing for marine fish	Ministry of Blue Economy and Civil Aviation
Trade in Endangered Species (CITES)	BILL, 2022	National	CITES provisions on Trade in Endangered Species of Wild Fauna and Flora; promote management, conservation, and protection of threatened resources and endangered species; and arrange the matters related to it or incidental to it.	Regulations are established Management Authority, Scientific Authority, Trade in Endangered CITES listed Species, Special provisions and exemptions, Verification, clearance, and enforcement.	The project must take this law into account since the activities to be developed are directly related to the Queen Conch species that is in Annex II of CITES.	Ministry of Blue Economy and Civil Aviation

Source: Own data compiled using information from UNCTAD (2020), CANARI (2021), USAID (2011), Act 210, and 2020

➢ Regulatory framework of socio-environmental aspects

The socio-environmental regulatory framework related to the Program is established under the following laws:

- Protected Area Conservation Trust Act, Cap. 218. The Belize Barrier Reef Reserve System (BBRRS), inscribed as a UNESCO (20 COM VI) World Heritage Site in 1996, is comprised of seven protected areas; Bacalar Chico National Park and Marine Reserve, Blue Hole Natural Monument, Half Moon Caye Natural Monument, South Water Caye Marine Reserve, Glover's Reef Marine Reserve, Laughing Bird Caye National Park and Sapodilla Cayes Marine Reserve.
- Environmental Protection Act, Cap. 328
- Pollution (Amendment) Regulations, 2009
- Environmental Impact Assessment regulations, 2007.
- Refrigeration Technicians (Licensing) Act, 2010.
- Forests Act (CAP 213)
- National Parks System Act (CAP 215)
- Wildlife Protection Act, Cap. 220.
- Waste Management Authority Act, Cap. 224
- Workers' Compensation Act, Cap. 303
- Act, Cap 118 abatement of nuisances.
- Impact Assessment Regulations, Cap. 328 Section 21
- Regulation of pollution, Capt. 328 Section 45
- High Seas Fishing (Monitoring, Control, and Surveillance) Regulations, 2014
- Social Security Regulations, Chap. 44
- Labour Act Regulations working conditions, Chap. 297
- Protection Against sexual harassment Act Chapter 107
- Immigrant Regulations, Cap. 156 Section 35
- Cooperative Societies Act (CAP. 313)

Table 4 shows the relevant legal framework for the socio-environmental aspects applicable to the socio-environmental evaluation of the Program with a brief description.

➢ Other legislation

- Registration of Merchant Ships Act (CAP 236)
- Belize Port Authority Act (CAP. 233)
- Belize National Coast Guard Service Act (No. 19 of 2004)

Table 4. Laws and Regulations for the Environmental and Social Sector

Reference	Date	Level of Goverment	Key points	Description	Requirements applicable to the Project	Responsible Authority
SOCIO-ENVIRONMENTAL LAWS AND REGULATIONS						
Protected Area Conservation Trust Act, Cap. 218	Revised Edition 2000	National	It establishes the functions of trusts. Powers of the trust. Conservation of protected areas. Sustainable management and development of protected areas.	This Act establishes the functions of trust foundations for protecting protected areas in Belize.	The Project must take into account the management of Conservation of protected areas.	Forest Department, Ministry of Sustainable Development, Climate Change and Disaster Risk Management
National Parks System Act, Cap. 215	Revised Edition 2000	National	Defines the essential characteristics to establish an area as a National Park, Nature Reserve, Wildlife Sanctuary, or Natural Monument. Restrictions to entering these areas.	The Law of the National Park System establishes the regulation of use and prohibitions of activities to be developed within the zones of the national park system. In addition, it creates the protection and conservation measures of the national parks.	Through ecotourism activities, the Project aims to expand the employment offer and promote the development of the country's tourism sector. Therefore, you must be aware of and abide by existing regulations on national parks.	Department of the Environment, Ministry of Sustainable Development, climate change and Disaster Risk Management
Environmental Protection Act, Cap. 328	Edition 2011	National	Powers to intervene, prevent and control environmental pollution. Dumping bans. Regulation and requirements for environmental assessment. Regulation and inspection of nutrients. Investigation and procedures for the criminalization of environmental damage.	Law establishes that any project to be developed in all its phases must implement and follow all regulations and guidelines for environmental protection in terms of pollution control and environmental impact assessment.	The project's actions may develop implementation activities, which must comply with the regulations and requirements necessary to comply with the measures adopted or to be adopted to mitigate the impacts according to the environmental assessment.	Department of the Environment, Ministry of Sustainable Development, Climate Change and Disaster Risk Management
Wildlife Protection Act, Cap. 220	Revised Edition 2000	National	Hunting control, Restrictions. Prohibited activities. Distributor license requirement. Import and export permit requirements	This Law seeks the protection of wildlife with respect to hunting control and restrictions, requirements that must take into account all projects in the areas to be intervened. It prohibits certain activities and, if necessary, you must obtain a license to perform them.	Environmental sustainability is one of the components to be developed in the implementation of the project therefore it is necessary to take into account existing regulations.	Forest Department, Ministry of Sustainable Development, Climate Change and Disaster Risk Management
Waste Management Authority Act, Cap. 224	Revised Edition 2000	National	Functions of the authority. Service areas Solid waste regulations.	This Law establishes the regulations for the handling, transporting, and disposing of solid waste. In addition, it creates the necessary conditions for service areas.	The Project will develop activities that must consider the handling, transport, and final disposal of solid waste.	Forest Department, Ministry of Sustainable Development, Climate Change and Disaster Risk Management
Workers' Compensation Act, Cap. 303	Edition 2003	National	Conditions of compensation for accidents at work Employment for special persons	This Law establishes that in the event of an accident at work, it will issue regulated compensations to the workers. In addition, it creates the conditions for its issuance.	The project develops activities complying with the regulations on the matter.	Labour Department, Ministry of Rural Transformation
Act, Cap 118	Edition 2000	National	Power of courts of summary jurisdiction to order the abatement of nuisances. Power to revoke the order prohibiting recidivism of the nuisance. Recording of prohibition orders.	The act establishes the procedure for lodging nuisances with the courts of jurisdiction. In addition, it has the power to revoke orders.	The project will seek to comply with and abide by this Law, with attention to the inconvenience caused by the actions to be carried out.	Court may authorize the City, Village or Town Council in whose district the building, place or way is situated
Impact Assessment Regulations, Cap. 328 Section 21	Edition 2011	National	Powers to intervene, prevent and control environmental pollution. Dumping bans. Regulation and requirements for environmental assessment. Regulation and inspection of nutrients. Investigation and procedures for the criminalization of environmental damage.	This regulation establishes the guidelines that every project to be developed in all its phases must implement and follow all rules and guidelines for environmental protection in terms of pollution control and environmental impact assessment.	For projects requiring infrastructure construction, the respective national regulations will be considered to minimize the impacts and establish relevant environmental measures.	Department of the Environment, Ministry of Sustainable Development, Climate Change and Disaster Risk Management
Regulation of pollution, Capt. 328 Section 45	Edition 2000	National	Emission of pollutants into the environment. Overview of air pollution. Water pollution. Land pollution.	Law establishes the requirements to prevent air, water, and land pollution.	The project will avoid in the development of all its phases, the contamination of water, air and land resources.	Department of the Environment, Ministry of Sustainable Development, Climate Change and Disaster Risk Management
Social Security Regulations, Chap. 44	Edition 2003	National	Regulations for the payment of social security Regulations for benefits Occupational diseases and accidents	This Law establishes that all employers contribute to social security by the established rules.	All actions to be developed by the project must comply with these social security regulations.	Ministry of Finance
Labour Regulations, Chap. 297	Edition 2003	National	Recruitment Working hours and rest days Work regulations Work for women and children	This Law establishes the regulations that must be considered for all work under certain conditions and provisions.	The project will develop actions in which existing regulations for work must be complied with.	Labour Department, Ministry of Rural Transformation
Immigrant Regulations, Cap. 156 Section 35	Revised Edition 2000	National	Regularization of immigrants. Temporary permits People who do not require a passport	This Law establishes the requirements for the regularization of the migrant population.	The project will seek the integration of the migrant population in compliance with existing regulations on the subject.	Ministry of Foreign Affairs, Foreign Trade and Immigration

Source: Own elaboration 2022, based on national laws

☞ Gap analysis

Below are the main gaps between Belize's national legislation and regulations and the IDB's socio-environmental standards.

- **Environmental evaluation:** Impact Assessment Regulations S.I. Cap. 328 Section 21

The Department of the Environment (DOE) establishes the Environmental Assessment as an instrument of environmental policy where any public or private project must be analyzed for its categorization. Based on the sensitivity of the environment and the activities to be carried out, the DOE will determine whether the projects to be implemented require an impact assessment or a limited environmental study.

During an environmental impact assessment, the developer will provide the opportunity for meetings between the developer and interested members of the public, especially within or immediately adjacent to the geographical area of the proposed company, to (a) provide information about the proposal's commitment to people whose environment can be affected by the commitment; Y (b) record the concerns of the local community on the environmental impact of the proposal company[65].

Gap 1: Although public consultation is a requirement for the execution of projects categorized in Annex II of the DOE, Belize's national regulations do not require the preparation of a stakeholder participation plan, nor does it establish the incorporation of vulnerable groups as required by the ESPS 10 of the IDB. The program can address this gap by implementing the ESMP Stakeholder Engagement Plan (SEP).

Gap 2: According to the DOE regulation, "During an environmental impact assessment, the developer will provide the opportunity for meetings between the developer and the local community to record the community's concerns about the environmental impact of the proposal." However, continued stakeholder engagement and implementation of a complaint mechanism are not anticipated. The program can overcome these gaps by implementing the ESMP Stakeholder Engagement Plan (SEP), which promotes public consultation at different stages of the Program cycle and includes the complaints mechanism.

- **Belize Spiny lobster (Panulirus argus) Fishery Management Plan and Belize Queen Conch (Strombus gigas) Management Plan**

The Belize Fisheries Department (BFD) 2014 prepared spiny lobster and queen conch management plans to guide technical actions and manage these resources according to the guidelines of the Central American Fisheries and Aquaculture Organization (OSPESCA).

Gap: The Spiny Lobster and Queen Conch management plan update must comply with the ESPS 6 of the IDB. This standard recognizes that the protection and conservation of biodiversity, the maintenance of ecosystem services, and the life-sustaining management of natural resources are essential for sustainable development. This standard establishes the relationship of ecosystem services as (i) provisioning services, which are the products that

[65] DOE, Chapter 328.

people obtain from ecosystems; (ii) regulating services, which are the benefits people obtain from regulating ecosystem processes; (iii) cultural services, which are the immaterial benefits that people obtain from ecosystems, and (iv) support services, which are the natural processes that maintain the other services.

The plans for Spiny Lobster and Queen Conch should be oriented to comply with the objectives of the standard concerning: a) The protection and conservation of coastal, marine, and water courses and reserves biodiversity sweet; b) Maintaining ecosystem functions to ensure the benefits derived from ecosystem services; c) Promote the sustainable management of living natural resources through the adoption of practices that integrate conservation needs with development priorities.

- **Pollution Regulations (S.I. 56/1996) and Amendment - 2009**

The Pollution Regulations address air, water, and soil pollution, including noise pollution. Likewise, this regulation deals with the emission of pollutants into the air where no person should cause, allow or allow the contaminants to be emitted or downloaded directly or indirectly into the air from any source. In 2009, the regulation included aspects related to the commitments of the Montreal Protocol on substances that deplete the ozone layer.

Gap: Although national regulations cover various aspects of pollution prevention, it is necessary to complement national legislation with the World Bank Group guidelines on environment, health, and safety. established in ESPS 3 of the IDB**.** Therefore, in the ESMP, all Program projects analyzed with limited potential for contamination and impact on resources considered low/moderate risk must follow IDB ESPS 3, which covers national regulations.

- **Land Acquisition (Public Purposes)** Act Chapter 184 - Revised Edition 2000

The Land Acquisition Law regulates aspects related to questions and claims regarding the payment of compensation, which are evaluated by the Evaluation Board, which will be composed of (i) the Chief Minister of Justice or a Supreme Court judge who will be the Chairman of the board; (ii) a member (other than a public official) appointed by the minister responsible for land; and (iii) a member appointed by the owner (IV); Provisions governing the assessment of compensation, etc. (V); Miscellaneous (VI); Voluntary Assignment of Lands to the Crown (VII); Inscription (VIII).

Gap: The Land Acquisition Law in Belize does not contemplate actions related to users' rights when there is some restriction of access to seasonal natural resources, as is the case of fishermen who derive their livelihood from fishing areas. To address this gap, the ESMP will consider, following ESPS 5, implementing socio-environmental measures according to hierarchy to prevent, mitigate and, ultimately, compensate for the possible impact due to restricted access to the group of fishermen who use zone 9 as a livelihood.

- **Labour Act Chapter 297 -** Revised Edition 2011 and Amendment Act 2020

This standard is intended to protect the worker's labor and working conditions. It includes Occupational Health safety and protection of workers' rights and addresses the issues of forced labor and employment of women and children.

There is no evidence of any gap between national legislation, international agreements, and the ESPS 2 of the IDB. It is essential to highlight that all the projects of the Program must comply with the provisions of ESPS 2 in aspects such as Labor and working conditions, including the possibility that workers have the right to present their complaints and claims without reprisals for their requests.

- **Protection against Sexual Harassment** Act Chapter 107 Revised Edition 2000

This Law contemplates the topics of Forms of Sexual Harassment, Responsibilities of employers and employees, Hearing of Complaints, Infractions, and sanctions.

Gap: Despite significant progress, significant gender gaps persist, from physical violence and deprivation to unequal work or political opportunities. Women in Belize lag behind men in positions of power and political leadership. Women in Belize face barriers to economic empowerment and are the primary victims of GBV[66]. In this sense, the projects of the Program must be oriented under the ESPS 9: Gender Equity, and the ESMP will include the formulation of the Gender Plan.

- **Indigenous People**

According to Hulze IDB 2022, “Belize does not have specific legislation for the protection or any other treatment of indigenous people. The preamble to the Belize Constitution, however, makes mention of indigenous peoples by requiring that “State policies protect the identity, dignity, and cultural values of Belizeans, including the indigenous peoples of Belize.” In addition to this, the indigenous peoples of Belize do not enjoy traditional fundamental rights and freedoms of the individual (section 3) and protection against discrimination (article 16) based on race, place of origin, political opinion, color, creed, or sex, that every Belizean enjoys.”

Gap: The national legal framework of Belize related to indigenous peoples does not contemplate some aspects required by IDB ESPS 7, especially those related to (i) ensuring the development of projects with full respect for the human rights of indigenous peoples, as well as to their collective rights, dignity, aspirations, culture, and livelihoods dependent on natural resources and (ii) Ensure the free, prior and informed consent of the communities of indigenous peoples affected by the project. The Program must guide its actions under ESPS7: Indigenous Peoples and prepare the Plan for indigenous peoples that will be part of the ESMP to overcome this gap.

[66] IDB, FAO, 2022. Promoting Growth in Sustainable Blue Economy Program (BL-L1042). Diagnostic of the Fisheries Sector and Identification of Portfolio Diversification and Improvement Opportunities.

- **Rights of Cultural Expression of the Indigenous Garifuna People in Belize**

In 1990, Belize ratified the World Heritage Convention. Belize ratified the International Covenant on Civil and Political Rights in 1996. In 2007, Belize ratified the Convention for the Safeguarding of the Intangible Cultural Heritage, of which the "Proclamation of Masterpieces of the Oral and Intangible Heritage of Humanity" is a part. The Garífuna people were one of the recipients of this proclamation because of their language, dance, and music. In addition, on March 24, 2015, Belize acceded to the Convention on the Protection and Promotion of the Diversity of Cultural Expressions[67].

Gap: According to Article 3(b) of the Belize Constitution, "While all persons in Belize are entitled to the fundamental rights and freedoms of the individual, that is, the right, regardless of race, national origin, political opinion, color, creed, or sex, but without prejudice to respect for the rights and freedoms of others and the public interest, any of the following, viz. . . freedom of conscience, expression and assembly and association". Under the above, Belize maintains that all citizens are treated equally and therefore does not provide additional measures to protect the Garífuna people[68]. To eliminate this gap, the Program must implement the projects under ESPS 8, which recognizes the importance of cultural heritage for current and future generations. People from the Garifuna and indigenous groups will participate in the public consultation processes with sessions culturally appropriate to their language.

4.2. Institutional Framework

In 2020, the Government established a new Ministry of Blue Economy and Civil Aviation (MBECA) with the mission to "increase the gross domestic product through a thriving Blue Economy (BE) development pathway that is harmonized, innovative, and socially just, supported by a robust, science-based management region of our aquatic resources and spaces to improve the livelihood of all Belizeans."[69] Other institutions that regulate marine fishing activities within Belize's EEZs and the processing of seafood include[70]:

- **The Belize Fisheries Department** (BFD) under the Ministry of Agriculture, Fisheries, Forestry, the Environment, and Sustainable Development and Immigration Services and Refugees (MAFFSD) is the primary institutional body that regulates fisheries activities and enforces fisheries law within Belize's territorial sea and EEZ. The Department was established in 1987 by the Fisheries Act. The mission of the Department is "to provide the country and people of Belize with the best possible management of its aquatic and fisheries resources, to optimize the present and future benefits through efficient and sustainable management" (BFD, 2019, cited by UNCTAD, 2020).

  The Belize Department of Fisheries performs its functions and operations in five central units: i) the Capture Fisheries Unit (CFU); ii) the Conservation Unit; iii) the Ecosystem Management Unit l iv) the Planning Unit, and v) the Administrative and Licensing Unit that has thirteen collaborators.

[67] The University of Oklahoma College of Law International Human Rights Clinic the United States of America. Report on Belize to the 31st Session of the Universal Periodic Review, Human Rights Council, October – November 2018
[68] The University of Oklahoma College of Law International Human Rights Clinic the United States of America. Report on Belize to the 31st Session of the Universal Periodic Review, Human Rights Council, October – November 2018
[69] IDB, 2022. Project Profile Promoting Sustainable Growth in the Blue Economy Program (BL-L1042).
[70] UNCTAD, 2020. Oceans Economy and Trade Strategy: Belize Marine Fisheries and Seafood Processing

- **The Belize High Seas Fisheries Unit,** established by the High Seas Fishing Act of 2013 within the Ministry of Finance, is the primary authority responsible for the regulation and control of Belize-flagged vessels which engage in fishing or transshipment.

- **The Belize Coast Guard**, established by law in 2016, has as its objective, in addition to national security and military operations, the mandate to enforce the fishing law under the Fisheries Law No. 7 of 2020.

- **The Coastal Zone Management Authority and Institute** (CZMAI) was established by the Coastal Zone Management Law of 2000. The authority is responsible for implementing and monitoring the policies governing the use and development of the coastal zone in Belize, which includes assisting in the development of the Integrated Coastal Zone Management Plan (2016) and supervising its implementation.

- **The Belize Agricultural Health Authority** (BAHA) aims to ensure animal and plant health and food safety services, including fishing regulations, seafood processing facilities, exporters, guaranteeing standards, appropriate health and safety labeling practices, and export permits.

- **The mission of the Belize Customs and Excise Department** is to ensure safety and security and contribute to the economic development of Belize through the application of customs and fiscal regulations.

- **The Belize Port Authority** is the designated Authority responsible for determining which facility will be a "Port Facility" to comply with the Port Security Regulations and the International Ship and Port Facility Security (ISPS) Code. Within the institutional responsibilities, it has: Operate the port to serve the public interest better; Regulate and control navigation within the limits of the national waterways, piers, docks, and their accesses; Maintain, improve, and regulate port facilities and services as necessary; Provide the ports and their accesses, pilotage services, beacons, buoys and other services and aids to navigation that are required; Enforce safety regulations and navigation safety regulations, registration, inspection and issuance of certificates of navigability for national vessels and issuance of certificates of aptitude for boat skippers; Enforce the International Ship and Port Security (ISPS) Code at port facilities Ensure, in collaboration with other agencies and public institutions, the prevention of marine pollution and the protection of the marine environment[71].

4.3. National Environmental Requirements for projects

➢ The Department of Environmental (DOE)

Belize establishes that all persons, institutions, and organizations, whether public or private, must request the Department of the Environment if the undertaking, Project, or activity to be

[71] https://portauthority.bz/

developed will require an Environmental Impact Study. For this purpose, the Law in Chapter 328S Revised Edition of 2000 establishes the procedure and requirements for Environmental Studies. If it is necessary to do the Environmental Impact Assessment, the assessment process is carried out in three phases:

1. A project analysis phase (screening of the Project)
2. Review by the National Environmental Evaluation Committee following paragraph 25 of the regulation.A grade for the design and implementation of a monitoring program.
3. The Environmental Impact Assessment must be included as minimum requirements:
   a) Description of all the activities to be carried out,
   b) The project must describe the people affected by its activities, including specific information identifying the impacts and effects of the proposed activities.
   c) Evaluation of the Project involves identifying potential environmental impacts, including the direct and indirect, cumulative, short and long-term effects that the project activities could cause.
   d) Other authorizations are necessary for the Project. In the development of the Project, the following permissions will be required: Authorization for water extraction, Area Map; Permission to extract water from the owner of the land if the applicant does not own the owner of the land; If a wastewater discharge occurs, a letter of authorization or an effluent license from the Department of the Environment is required.

➢ Belize Fisheries Department (BFD)

At the level of permits, the BFD requests:

☞ Fisherfolk and Vessel Licenses[72]

1. Vessel Requirements

- The owner or master of the vessel must have a valid commercial fisher folk license and
- The vessel must have a valid seaworthiness certificate issued by the Belize Port Authority.

2. Fisherfolk Requirements

1. Must be at least 18 years old **AND**
2. Present a valid Social Security card **OR**
3. Present a valid Voters card and Birth Certificate **OR**
4. Present a valid Belizean passport

All Applicants must present Both:

➢ Proof of Residency
   a) Recent utility bill showing address (electricity, water, or telephone) OR
   b) Three (3) months rental receipt and an affidavit or letter from the landlord stating that the applicant has been residing at their residence for the last three (3) months (a justice of the peace must sign this).

[72] BFD, 2023. https://fisheries.gov.bz/licenses/

- Proof of Sale in Belize
    a) Receipt of sale of fishery products from fishermen cooperatives, restaurants, hotels, etc

Permits[73]

The Fisheries Department of Belize processes special permits for taking some species, exportation, and marine research or filming.

- **Seafood Export**

a) Individual or Company
b) Fisheries Product
c) Species
d) Annual Renewal

- **Filming Permit**

Required for any aquatic filming project
a) Filming activities and rationale must be submitted for approval
b) Provide a list of equipment and crew
c) Submit digital copies collected

- **Research**

a) Required for any aquatic research
b) The scientific research proposal must be submitted for approval
c) $200 Prescribed fee applicable outside Protected Areas
d) $500 Prescribed fee applicable inside Protected Areas
e) Mandatory guidelines issued in the permit
f) Permits expire on December 31st

- **Researchers are obligated to submit the following:**

a) Application for a Scientific Research Permit
b) Letter of Commitment
c) Scientific Report Writing Format
d) Application for a Scientific Research Permit
e) Scientific researcher's permit -administrative requirements

CITES permits

A research/collecting permit is required for most biological and research collections. This permission applies to all agencies. If the organism is included in the CITES list, an additional

[73] BFD, 2023. https://fisheries.gov.bz/licenses/

CITES permit must be filed with the CITES administrative authority in Belize. (Ministry of Sustainable Development, Climate Change, and Disaster Risk Management).

- **Boat registration, license Belize Port Authority**

a) To register a boat: Certificate, a bill of sale, or a receipt for a locally built boat. Without these documents, you must provide a signed declaration form describing the boat, length, width, etc. If it is built abroad, you must provide a customs declaration form.
b) To obtain the license: Submit a building certificate. Inspect the vessel to ensure it has the appropriate equipment for life jackets, fire extinguishers, communication equipment, etc.
c) A captain's license.

4.4. ESPS relevant to Program

The Program will comply with the IDB's Social and Environmental Policy Framework by implementing the Environmental and Social Performance Standards (ESPS). According to the Initial Environmental and Social Review Summary for the Program by IDB, 2022, the ESPSs with requirements are:

ESPS 1: Assessment and Management of Environmental and Social Risks and Impacts

In coordination with other government agencies and third parties, the Borrower will conduct a process of environmental and social assessment and establish and maintain an ESMS appropriate to the nature and scale of the Project and commensurate with the level of its environmental and social risks and impacts. The ESMS will incorporate the following elements: (i) project-specific environmental and social framework; (ii) identification of risks and impacts; (iii) management programs; (iv) organizational capacity and competency; (v) emergency preparedness and response; (vi) stakeholder engagement and (vii) monitoring and review.

Objectives:

- To identify and evaluate the project's environmental and social risks and impacts.
- To adopt a mitigation hierarchy and a precautionary approach to anticipate and avoid, or where avoidance is not possible, minimize, and, where residual impacts remain, compensate/offset for risks and impacts to workers, project-affected people, and the environment.
- To promote Borrowers' improved environmental and social performance through effective management systems.
- Ensure that grievances from project-affected people and external communications from other stakeholders are responded to and managed appropriately.
- To promote and provide means for adequate engagement with project-affected people and other stakeholders throughout the project cycle on issues that could potentially

affect them and to ensure that relevant environmental and social information is disclosed and disseminated.

ESPS 2: Labor and Working Conditions

Environmental and Social Performance Standard (ESPS) 2 recognizes that the protection of the fundamental rights of workers should accompany the pursuit of economic growth through employment creation and income generation.

Objectives ESPS2:

- To respect and protect the fundamental principles and rights of workers.
- To promote fair treatment, non-discrimination, and equal opportunity for workers.
- To establish, maintain, and improve the worker-employer relationship.
- To ensure compliance with national employment and labor laws.
- Protect workers in vulnerable situations such as women, people of diverse sexual orientations and gender identities, persons with disabilities, children (of working age, following this ESPS), migrant workers, workers engaged by third parties, and primary supply workers.
- To promote safe and healthy working conditions and the health of workers.
- To prevent child and forced labor (as defined by the ILO).

ESPS 3: Efficiency in the Use of Resources and the Prevention of Contamination

This ESPS outlines a project-level approach to resource management, pollution prevention and control, and avoidance and minimization of GHG emissions. It builds on the "polluter pays" principle and the mitigation hierarchy. It recognizes the disproportionate impact of pollution on women, children, the elderly, and the poor and vulnerable.

Objectives:

- Avoid adverse impacts on human health and the environment by preventing or minimizing pollution from project activities.
- To promote more sustainable use of resources, including energy and water.
- To avoid or minimize project-related emissions of GHG.
- To avoid or minimize the generation of waste.
- To minimize and manage the risks and impacts associated with pesticide use.

ESPS 4: Community Health and Safety

Environmental and Social Performance Standard (ESPS) 4 recognizes that project activities, equipment, and infrastructure can increase community exposure to risks and impacts, including those caused by natural hazards and climate change. In addition, communities already subjected to the adverse effects of natural hazards and climate change may also experience acceleration and intensification of adverse impacts due to project activities.

Objectives:

- To anticipate and avoid adverse impacts on the health and safety of the project-affected people during the project life cycle from both routine and non-routine circumstances.
- To ensure that personnel and property are safeguarded under relevant human rights principles and in a manner that avoids or minimizes risks to the project-affected people.
- To anticipate and avoid adverse impacts on the Project from natural hazards and climate change during the project life cycle.

ESPS 5: Land Acquisition and Involuntary Resettlement

The borrower will consider viable alternative project designs to avoid or minimize physical or economic displacement. In cases where displacement cannot be avoided, the borrower shall provide the people affected by the project with compensation for the loss of property at total replacement cost and other assistance to help them improve or restore their standard of living or livelihoods.

This ESPS applies to physical and economic displacement resulting from the following types of land-related transactions and non-land-related economic displacement:

- Land or land use rights acquired through expropriation or other compulsory procedures by national law.

- Land rights or land use rights acquired through negotiated settlements with property owners or those with legal rights to the land if failure to settle would have resulted in expropriation or other compulsory procedures.

- Project situations where involuntary restrictions on land use and access to natural resources cause a community or groups within a community or persons to lose access to resource use where they have traditional or recognizable usage rights.
- Certain project situations require evictions of people occupying land without regular, traditional, or recognizable usage rights.

- Restriction on access to land or use of other resources, including communal property and natural resources such as marine and aquatic resources, timber and non-timber forest products, freshwater, medicinal plants, hunting and gathering grounds, and grazing and cropping areas.

- Economic displacement resulting from permanent or temporary loss of access to formal and informal economic activities (e.g., small shops owners and informal vendors, among others)

ESPS 6: Conservation of Biodiversity and Sustainable Management of Living Natural Resources

Environmental and Social Performance Standard (ESPS) 6 recognizes that protecting and conserving biodiversity, maintaining ecosystem services, and sustainably managing living natural resources are fundamental to sustainable development

Objectives

- To protect and conserve terrestrial, freshwater, coastal, and marine biodiversity.
- To maintain the ecosystem functions to ensure the benefits from ecosystem services.
- To promote the sustainable management of living natural resources through the adoption of practices that integrate conservation needs and development priorities

ESPS 7: Indigenous Peoples

Environmental and Social Performance Standard (ESPS) 7 recognizes that Indigenous Peoples,159 as distinct social and cultural peoples, are often among the most marginalized and vulnerable population segments. In many cases, their economic, social, and legal status limits their capacity to defend their rights to and interests in lands and natural and cultural resources. It may restrict their ability to participate and benefit from development following their worldview.

Objectives

- To ensure that the development process fosters full respect for the human rights, collective rights, dignity, aspirations, culture, and natural resource-based livelihoods of Indigenous Peoples.
- To anticipate and avoid adverse impacts of projects on communities of Indigenous Peoples, or when avoidance is not possible, to minimize and compensate for such impacts.
- To promote sustainable development benefits and opportunities for Indigenous Peoples in a culturally appropriate manner.
- To establish and maintain an ongoing relationship based on Informed Consultation and Participation (ICP) in a culturally appropriate manner with the Indigenous Peoples affected by a project throughout the Project's life cycle.
- To ensure the FPIC of the Project-Affected Communities of Indigenous Peoples when the circumstances described in this ESPS are present.
- To respect and preserve the culture, knowledge, traditional knowledge, and practices of Indigenous Peoples

ESPS 8: Cultural Heritage

Environmental and Social Performance Standard (ESPS) 8 recognizes the importance of cultural heritage for current and future generations. Consistent with the Convention Concerning the Protection of the World Cultural and Natural Heritage, this ESPS aims to ensure that Borrowers protect cultural heritage in the course of their project activities

Objectives:

- To protect cultural heritage from the adverse impacts of project activities and support its preservation.
- To promote the equitable sharing of benefits from the use of cultural heritage

ESPS 9: Gender Equality

This ESPS aims to identify potential gender-based risks and impacts and introduce effective measures to avoid, prevent, or mitigate such risks and impacts, thereby eliminating the possibility of reinforcing pre-existing inequalities or creating new ones.

Objectives

- To anticipate and prevent adverse risks and impacts based on gender, sexual orientation, and gender identity, mitigate and compensate for such impacts when avoidance is not possible.
- To establish actions to prevent or mitigate risks and impacts due to gender throughout the project cycle and inclusion in project-derived benefits of people of all genders, sexual orientations, and gender identities.
- To prevent SGBV, including sexual harassment, exploitation, and abuse, and when incidents of SGBV occur, respond promptly.
- To promote safe and equitable participation in consultation and stakeholder engagement processes regardless of gender, sexual orientation, and gender identity.
- To meet the requirements of applicable national legislation and international commitments relating to gender equality, including actions to mitigate and prevent gender-related impacts.

ESPS 10: Participation of Stakeholders and Information Disclosure

This ESPS recognizes the importance of open and transparent engagement between the Borrower and stakeholders, especially project-affected people, as a critical element that can improve project environmental and social sustainability, enhance project acceptance, and contribute significantly to the Project's successful development and implementation.

Objectives

- Establishing a systematic approach to stakeholder engagement will help the Borrower identify stakeholders, especially project-affected people, and build and maintain a constructive relationship with them.
- To assess the level of stakeholder interest in and support for the Project and to enable stakeholders' views to be considered in project design and environmental and social performance.
- To promote and provide the means for effective and inclusive engagement with project-affected people throughout the Project's life cycle on issues that could potentially affect or benefit them from the Project.
- Ensure that appropriate information on the project's environmental and social risks and impacts is disclosed to stakeholders in a timely, understandable, accessible, and proper manner and format.
- To provide stakeholders with accessible and inclusive means to raise questions, proposals, concerns, and grievances and allow Borrowers to respond and manage them appropriately

CHAPTER 5: SOCIO-ENVIRONMENTAL CHARACTERIZATION

CHAPTER 5: Socio-Environmental characterization

5.1. Physical environment

Geophysical elements such as location, climate, and geomorphology, among other aspects, can condition the development of projects. The most relevant features for the study at a geophysical level are the following:

5.1.1. Geographic Framework

a. Location

The intervention of the Program is in Belize[74]. This country forms a portion of the Yucatan Peninsula lying between 15°45'and 18°30'north latitude and 87°30' and 89°15' west longitude[75] with a national territory of 46,620 square kilometers (18,000 square miles). The continent constitutes 95% of the territory, and 5% is represented by more than 1,060 small islands or Cays[76]. Belize's coastline extends 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[77].

Administratively, Political Belize comprises six (6) districts, nine municipalities, and 197 villages[78]. The districts are Orange Walk and Cayo, located to the west in the interior part of the country, and Corozal, Belize, Stann Creek, and Toledo, located in the eastern region, as coastal districts.

The coastal and marine zone of Belize is defined by:

- **The spatial, physical delimitation**

Section 2 of the Coastal Zone Management Act, 1998 defined: "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.

From the Sarstoon River to Ranguana Caye in southern Belize, the outer limit is measured three nautical miles from mean low water (MLW), considering Guatemala's proximity to Belize.

[74] IDB, 2022. Project Profile Promoting Sustainable Growth in the Blue Economy Program (BL-L1042).
[75] UNCSD, (n.d.) – Belize National Sustainable Development Report
[76] NCCO, 2016. Belize´s third National Communication to the United Nations Framework Convention on Climate Change.
[77] Draft Maritime Economy Plan – Belize (2021) jointly developed between the Government of Belize and the Commonwealth Marine Economies Program supported by UK AID.
[78] GEF, et al., 2017. Belize Technology needs assessment mitigation

The outer limit is measured using MLWM on the fringing reefs in areas with fringing reefs. Therefore, the three atolls (Turneffe, Lighthouse Reef, and Glover's Reef) are included within the territorial waters of Belize.

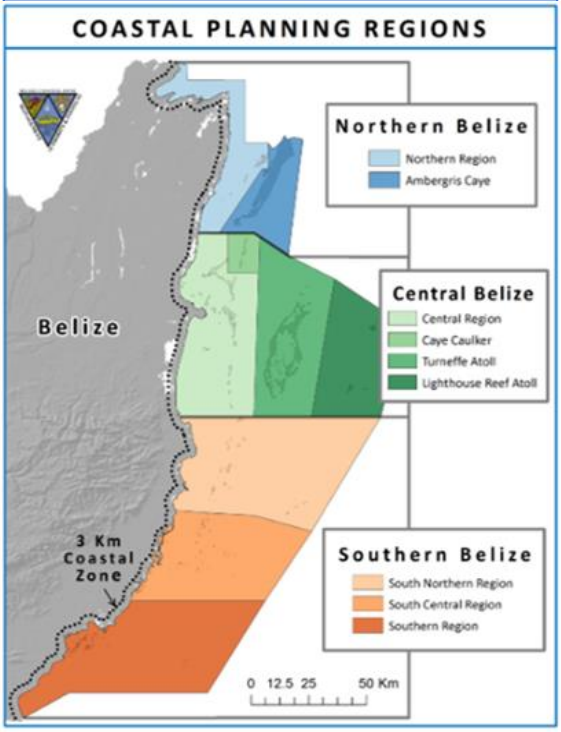
- **Planning regions**

According to the Integrated Coastal Zone Management Plan (GIZC, 2016), the coastal zone was divided into nine (9) planning regions (MAP) that have biological, geographical, economic, and administrative similarities. (Figure 5). These zones were defined to resolve conflicts in the use of resources and negotiate conflicting interests for coastal zone management. Planning regions include places for protected marine areas and priority areas for Fishing, coastal development, marine tourism, transportation, and other human uses[79].

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[80] (Figure 5).

This zone corresponds to the zone of influence that immediately affects the coastal environment and encompasses all coastal communities, as well as the distribution of natural features and resources found in coastal and marine ecosystems where water levels (a) are influenced by tidal action, (b), are contiguous to the sea level, (c) have a saline influence, or (d) facilitate the migration of fauna between freshwater and saltwater[81]. This zone includes extensive river, estuarine, and coastal wetland systems(ICZM, 2016).

Figure 5. Belize's coastal planning regions



Source: Coastal Zone Management Authority and Institute (CZMAI), 2016

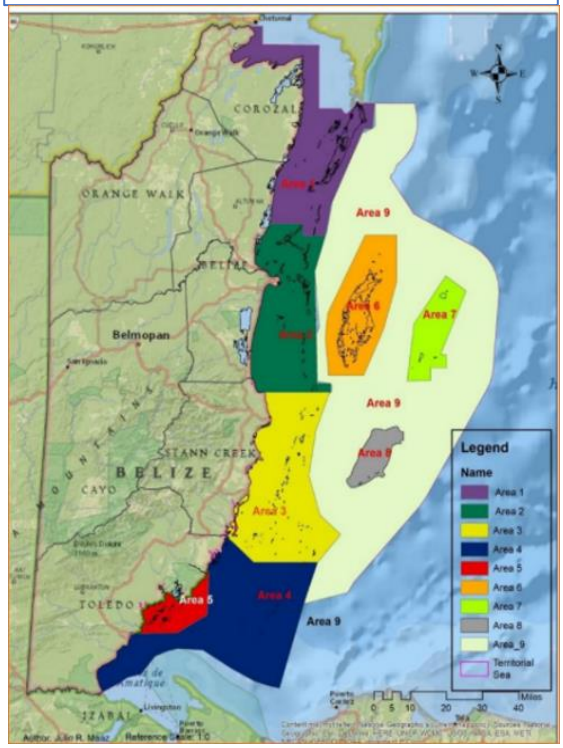
- **Territorial Use Rights Regime for Fishermen (TURF)**

The Belize Department of Fisheries and non-governmental organizations (NGOs) implemented conservation strategies for marine and fisheries management to ensure sustainable livelihoods for fishermen under the Managed Access Program (Territorial Use Rights Regime for Fishermen

[79] Integrated Coastal Zone Management in Belize, 2016 (ICZM). (Dec 9/2022) https://www.coastalzonebelize.org/coastal-planning-monitoring-program-unit/#coastal-planning
[80] Draft Maritime Economy Plan – Belize (2021) jointly developed between the Government of Belize and the Commonwealth Marine Economies Program supported by UK AID.
[81] Integrated Coastal Zone Management in Belize, 2016 (ICZM). (Dec 9/2022) https://www.coastalzonebelize.org/coastal-planning-monitoring-program-unit/#coastal-planning

known as TURF) in 2011[82]. This TURF was developed in response to illegal Fishing and declining landings, and licensed anglers were granted access and harvest rights to fish in selected areas while also providing a mechanism to report their catch and color-code their catching vessel(s)[83]. In 2016, the Managed Access Program (MAP) was implemented nationwide across Belize, adding seven fishing areas to the pre-existing two pilot sites, with one for deep slope fishing[84]. This regime empowers artisanal fishermen by allowing them to participate in managing fishing grounds by granting them licenses for fishing areas in managed access zones, validated by the latest Fisheries Resources Law No. 7 of 2020. Figure 6 and Table 5 show the areas declared as fishing areas, highlighting that of the total 37,127 square kilometers, 70% of the area corresponds to Area 9.

Figure 6. Belize's coastal planning regions



Source: Belize Fisheries Department (BFD)

Table 5. Fishing Area

Fishing Area	Square kilometers
Area 1	2,533
Area 2	1,327
Area 3	2,160
Area 4	2,673
Area 5	404
Area 6	1,317
Area 7	408
Area 8	307
Area 9	25,998

Source: Own data compiled using information from Fisheries Law and Regulations Chapter 210. Legal Instrument number 54 of 2012 (Regulation 24 A (1)).

82 Alves Catherine et al. (2022). Fisher's perceptions of Belize's Managed Access program reveal overall support but a need for improved enforcement
83 Alves Catherine et al. (2022). Fisher's perceptions of Belize's Managed Access program reveal overall support but a need for improved enforcement
84 Alves Catherine et al. (2022). Fisher's perceptions of Belize's Managed Access program reveal overall support but a need for improved enforcement

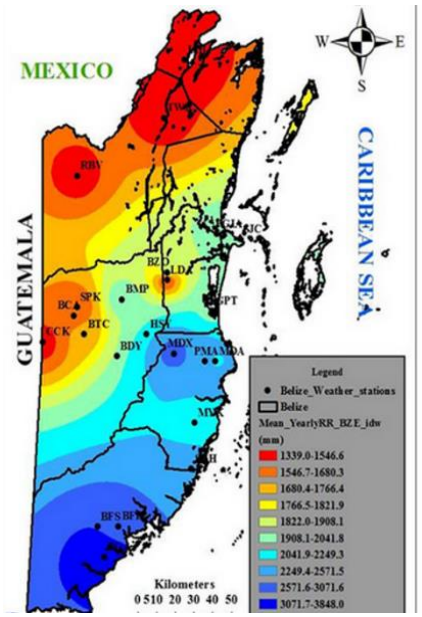
5.1.2. Climate

Belize has a moist tropical climate with a seasonal variation slightly different than other Caribbean countries.[85] The weather is influenced by three major global/regional climate systems: the Atlantic Ocean Climate System, the Pacific Ocean Climate System, and periodically by North American climate systems changes[86]. The El Niño Southern Oscillation (ENSO) heavily influences Belize's climate and the intensification of the Inter-Tropical Convergence Zone (ITCZ). The El Niño phenomenon generally produces warmer conditions from June to August, whereas La Niña produces wetter conditions typically associated with tropical Atlantic cyclones[87].

- **Rainfall and Temperature**

This country has a subtropical climate with two (2) distinct wet and dry seasons. The rainy season occurs from June to November and brings approximately 60 inches (1524mm) of rain in the north to 160 inches (4064mm) in the south[88] (Figure 7). Rainfall varies yearly in many areas, except in the country's southern parts, where the annual rainfall average is consistent. The heaviest rain is usually expected in June or early July and is punctuated by a break in late July or August, while the dry season occurs from November to May. Changing from dry to wet seasons can be considered gradual, with a remarkable transition from November to February and a warm transition from March to May.[89]

Figure 7. Mean Yearly Rainfall for Belize 1951-2013



Source: 2013, Meteorologist Frank Tench

The average temperature in Belize is approximately 80°Ft, with average highs of 85° and lows of 73°[90]. January is the coldest month, and May with the warmest temperatures. Inland areas are more likely to have higher temperatures than coastal areas, and the temperature in the latter is influenced by the sea breeze, which lowers the temperature (NCCO,2016).

- **Tropical Storms**

Tropical storms affect Belize every year between the beginning of June and the end of November, with Landfall potential exceptionally high in northern Belize. Originally from the

85 BM, Climate Change. (Dec/10/22) https://climateknowledgeportal.worldbank.org/country/belize/climate-data-historical
86 Ministry of Agriculture, Forestry, Fisheries, the Environment and Sustainable Development, Belmopan, Belize, 2016.
87 BM, Climate Change. (Dec/10/22) https://climateknowledgeportal.worldbank.org/country/belize/climate-data-historical
88 NCCO, 2016. Belize´s third National Communication to the United Nations Framework Convention on Climate Change.
89 NCCO, 2016. Belize´s third National Communication to the United Nations Framework Convention on Climate Change.
90 Ministry of Agriculture, Forestry, Fisheries, the Environment and Sustainable Development, Belmopan, Belize, 2016. National Biodiversity Strategy and Action Plan, Belize.

Atlantic Ocean tropical warm waters, these storms are not frontal, develop highly organized circulations, and extend on the scale of tropical and tropical depressions thunderstorms (with sustained wind < 74 mph) to hurricanes (with sustained wind > 74 mph) (Figure 7). These storms move west toward the Caribbean and Central American coast, Gathering forces until they make landfall. They often bring extreme weather conditions –heavy rains and destructive winds.[91]

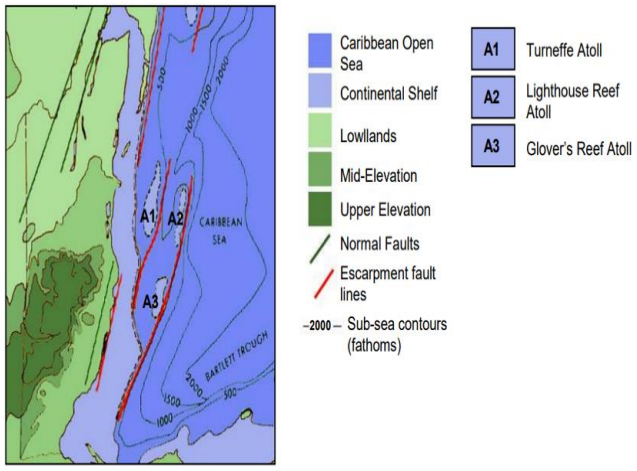
5.1.3. Geology and Bathymetry

- **Geology of the coast of Belize**

Belize's geology is part of the ancient Maya, bounded by cliffs and mountains, surrounded by lower mountains and younger sedimentary rocks[92]. Northern Belize is an extension of the Yucatan Platform, while southern Belize shares the mountainous geology of eastern Guatemala (Fairbridge, cited in UNDP 2011a). The Yucatan Platform consists of hard, dense limestone over red shale (Viniegra, cited in UNDP 2011a) that results in a topography consisting of low (approximately 250 meters above sea level (masl)), rolling limestone hills, and escarpments.

The escarpments result from north-northeast trending faults caused by the subsidence of the continental shelf toward the Yucatan Trough in the Caribbean Sea (Hartshorn et al., cited in UNDP 2011a)[93]. This area is characterized by carbonates of great importance for developing karst and caves in the broad belt of limestone and dolomite from the Cretaceous that routes almost all the most significant underground streams in the highlands[94].

Figure 8. Fault lines that run parallel to the Belize coastline form the base of the reef



Source: BFD, GSSCMR.2011-2016

The Belizean continental shelf underlies the coast of Belize and extends seaward for 15 to 40 km from the shoreline. It is a complex submarine platform of Pleistocene limestone that ends abruptly, in the southern seascape, at the top of the third of three northeast-southwest escarpments off the coast[95]. (Figure 8)
The first escarpment runs parallel to the coast, descending to the east to a depth of approximately 1 km. An extensive reef system has developed on the edge of this escarpment, forming the Belize Barrier

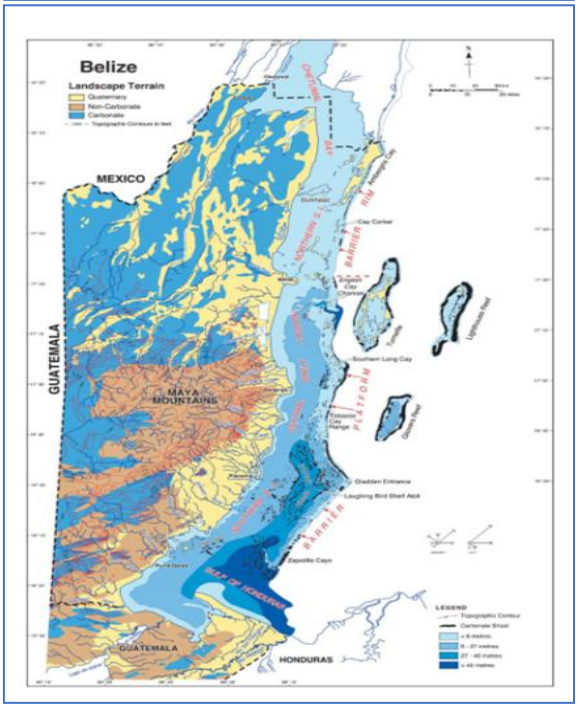
[91] Belize Fisheries Department, (n.d). Management Plan South Water Caye Marine Reserve 2019 – 2023
[92] Miller, Thomas E.2015. Geologic and Hydrologic Controls on Karst and Cave Development in Belize.
[93] Geology The country is well known as the home of the longest barrier reef in the Western Hemisphere.
[94] Miller, Thomas E.2015. Geologic and Hydrologic Controls on Karst and Cave Development in Belize.
[95] Belize Fisheries Department, (n.d). Management Plan South Water Caye Marine Reserve 2019 – 2023

Reef[96]. Cays dot this platform; some formed on mangrove peat, others from coral outcrops and sand deposits. The second escarpment supports Turneffe Atoll and joins the prominent escarpment of the barrier reef north of South Water Caye Marine Reserve. The third escarpment provides the base for Lighthouse Reef and Glover's Reef atolls. Then it extends south to finally intersect the barrier reef at Gladden Spit, forming the "elbow," providing the conditions required for the aggregation site of spawning of regional importance[97].

➢ Bathymetry

The offshore shelf area is bordered by a well-developed barrier reef that extends from the country's northern border southward for approximately 260 km, terminating in a hook-like configuration[98].

Figure 9 Bathymetry of Belize



Source: G. Purdy E, Gischler E.2003.

Shelf bathymetric relief parallels land topography, increasing from less than 5 m in the north to more than 46 m in the south (Figure 9). As in other areas, the barrier reef provides wave shelter for the adjacent lagoon. In the north, this shelter forms a barrier rim that broadens in width to the south to become a barrier platform. Unlike the barrier rim, the barrier platform is characterized by an abrupt increase in depth into the adjacent shelf lagoon that increases in magnitude toward the south[99].

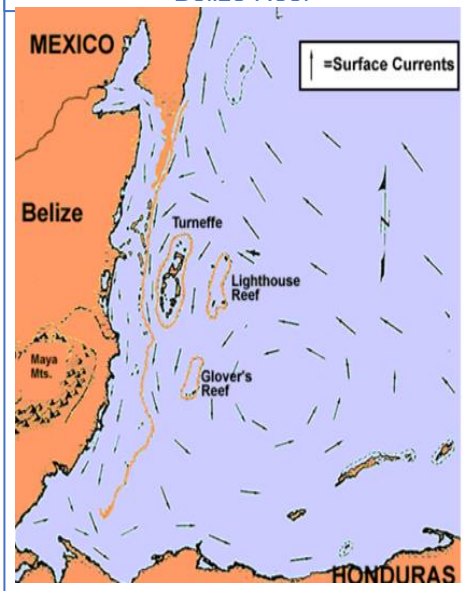
An inner channel separates the reef platform from the mainland. This channel is flanked on the seaward side by the barrier reef platform, which is relatively flat and about 8 km wide in this area. It is shaped like a featureless, gently sloping valley deepening toward the south, with water depth maintaining a reasonably constant descent ranging from 40 to 60 feet in the north to 60 to 90 feet in the south. The barrier reef complex has been divided into three provinces based on distribution and geomorphic characteristics: Northern, Central, and Southern Provinces (Burke, 1982).[100]

[96] NOA, 2010. Sapodilla Cayes Marine Reserve management plan 2011 - 2016 : a component of Belize's world heritage site
[97] Ministry of Tourism & Diaspora relation, Caye Caulker Marine Reserve Management Plan. 2021-2026
[98] G. Purdy E, Gischler E.2003. The Belize margin revisited: 1. Holocene marine facies
[99] G. Purdy E, Gischler E.2003. The Belize margin revisited: 1. Holocene marine facies
[100] Belize Fisheries Department, (n.d). Management Plan South Water Caye Marine Reserve 2019 – 2023

- **Tides and Water Movement**

In the western Caribbean, the surface currents are north and generate a thin counter current in front of the barrier reed and around the atolls of Belize. Between the barrier reef and the mainland, the currents are south. Tradewinds and emptying of the many coastal rivers generate a head of water funneled to the south[101].

Figure 10. Surface Currents of Belize Reef



Source: MIT, 2001

The prevailing water movement entering the Caribbean is the wind-driven Guiana Current, flowing from southeast to northwest (Figure 10); this becomes the Caribbean Current, flowing through the Lesser Antilles, with the majority reaching the Yucatan Strait (Hanson & von Twistern, 1996).[102]

According to MIT, 2001, the tidal range is small (rarely more excellent, more significant, 8 inches). Still, the numerous breaks in the barrier reef limit the passage of water and create powerful local and temporary currents (up to 1.5 knots). These breaks in the barrier are magnificent habitats for large fish and rich coral development. Tidal action within the Belize Barrier Reef Lagoon is classified as semi-diurnal mixed tides, with generally four peaks on any given tidal day as follows: a high-high, a high-low, a low- high and a low-low tide (Hanson & von Twistern, 1996; National Weather Service). Generally tidal, the variation is from 0.3 to 0.5 m, increasing to 0.8 m during spring tides or associated with the action of a storm. Higher tides are the result of extreme weather events[103].

[101] MIT,2001. Massachusetts Institute of Technology. http://web.mit.edu/12.000/www/m2005/a1/Research/geobackground.htm

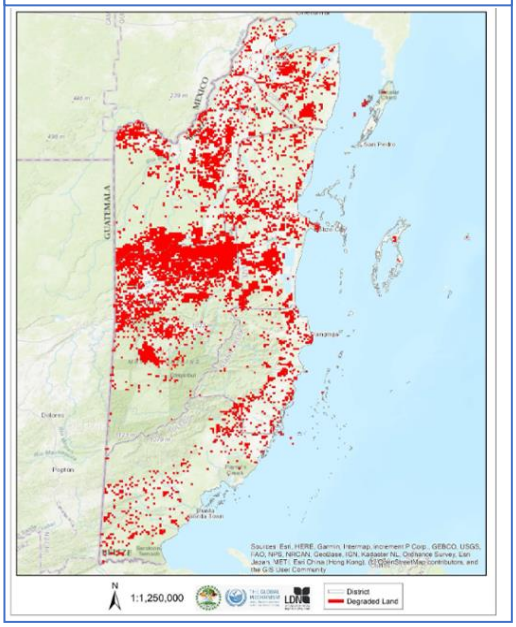
[102] Ministry of Tourism & Diaspora relation, Caye Caulker Marine Reserve Management Plan. 2021-2026

[103] Ministry of Tourism & Diaspora relation, Caye Caulker Marine Reserve Management Plan. 2021-2026

5.1.4. Soils Characteristics

Belize has characteristic soils of the Yucatan Peninsula, comprising reefs and porous limestone rocks that give rise to dry, rocky, shallow, and extensive Leptosols. In the alluvial plains of broad and shallow valleys, Vertisols develop. Along the Caribbean coast, ancient marine sediments and the proximity of groundwater to the surface in alluvial sediment zones, poorly drained soils give rise to Solonchaks (saline soils) and Gleysols (marshy soils)[104].

Figure 11. Degraded Lands, Belize, 2000-2015



Source: LDN et al., 2020

- **Main problems related to soils**

  - **Land degradation in Belize**

Based on spatial analysis data provided by the UNCCD Secretariat, the land degradation baseline for Belize was from 2000 to 2015. (Figure 11). As a result of 4,788 km2 of land in Belize, the degradation occurs in 21.66% of the territorial land. The mainland degradation hotspots are the Belize River Watershed and the Corozal and Orange Walk Districts, including the New River Watershed[105].

  - **Land use Change**

Land use change in Belize results from converting natural landscapes to artificial ones, predominantly through deforestation, filling freshwater and mangrove wetlands, and dredging seagrass. Two primary drivers have been identified at the national scale: i) Agricultural Expansion (including aquaculture) and ii) Population Expansion/Coastal - Caye Development[106].

The coastal zone and the cays are the most vulnerable areas in Belize regarding development impacts, with the potential to affect the long-term viability of coastal Biodiversity and the provision of ecosystem services. Red mangrove and herbaceous beach vegetation play a critical role in stabilizing the coastal structure and cays, reducing coastal erosion, beach loss, and sedimentation, and providing a nursery function for many marine species. Among the most threatened ecosystems in Belize, the loss of natural coastal vegetation is accelerating as development value, and demand for beach fronts increases, resulting in habitat removal along the entire Belizean coastline and the keys, resulting in destabilization of the keys, increased beach erosion, loss of beaches, and increased sedimentation impacts[107].

[104] FAO 2014, Atlas de suelos de America Latina y el Caribe.
[105] LDN, et al., 2020. Land Degradation Neutrality Target Setting Programme. Final Report.
106 Ministry of Agriculture, Forestry, Fisheries, the Environment and Sustainable Development, 2016. National Biodiversity Strategy and Action Plan. Belize, 2016-2020.
107 Ministry of Agriculture, Forestry, Fisheries, the Environment and Sustainable Development, 2016. National Biodiversity Strategy and Action Plan. Belize, 2016-2020.

The critical consequences of Land-use change are[108]:

- Removal of natural vegetation cover
- Loss and degradation of ecosystem services
- Loss of watershed catchment, flood control, storm buffering, soil formation and reten7on, pollination, natural pest control
- Reduced water catchment and impacts on replenishment of the aquifer, particularly in Northernlize
- Increased wildlife-human conflict and associated costs as wildlife

- **Coastal Erosion**

Beach erosion, although a natural phenomenon, has accelerated in recent times and is attributable to numerous causes —mainly those of man's activities in various forms such as the clearance of mangroves, the reclamation of land from the sea, seawalls, the construction of piers, and the Dredging of sand offshore, all of which affect the littoral drift and the consequent shift and deposition of sand (BTB, 2011).

Coastal erosion is a phenomenon of loss of continental zone by the advance of the sea inside the continent, regardless of the origin of this phenomenon. The opposite process is called accretion and consists of the natural or artificial growth of the coastline by the contribution of sediments and materials. All beaches have erosion/accretion dynamics at different times of the year. Long-term studies (minimum 50 years) define the dominant process, and it can be determined whether the beaches are in erosion, accretion, or equilibrium.

According to MCCAP 2020, in an unpublished study by ANIDE (2019), in the period 1969-2017, net displacement magnitudes of erosion rates were presented on the Belizean coast (Table 6). This study showed severe erosion problems along the entire coast of Belize, where Districts like Corozal led rates of up to -2.61 m/year and beach losses of 109.50 meters in 50 years. Likewise, the Stann Creek district recorded beach growth zones of up to 80.55 m.

Table 6. Coastal erosion/accretion rate in Belize (1969-2017)

Municipality	Sites studied	Period	Years	Parameter	Erosion rate (m/y) (1969-2017)	Accretion rate (m/y) (1969-2017)	Net displacement (m) (1969-2017)
COROZAL	33	1969-2019	50	MEAN	-1.05	0.41	-38.39
				MAX	-0.20	0.66	29.91
				MIN	-2.61	0.18	-109.50
BELIZE	79	1969-2019	50	MEAN	-0.49	0.52	-5.41
				MAX	-0.02	1.26	62.93
				MIN	-2.28	0.02	-113.88
STANN CREEK	42	1969-2019	50	MEAN	-0.47	0.56	12.81
				MAX	-0.07	1.64	80.55
				MIN	-0.71	0.05	-35.60
TOLEDO	45	1969-2017	48	MEAN	-0.47	0.14	-14.59
				MAX	-0.01	0.31	15.07
				MIN	-1.33	0.01	-63.81

Negative values: Erosion processes.
Positive values: Accretion processes.

Source: ANIDE, 2019 cited by MCCAP, 2020

[108] Ministry of Agriculture, Forestry, Fisheries, the Environment and Sustainable Development, 2016. National Biodiversity Strategy and Action Plan. Belize, 2016-2020

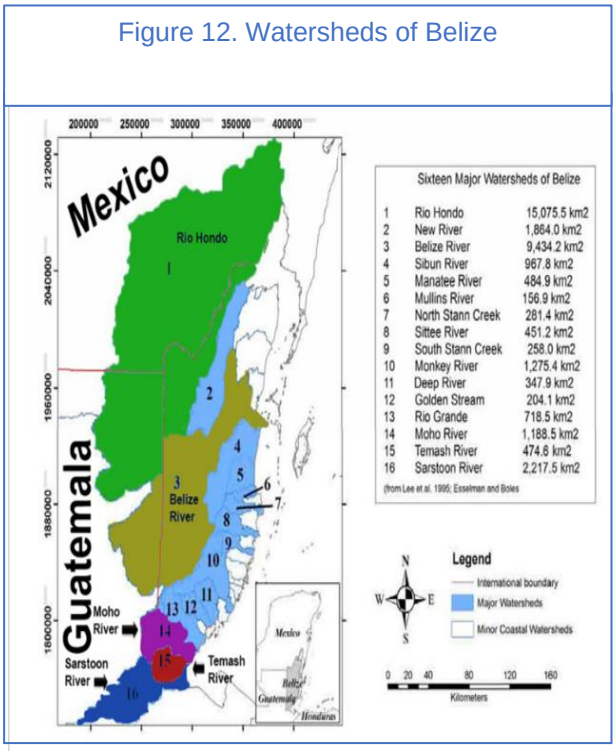
In the areas most affected by coastal erosion in Belize, the following were identified as probable causes of erosion (MCCAP,2020):

- Coastal roads.
- Blockage of river sediment input by storage dams.
- Inadequate coastal structures (piers, breakwaters, etc.) or carried out without studies of coastal dynamics.
- The result is that a beach is protected, and the problem is passed on to the neighbor.

5.1.5. Hydrology

Belize has 39 identified river basins, of which 16 are classified as primary and 23 as sub-basins[109] (Figure 12). Within the 16 primary basins, five transboundary basins are shared with Guatemala, and one (Rio Hondo) has significant portions draining both Guatemala and Mexico[110]. The transboundary basins that Belize has are: Belize River, Hondo River, Moho River, Temash River and Sarstoon River

Figure 12. Watersheds of Belize



Source: Land Information Center. Ministry of Natural Resources, Belize.

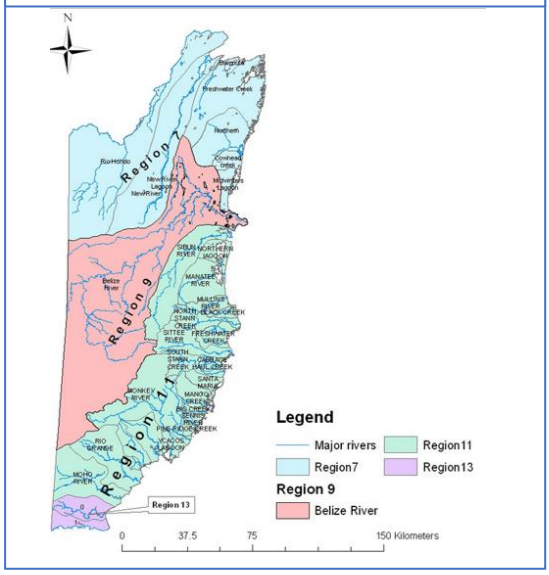
[109] GWP, (Global Water Partnership) et al., 2011. Situación de los recursos hídricos en centroamerica.
[110] GEF CReW 2015. Baseline Assessment Study on Wastewater Management Belize

Belize's five transboundary basins are part of the 276 transboundary basins globally (Wolf et al., 1999). This situation represents a crucial water supply and maintains vital ecosystems in 145 countries[111].

- **Water Regions of Belize and Groundwater**

The Hydrology Unit of the National Weather Service (NMHS) divides the country into four watershed regions (Figure 13), which are: Region 7 in the North; Region 9 in the West and the central corridor; Region 11, comprising the coastal plain and coastal slope, and Region 13, in the far south[112].

Figure 13. Belize Hydrological Regions

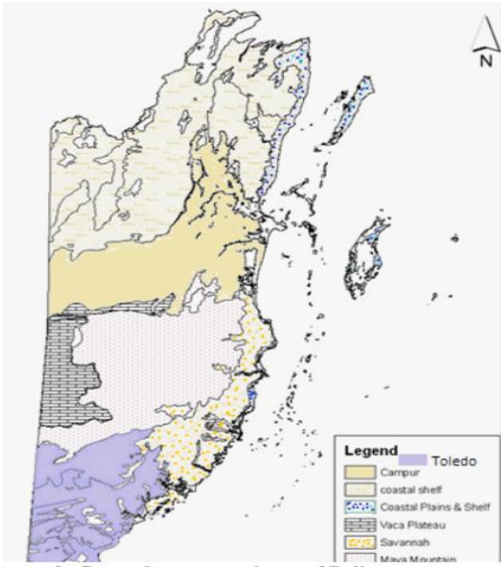


Source: National Meteorological Service,2009

Groundwater is one of the primary sources of water resources in rural Belize, where 95% of freshwater comes from underground deposits, generally extracted through manual pumps and rudimentary systems[113]. Belize's geology is predominantly limestone, except in the Maya Mountains, composed of igneous, metamorphic, and sedimentary rocks from 125-320 million years old (Buckalew et al. 1998). The primary groundwater provinces in Belize are (Buckalew et al. 1998): the Campur, the Coastal Shelf, Coastal Plain and Shelf, the Vaca Plateau, Savannah, and the Maya Mountain (Figure 14)

[111] WB (World Bank). 2016.Integrated management in transboundary basins and the role of Transboundary Basin Entities in the face of water stress.
[112] GWP, (Global Water Partnership) et al., 2011. Situación de los recursos hídricos en Centroamérica.
[113] GWP, (Global Water Partnership) et al., 2011. Situación de los recursos hídricos en Centroamérica.

Figure 14. Groundwater Provinces



Source: Buckalew, et al., US Army Corps of Engineers, 1998)

The Campur Province coincides with the outcrop of the Campur limestone north of the Maya Mountains extending eastward toward Belmopan and the coast and northward to the Coastal Plains & Shelf Province boundary.

The Vaca Plateau Province straddles the western border in the northern Cayo district and includes the western slopes of the Maya Mountains.

The Maya Mountains Province: is composed of late Carboniferous Permian volcanic material.

The Coastal Plain and Shelf Province includes Corozal and Orange Walk districts and the northeastern Belize district.

Among the main problems related to aquifers is groundwater contamination by leachate from urban solid waste, particularly handling and even hazardous waste. The aquifers are also exposed to the ingress of untreated wastewater by constructing latrines and wastewater injection facilities without complying with the regulations. Likewise, the leachate produced by rainwater and by the wastewater itself and untreated wastewater can easily reach the aquifer due to the high permeability of carbonate rocks, affecting the chemistry and bacteriological water quality[114]

5.1.6. Land-Water interface

- **Water Quality**

Coastal waters worldwide report a decline in water quality due to activities carried out on land, including vegetation removal, soil erosion, and fertilizer additions due to the expansion of agriculture and coastal urbanization[115]. Below are the main activities changing water quality:

[114] MCCAP, 2020. Preparation of the State of the Belize Coastal Zone Report 2014-2018

[115] MRE, HRI, Healthy Reef, 2012. Report Card for the Mesoamerican Reef and Evaluation of Ecosystem Health.

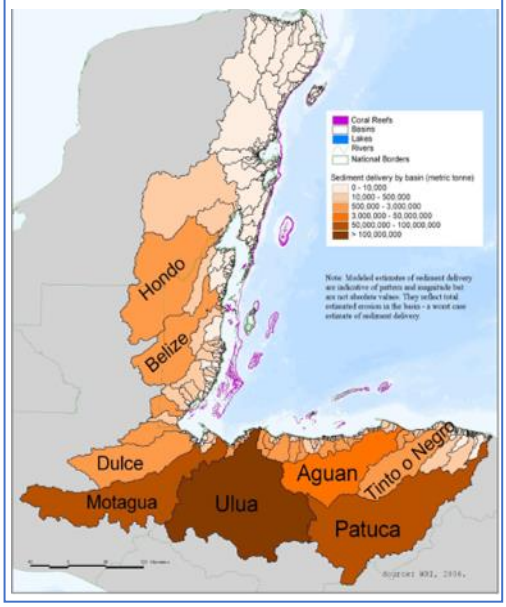
a. Sediments

The stability of beaches depends mainly on the availability of sediments. Sediment is loose sand, clay, silt, and other soil particles that eventually settle to the bottom of a body of water[116]. Some of the leading causes of sedimentation in the coastal zone of Belize are related to the following:

➢ River discharges

At the regional level of the 400 hydrological basins in the Mesoamerican Reef region, the Ulúa river basin in Honduras contributes the most significant amount of sediments, Nitrogen, and Phosphorus (Figure 15). Other significant rivers that transport sediments and nutrients in considerable quantities are the Patuca River (in Honduras), Belize (in Belize), and Río Tinto or Negro (in Honduras) [117].

Figure 15. Annual sediment delivery from MAR watersheds



Source: ICRAN, MAR, 2006

Most of the sediments and nutrients the watersheds deliver along the MAR originate in Honduras. The model suggests that more than 80% of the sediments originate in Honduras, while 17% of the deposit originates from Guatemala. Relatively smaller percentages come from Belize and Mexico. Honduras is also the largest source of nutrients (55% N and 60% P), while Guatemala contributes about a quarter of all N and P in these basins. Belize contributes 12-13% of N and P, while Mexico is estimated to contribute 5% of these nutrients from all modeled watersheds[118].

➢ Terrigenous sediments

Terrigenous sediments come from Belize's northern, central, southeastern, and southern hydrological regions. The deposits are derived from continental rocks, and river currents transport them to their discharge in the Caribbean Sea. Four sediment dispersal zones have been identified based on satellite images (Table 7), each providing similar amounts of sediment; the largest is the northern region with 532 km2 of dispersal surface[119].

[116] MCCAP, 2020. Preparation of the State of the Belize Coastal Zone Report 2014-2018
[117] ICRAN, MAR. 2016. http://pdf.wri.org/mar_exec_spanish.pdf
[118] ICRAN, MAR. 2016. http://pdf.wri.org/mar_exec_spanish.pdf
[119] MCCAP, 2020. Preparation of the State of the Belize Coastal Zone Report 2014-2018

Table 7. Ocean dispersion sediment areas in Belize

Dispersion sediment area	Hydrologic region	Creeks and Rivers	Ocean dispersion area (km^2)
1	North	Río Hondo, Blue Creek, Chan Chich River, Booth River, New River, Fresh Water Creek, Northern River.	532
2	Central	Belize River, Mopan River, Macal River, Cha Stream, Barton Creek, Sibun River, Manatee River.	495
3	Southeast	Mullins River, Big Creek North, North Stann Creek, Fresh Water Creek, Sittee River, Cabbage Haul Creek, South Stann Creek, Big Creek South, Mango Creek, Plantation Creek, Sennis River, Monkey River, Deep River.	521
4	South	Golden Stream, Middle River, Rio Grande, Joe Taylor Creek, Moho River, Temas River, Sarstoon River	466

Source: ANIDE, 2019 cited by MCCAP, 2020

➢ Carbonate sediments

The carbonate sediments come from the destruction of reefs and atolls by waves and organisms that develop at the bottom of the continental carbonate shelf. The highest concentration is in the pre-reef zone (the one facing the open sea), where more than 90% of the sediment is detrital carbonate. The detritus decreases towards the post-reef zone (60%), reaching 30% in the interior lagoons[120].

▪ Other sediments

All beaches have coastal dynamics with seasons of accumulation and loss of sediments, closely related to the marine and continental climate. Over time the beaches stabilize and preserve. The stability of beaches is due to the phenomena of a continuous supply of sediments mainly from rivers, which can be diminished by civil constructions in the coastal zone, such as roads, railways, and bridges, as well as by the damming of river flows in hydraulic works, retaining sediments[121]. Some other activities that cause sedimentation problems are related to the following:

- Infrastructure works include roads and water storage dams where terrestrial sediments are retained in the continental zone[122].
- Coastal Dredging is one of the most significant contributors to coral reef damage from sedimentation. Also, they can come from soil erosion inland; help from wind and water carries these particles to rivers, lakes, streams, and finally in the ocean, where they settle, often along with associated pollutants like metals and pesticides[123].

[120] MCCAP, 2020. Preparation of the State of the Belize Coastal Zone Report 2014-2018
[121] MCCAP, 2020. Preparation of the State of the Belize Coastal Zone Report 2014-2018
[122] MCCAP, 2020. Preparation of the State of the Belize Coastal Zone Report 2014-2018
[123] MRE, HRI, Healthy Reef, 2012. Report Card for the Mesoamerican Reef and Evaluation of Ecosystem Health.

- The drag of water due to soil erosion that rainwater runoff water rags the agrochemicals from the springs into the rivers after storms, and they continue their journey to the sea, increasing sediment load and pesticides[124].

b. Saline intrusion

Saline intrusion is the phenomenon that occurs in coastal areas due to the formation of a "saltwater wedge" from the oceanic water that penetrates the continent and is located below the freshwater aquifer. It is a phenomenon of difference in water density, where the saltier water finds, the lower, the less dense water, the freshwater, which explains the frequent stratification of the aquifer[125].

The phenomenon of saline intrusion throughout the Yucatan peninsula is formed by intensely dissolved carbonate rocks and karst characterized by a very high permeability. The impact of climate change on groundwater is often manifested in changes in recharge, base flow, seawater intrusion from coastal aquifers, or increased evapotranspiration under dry conditions and high temperatures. In Belize, the characteristic of coastal aquifers is that they are stratified (where the usable fresh water is located at shallow depths and under which a layer of saline water is located). However, changes in groundwater level, storage, and quality are difficult to determine in Belize due to a lack of information or data availability[126].

5.1.7. Coastal Waters

a. Nutrient Overloading Pollution

The presence of nutrients (phosphorus- nitrogen) in coastal waters is due to the transport of these elements from the land through streams and rivers. It drains so that the highest concentrations can be located at the sites of the mouths or discharges. The constant introduction of nutrients and their accumulation in coastal waters causes eutrophication processes (decreased oxygen in the water column) that negatively impact the habitats in the area (Department of the Environment. Ministry of Natural Resources and the Environment, 2008, p. 60; Oelsner and Stets, 2019, p. 1226 mentioned by MCCAP,2020).

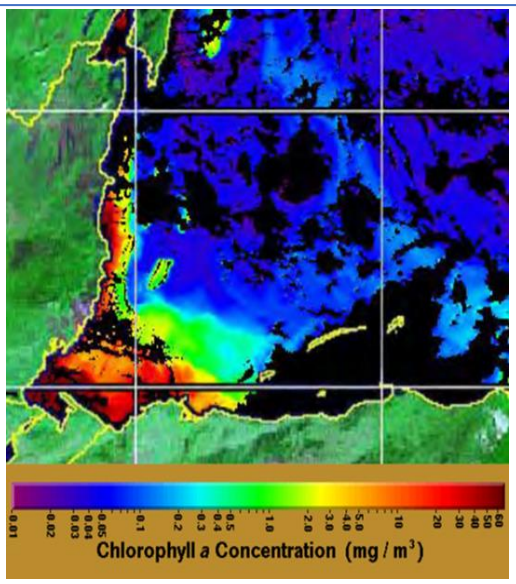
The agriculture activities in watersheds draining adjacent to the Mesoamerican Reef System, which includes Belize Barrier Reef, contribute to increased sediment and pollutants from fertilizer and pesticide application. Increased nutrients from fertilizer runoff promote algae growth at the expense of coral reefs. Runoff of pesticides and other chemicals can be toxic to coral and fish[127].

[124] Belize Fisheries Department, (n.d). Management Plan Sapodilla Cayes Marine Reserve 2011 – 2016
[125] MCCAP, 2020. Preparation of the State of the Belize Coastal Zone Report 2014-2018
[126] CCCC, 2021. National Adaptation Planning for Integrated Water Resources Management in Belize
[127] WR, ICRAN, (s.f.). Análisis de Cuencas Hidrológicas en el Arrecife Mesoamericano

An excess of nutrients can cause algal blooms, which negatively impacts other organisms by producing natural toxins, competition, shading, and eventually oxygen depletion, as the plankton eventually die and fall to the seabed, where they decompose and use up available oxygen. This deadly cycle played out in the summer of 2011 in Belize when an unprecedented phytoplankton bloom persisted for several months, drastically reducing water clarity and eventually leading to isolated areas of anoxia[128].

Figure 16 presents MODIS satellite images of ocean color illustrating the extent of the unprecedented phytoplankton bloom. Coral reefs are typically found in very low chlorophyll, blue and purple areas, with clean, apparent water features where reefs usually prosper. Red areas indicate very high chlorophyll (phytoplankton indicator), generally confined to river mouths and areas of natural upwelling[129].

Figure 16. SeaWiFS Chlorophyll



Source: July 18, 2011, MODI cited by MRE, HRI,2012

b. Marine Pollution

Pollution is an anthropogenic process from human activities such as industrialization or population density polluting the marine and coastal environment. Pollutants flow through direct discharges of effluents or solid wastes from land, human activities in the sea, and runoff from rivers and rains. The relative contribution of each pathway to marine pollution varies greatly depending on the substance and concentration, which, coupled with the lack of data and the complexity of natural processes, especially in the boundaries of land, atmosphere, and the sea, make quantitative estimates of these processes complex and uncertain (MCCAP,2020).

The primary cause of marine pollution in coastal areas is the waste products produced by human activities on land. These waste products include municipal, industrial, and agricultural runoff and by-products entering the coastal and marine environment through the many waterways draining the coast. Once in the coastal zone, it can no longer be controlled and threatens the survival of sensitive and highly productive coastal and estuarine ecosystems.

According to CZMAI, 2016, the following are the significant concerns that contribute to marine pollution in Belize:

- ☞ Population centers in Belize have inferior sewage systems, and public awareness of pollution on the effects of open latrines is low or non-existent.

[128] MRE, HRI, Healthy Reef, 2012. Report Card for the Mesoamerican Reef and Evaluation of Ecosystem Health.

[129] MRE, HRI, Healthy Reef, 2012. Report Card for the Mesoamerican Reef and Evaluation of Ecosystem Health.

- Cruise tourism constitutes most of the tourism sector in Belize (BTB 2008), where many people visit coastal areas in short shifts. This situation increases sewage production, development activity, and solid waste.

- Belize is historically rural, with the agricultural industry contributing significantly to GDP. Land use in this industry is widespread, and cultivation practices include using fertilizers and pesticides to increase crop yields (Fernández 2002). Consequently, the use of such agrochemicals leads to the degradation of nutrients and sediments loading in the coastal environment

- Another potential impact of contamination is oil exploration and extraction, where Belize currently does not have the capacity. to deal with a similar incident if it occurred in the territorial waters of Belize (NBSAP, 2016).

c. Dredging

According to CZMAI, 2016 dredging is considered one of the main stressors for marine ecosystems associated with development in coastal areas. The activity generally consists of the extraction of funds sediments from one area for disposal in another, ranging from the opening of navigation channels to recovery beaches. It has been shown that once the sediment is removed, it acquires an average of 10 to 15 years for the area to recover and regain its biological complexity (Newell et al., 2008, cited by CZMAI,2016). Although this activity is considered highly disruptive to coastal and marine ecosystems, specific actions must occur within the coastal zone. These activities include the maintenance of port facilities and maritime lanes. In some areas, filling or reclaiming land for development is necessary. In these instances, relevant authorities should take the proper precautions and follow best practices to minimize the effects on the environment[130]

5.1.8. Air Pollution

A measure of PM2.5 in outdoor ambient air quality is used to determine levels of air pollution. PM2.5 refers to a particulate matter measuring less than 2.5 micrometers in aerodynamic diameter. These particulates can travel deep within the respiratory system, causing several adverse health issues, such as stroke, heart disease, lung cancer, and chronic and acute respiratory diseases, including asthma. The World Health Organization's (WHO) Air Quality Guideline warns that exposure to more than 10 μg/m of PM2.5 annually over the long term can cause cardiopulmonary disease and lung cancer.

In 2017, the mean annual exposure to PM2.5 in Belize was 23.012 μg/m3, well above the recommended concentration. Other disease-causing air pollutants include carbon monoxide, nitrogen oxides, sulfur oxides, volatile organic compounds (VOCs), nitrates, free radicals, heavy metals, pesticides, and industrial chemicals (Cited by the Ministry of Human Development, 2019). According to PAHO, 2016, the types of Air Pollutants are Sulfur dioxide, Nitrogen dioxide, Carbon monoxide, Volatile Organic Compounds (VOC), Carbon particles, and non-carburetors primary particles.

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

Air pollution in Belize is related to increased health problems where agrochemical contamination by aerial spraying has been detected in some agricultural activities (Kaiser, 2011, mentioned by NBSAP, 2016). Likewise, other activities such as docking and moving cruise ships are a source of air and noise pollution that negatively impact the environment's quality.

- **Refrigerant Emissions**

Belize's energy sector profile shows greenhouse gas emissions from sources such as electricity generation; land, local air, and sea transportation; biomass consumption; and others. Gases emitted within the Energy sector include carbon dioxide, methane, and nitrous oxide[131].

According to the Fourth National Inventory of Greenhouse Gases, the industrial sector's emissions continue to be emitted by the same sources as those of the previous inventories. Industry activities continue to increase as Belize's economic development progresses slowly. For the 2012-2017 period under review, the use of R-134a increased by twenty-six and seven-tenths (26.7) metric tons, representing an increase of one hundred and forty percent (140%) in 2012 but decreased by 27.6% in 2017. Regarding CH2FCF3 gas, there was an increase in the consumption of nineteen (19) metric tons or sixty-seven percent (67%) compared to 2012, but it decreased by 21.6% in 2017. As a result, emissions increased by 13 GgCO2 eq or thirty percent (30%) from 2012 to 2017. This
can be attributed to the significant increase in vehicles in the country and buildings equipped with air conditioning units.

- **Maritime traffic**

According to information from CZMAI 2016, due to its location in Central America and the Caribbean, Belizean waters have become a site for several maritime activities, including shipping and cruise tourism. Water taxi routes, boat lanes, and cruise ships traverse nearly Belize's coastal waters. With almost 1,000 cays within territorial waters, recreational boating and travel to and from the cays are also integral to Belizean life.

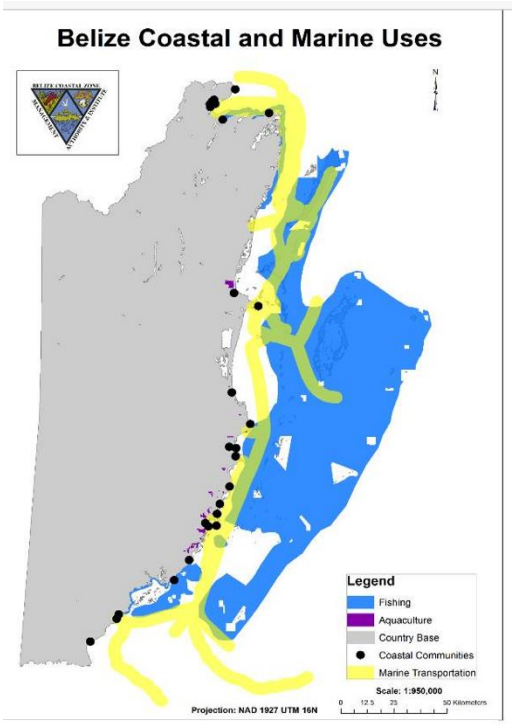
Belize trades to and from Belize through the Port of Belize and Big Creek. Typically, the port facilitates the trade of fruits, vegetables, and crude oil, while all other items pass through the Port of Belize. Most of the fuel oil is pumped into the PUMA Belize reservoirs (located near the Port of Belize) from transport vessels at anchor. Tour operators cater to both overnight and cruise ship tourists arriving in Belize. Tenders transport tourists visiting the Mayan sites or other inland attractions from the cruise ships to the Tourist Village in Belize City. About 60% of overnight tourists visit the marine environment. The vessels used to serve the tourism sector consume petroleum derivatives such as diesel and gasoline[132].

The sea transport routes are presented in Figure 17.

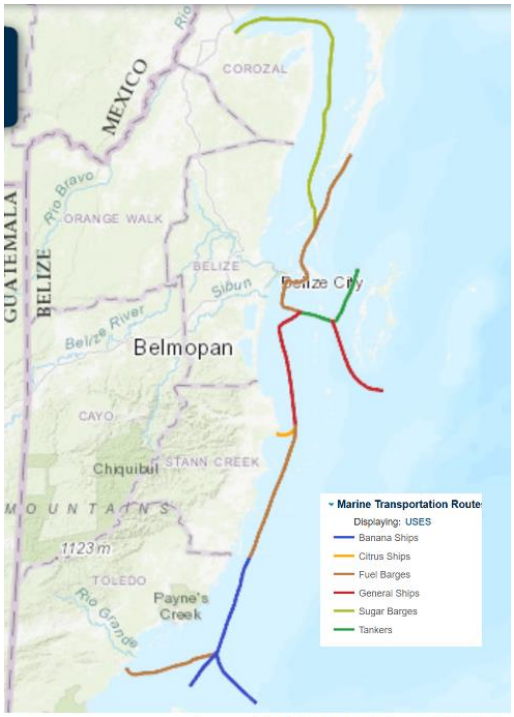
131 https://unfccc.int/sites/default/files/resource/Fourth%20National%20GHG%20Inventory%20rev%20Aug42020.pdf

132 https://unfccc.int/sites/default/files/resource/Fourth%20National%20GHG%20Inventory%20rev%20Aug42020.pdf

Figure 17. Marine transportation route



Source: CZMAI 2016



Source:http://www.coastalzonebelize.org

Several water taxi operators are serving the Belizean population throughout Belize. The main routes run from Belize City to the islands of San Pedro and Caye Caulker. Daily trips also run from San Pedro to Corozal and Chetumal, Quintana Roo, Mexico. Belize also has a fishing fleet of around 600 vessels that operate year-round. Many are wooden candle boats from 18 to 30 feet with outboard motors. The rest of the fleet is mainly fiberglass boats with outboard motors ranging from 23 to 28 feet. These ships make daily or three-day trips from the mainland to the three atolls (Glovers Reef, Turneffe Islands, and Lighthouse Reef) and the keys. The fishing fleet consumes mainly regular gasoline[133].

The tourism and fishing industries have driven the development of fleets of water taxis, charter boats, and fishing boats powered by gasoline and diesel engines. The numbers are such that this sub-sector adds to the emission of GHG gases in Belize[134].

5.1.9. Noise[135]

The Noise Abatement Regulations, Part XI, of the Environmental Protection Act, CAP. 328 of the Laws of Belize (Rev. Ed. 2011) provides for noise pollution regulation in Belize. High noise levels can harm a person's health, causing hearing loss and other stress-related symptoms.

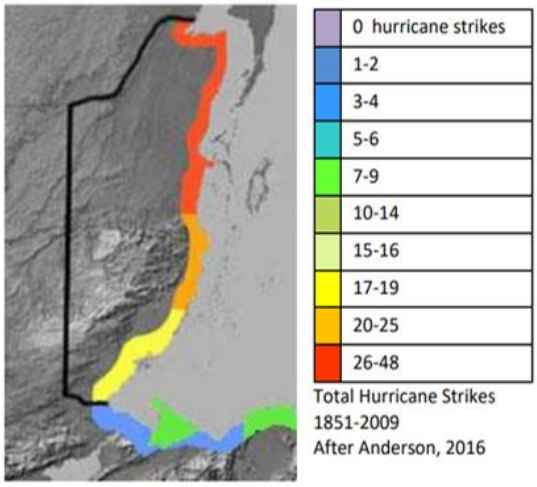
133 https://unfccc.int/sites/default/files/resource/Fourth%20National%20GHG%20Inventory%20rev%20Aug42020.pdf
134 https://unfccc.int/sites/default/files/resource/Fourth%20National%20GHG%20Inventory%20rev%20Aug42020.pdf
135 Ministry of Human Development, 2019. Community Action for Public Safety II

The daytime permittable noise level in residential areas is 60 decibels (dB), while the nighttime (6 PM to 6 AM) allowed level is 45 dB. Maximum daytime levels in industrial/commercial areas should not exceed 90 dB. According to the WHO, noise levels at 80 dB can temporarily cause hearing loss, while 100 dB can cause complete hearing loss. A standard older model passenger vehicle may emit noise up to 82 dB, while cars built from 2016 onward may emit noise up to 74 dB. Noise from firecrackers may exceed 145 dB.

5.1.10. Disasters

Belize is highly susceptible to natural disasters, such as hurricanes, tropical storms, floods, and droughts, which affect the country regularly. Numerous devastating tropical depressions, hurricanes, tropical storms, floods, droughts, and hurricanes have marked the country's history[136]. The country has paid a high price for atmospheric disasters in recent years since it is within the Tropical Atlantic route of Cyclones[137]. Tropical storms affect Belize every year between June and November. Originating in the Atlantic Ocean over warm, tropical waters, these storms are non-frontal, developing highly organized circulations, and ranging in scale from tropical depressions and tropical storms (with sustained wind speed < 74 mph) to hurricanes (with sustained wind speed > 74 mph). They generally bring extreme weather conditions – heavy rains and destructive winds. While many hurricanes have very focused paths of destruction, their effects are wide-ranging, particularly in the marine and coastal environments[138].

Figure 18. Frecuency of huricanes in Belize



A review of historical data from the last 107 years reveals that Belize is located along the curved path of the Cape Verde Islands hurricanes and along the way of the western Caribbean storms (GEF, 2017). Nearly 45% of the population living at low elevations are particularly vulnerable to storm surges and coastal flooding. Figure 18 shows the frequency of hurricanes in Belize, between 1851-2009, after Anderson 2016. This figure highlighted that Belize's northern and central areas had the highest events frequency. Table 8 shows the principal disasters in Belize.

[136] 2019, Green Climate Fund. Consideration of funding proposals - Addendum III.
[137] GEF, 2017. Belize Technology needs assessment mitigation
[138] Belize Fisheries Department, (n.d). Management Plan South Water Caye Marine Reserve 2019 – 2023

Table 8. Principal natural disasters events in Belize

Name of the Event	Category	Date & Year	Impacts
Hattie	4	31 Oct. 1961	Land fall was just south of Belize City, generating a 15 feet storm surge. Destroyed forests and generated extreme flood conditions.
Greta	3	19 Sep. 1978	Made landfall near Dangriga Town; produced torrential rainfall in the Maya Mountains and northern Belize. Losses US $25 million.
Hurricane Mitch	5	1998	Dangerous Hurricane Mitch threaten Belize, powerful wave actions degraded beach. Serious coral bleaching and die-off on reefs. Approximately 30,000 persons evacuated.
Hurricane Keith	4	29 Sep. – 2 Oct., 2000	Powerful Hurricane Keith impacted San Pedro, Ambergris with a storm surge of 4 – 5 feet, and caused extensive beach erosion. Damage: US$ 204.8 million.
Tropical Storm Arthur		26 May – 2 June 2010	Produce flooding over central and northern Belize. Damage: US$ 42.8 million.
Tropical Depression 16		Oct-10	Torrential rainfall and extensive floods in the Belize River Valley and the project zone that inundated several sections of the Philip Goldson Highway (PGHW). Damage: US$ 1.4 million.
Richard	1	Oct. 24,2010	Broken and fallen tress cluttered the stream channels, and the dry matter became fuel for widespread bush fire in the very active 2011 Fire Season. Damage: US$ 24.6 million.
Earl	1	3-Aug-16	Hurricane Earl made landfall over Southern Belize district, producing a storm surge of 2 – 3 feet and widespread beach erosion and localized coastal flooding. Damage: US$ 56.8 million.
Lisa	1	5-Nov-22	This hurricane affected the regions of Belize and Cayo Cayo more strongly.

(Source: CRRE, 2013; NMS, 2016; NOAA, 2016)

Hurricane Lisa made landfall at 5:20 p.m. m. EDT Wednesday, November 2, about 10 miles southwest of Belize City, forcing many people to shelter from high winds and the threat of flooding. At landfall, Lisa was a Category 1 hurricane with 85 mph winds. Lisa crossed the mainland of Belize, approximately 5 miles south of Belize City. This event meant that the powerful northeast quadrant of the hurricane pounded the Belize District relentlessly and relentlessly for over two hours. This system brought heavy rains into the country, causing flooding in low-lying and flood-prone areas. According to the Initial NEMO Situation Assessment Report issued Nov 4, Rain totals of 4-6 inches with local amounts up to 10 inches were reported throughout Belize. Lisa was accompanied by a storm surge that raised water levels between 4 and 7 feet above normal tidal levels in areas of overland flow near and north of the center of the Lisa along the coast of Belize. Hurricane Lisa moved in a westerly direction through the country's center, causing damage to Cayo District as well before it left Belize. According to Belize City Mayor Bernard Wagner, twelve shelters in Belize City opened from noon local time on Wednesday. Most of the shelters were occupied and staffed by public officers[139].

The Mesoamerican reef system was affected when Lisa struck Turneffe Atoll in the Caribbean Sea off the coast of Belize as a Category 1 storm on November 2, 2022. The event triggered a $175,000 payment to fund recovery and immediate reef restoration. The parametric product was developed by the Mesoamerican Reef Fund (MAR Fund) and WTW's Climate and

[139] IFRC, Belize Tropical Storm Lisa 2022

Resilience Hub, with the policy backed by AXA Climate and Munich Re and placed by WTW's Alternative Risk Transfer team[140].

According to Usher (2023), who surveyed a sample of 200 fishermen in the six (6) districts of Belize between November and December 2022, significant losses from Hurricane Lisa related to damage and loss of gear and equipment. According to respondents, 19% reported losses of "tools and equipment" (excluding boats and engines), and 16.5% reported damage related to fishing boats (9%), engine damage (6%), loss of fishing boats (2%) and engine losses (2%).

Due to the geographical location of Belize, the country is susceptible to the effect of various natural hazards caused by phenomena such as storms and hurricanes, whose frequency, intensity, and duration have forced the government to establish an agency called the National Emergency Management Organization (NEMO). The NEMO has ten coordination districts and three regional coordination through which natural disasters are managed. During the hurricane season, monitoring the condition of the marine climate is very important if a storm that goes to the coast exceeds a certain intensity and magnitude (MCCAP,2020).

5.1.11. Climate Change

As a small island developing state with a large, low-lying coastal area, Belize is vulnerable to the adverse impacts of climate change. The value of ecosystem services generated by coral reefs and mangroves was estimated to contribute between 15% and 22% of the GDP in Belize (in the range of US$395–559 million per year) (WRI, 2008). Of the ecosystem services, tourism accounted for more than 15% of GDP by providing a large amount of foreign exchange earnings and employment. Given Belize's location and vulnerability to climate change, an effective way to adapt was by promoting adaptation measures based on ecosystems that strengthen the resilience of the reef and associated habitats[141].

The Belize Barrier Reef was classified as one of the marine hotspots with abundant globally and locally significant biodiversity—induced climate change destabilization of the barrier reef ecosystem, affecting the livelihoods of coastal communities. Sea rise- surface temperatures and intensified coral bleaching caused declines in fish populations, endangering the livelihoods of people who depended on capture fisheries. The Belize Barrier Reef provided resources for fishing and tourism and sheltered the country's long coastline from high-speed winds, which caused erosion and coastal damage. On the Belize Barrier Reef, Turneffe Atoll Marine Reserve, the South Water Caye Marine Reserve, and the Corozal Bay Wildlife Sanctuary were targeted by the project due to their criticality in terms of the integrity and connectivity of marine ecosystems and climate impacts[142]

According to GCF,2019, Belize is considered among the most vulnerable countries regarding climate. Two detailed measurements of individual countries' vulnerability to climate threats have been made: From 1996-2015, Belize was ranked 26th out of 181 countries in the Global Climate

[140] https://resilience.iii.org/resilience-blog/hurricanes/hurricane-lisas-belize-landfall-triggered-parametric-payout-for-coral-reef-protection/
[141] https://documents1.worldbank.org/curated/en/158711625019941733/pdf/Belize-BZ-Marine-Conserv-Climate-Adaptation.pdf
[142] https://documents1.worldbank.org/curated/en/158711625019941733/pdf/Belize-BZ-Marine-Conserv-Climate-Adaptation.pdf

Risk Index (CRI) prepared by the NGO Germanwatch in Bonn[143]. The CRI estimates the average annual losses due to climate-related events to be approximately US$57 million, representing 2.87% of GDP. The University of Notre Dame's Global Adaptation Index (GAI) rates Belize's adaptive capacity at 121 out of 181 countries[144]. "Belize needs investment and innovations to improve readiness and a great urgency for action." Conversely, Belize is the 56th most vulnerable country and the 62nd least ready country," with the two worst scores being in the projected change of cereal yields and agricultural capacity where the country denotes essential vulnerabilities in the food sector, affecting food security, nutrition, and livelihoods[145].

- **Coastal zone**

The coast comprises the interface between land and sea. The coast, therefore, represents a highly dynamic nexus between land and sea, which is adjusting over time to a range of drivers, including Climate Change, sea level rise, and storm surges[146].

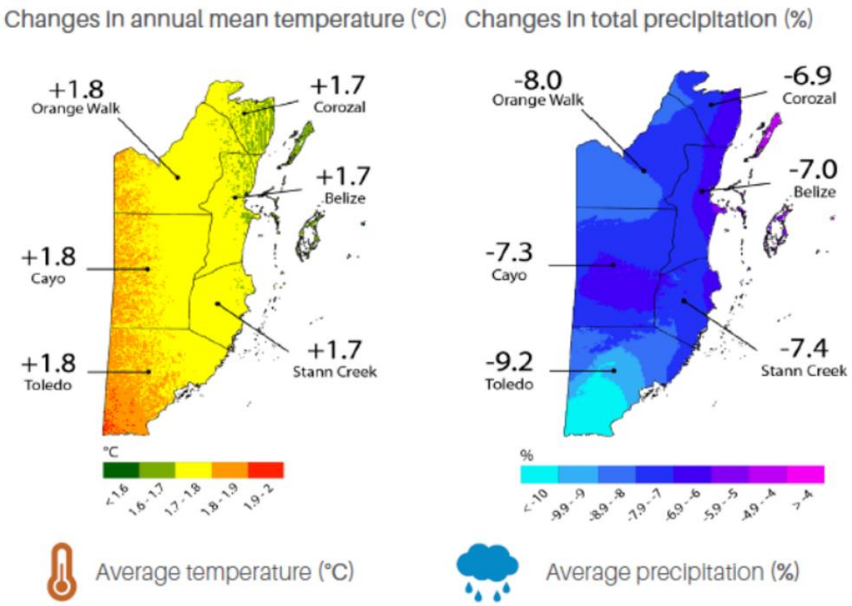
Climate Change impacts, such as projected increases in sea surface temperatures, salinity, pH, sea level, and the intensity of weather-induced tropical cyclones and storm surges, will impact coastal ecosystems and economic activities in the coastal zone of Belize. Delicate marine ecosystems, such as seagrass meadows, mangroves, and Coral reefs that are directly dependent on climatic conditions for their distribution, function, and growth, will be affected by global climate change[147]. Likewise, changes in climatic conditions can lead to the degradation of these already-threatened ecosystems (Clarke et al., 2013, mentioned by NCCO,2016).

The IPCC's 2050 projections for Central America predict increasing temperatures causing increasing evaporation losses, decreasing precipitation, shorter rainy seasons and longer dry seasons, increased frequency and intensity of heavy rain events causing rapid runoff or flash floods with consequently increasing erosion, more intense hurricanes, and a general rise in extreme events like droughts and floods. The expected decrease in precipitation, increases in temperature, and less predictable seasonal weather patterns will unequivocally hurt the agricultural production cycle and food security. Prolonged dry seasons have already resulted in damaging droughts, and extreme rainfall events have resulted in flash flooding that has wiped out subsistence crops and increased runoff and erosion. The expected increase in the intensity of hurricanes will lead to them traveling further inland, with impacts on agriculture, which is a decisive factor in the Belizean economy (Kongsager, R. 2017.)

According to Belize's Third National Communication to the UNFCC (2016), an increase in air temperature ranging from 2°C - 4°C is projected by 2100 for Belize. Similarly, a general decrease in annual rainfall of about 10% is projected by 2100. Figure 19 shows the projected Changes in Temperature and Precipitation in Belize by 2050

[143] https://germanwatch.org/de/download/16411.pd mentioned by GCF, 2019.
[144] https://gain.nd.edu/our-work/country-index/ mentioned by GCF, 2019
[145] GCF, IFAD, 2019. Consideration of funding proposal.Addendum III.
[146] NCCO, 2016. Belize´s third National Communication to the United Nations Framework Convention on Climate Change.
[147] NCCO, 2016. Belize´s third National Communication to the United Nations Framework Convention on Climate Change.

Figure 19. Projected Changes in temperature and Precipitation in Belize by 2050



Source: CIAT: World Bank. 2018 mentioned by NCCO,2016

Agriculture in the coastal zone will also be vulnerable to the changing climate, sea level rise, and storm surges. Generally, higher temperatures and lower precipitation are expected to be among the significant changes associated with Climate Change projections for Belize. Therefore, crops in warmer temperatures, such as rice, will thrive under Climate Change conditions. However, for more economically essential crops such as sugar cane and citrus, a decrease in precipitation will decrease yields leading to a reduction in export income[148].

Other sectors that will be vulnerable to future Climate Change, sea level rise, and storm surges, via direct and indirect impacts are Fishing, tourism, and agriculture (Singh et al., 2014, mentioned by NCCO,2016).

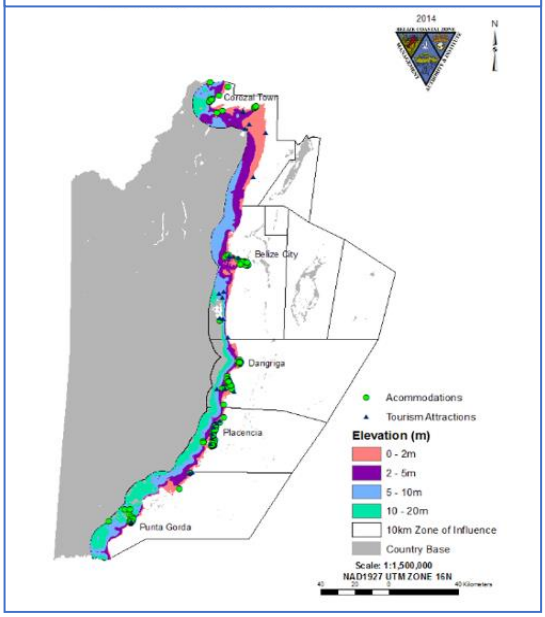
- **Climate Change Impacts on Coastal Tourism facilities**

Climate Change and climate-driven sea-level rise will most likely have essential and severe impacts on the tourism industry of Belize. Increases in air temperature of 2- 4°C towards the end of the century may make conditions unbearable, especially for the elder retired tourist population that makes up the majority of tourists visiting the country. Precipitation variations will likely lead to extreme conditions such as increasing drought in the dry season, torrential rains and flooding in the rainy season, and water and food shortages or higher prices of imported foods. Tropical storms and hurricanes compounded by sea-level rise are also likely to increase in numbers and intensity. Apart from the flooding and erosion of recreational beaches, they may also cause flooding and damage transport and other infrastructure.[149]

[148] NCCO, 2016. Belize´s third National Communication to the United Nations Framework Convention on Climate Change
[149] NCCO, 2016. Belize´s third National Communication to the United Nations Framework Convention on Climate Change.

Sea level rise and storm surges, by-products of Climate Change, would negatively impact Belize's tourism industry[150]. A changing climate and sea-level rise would result in losing beaches, properties, and public infrastructure, making Belize less attractive as a tourist destination (Figure 20). The loss of beaches and coastline due to erosion, inundation, coastal flooding, and loss of tourism infrastructure and natural and cultural heritage would reduce the amenity value for coastal users (IPCC AR4, 2007, cited by WWF et al., 2014).

Figure 20. Coastal tourist facilities vulnerable to relative sea-level rise



Source: BTFS, CATHALAC, INEGI, IGN-Guatemala, LIC, UK Ordinance Survey, USGS, 2014

- **Climate Change Impacts on Fisheries**

Climate Change and sea-level rise in Belize's fishing sector will be indirect. Fisheries require healthy fish habitats to survive and reproduce. Habitats in Belize include aquatic habitats, namely mangroves, coral reefs, and seagrasses, where fish spawn, breed, feed, or grow to maturity. Sea level rise could cause these habitats' partial or total disappearance due to flooding. On the other hand, increased water temperatures near the surface and increased acidification can cause massive discoloration and dieback of coral reefs[151].

The ecosystems on which the inland fisheries depend would be influenced by climate change through altered temperatures, flow regimes, and water levels. Belize, however, lies in the subtropical geographical belt where its climate is governed more by variations in rainfall than temperature, evaporation, wind, or humidity (Esselman and Boles, 2001). Changes in precipitation and water availability may result in pond/lake levels and altered distribution and abundance of fish stocks (FAO, 2011).

Consequences of Climate Change on the Marine Environment are[152]:

- Reduced health and possible loss of coral reef as a result of increasing water temperature, ocean acidification, and increased storm impacts
- Declines in lobster, conch, and finfish as reef health declines and ocean acidification increases

[150] NCCO, 2016. Belize´s third National Communication to the United Nations Framework Convention on Climate Change.
[151] NCCO, 2016. Belize´s third National Communication to the United Nations Framework Convention on Climate Change
[152] GEF, et a., 2016. National Biodiversity Strategy and Action Plan

- Reduced income for the fishing industry and individual fishermen
- Reduced tourism revenues from diving and snorkeling as the aesthetic appeal of the reef decreases
- Loss of sandy beaches, as sea level rises, storm activity increases, and ocean acidification reduces sand production
- Increasing potential dredging activity for the landfill as rising sea inundates Cayes and coastline
- Reduced income from tourism and reduced viable employment opportunities, increasing fishing pressures as tour guides switch back to Fishing.
- Increase in illegal fishing practices as personal incomes decline.
- Long-term loss of coastal protection from barrier reefs and atolls if reef growth can't keep up with sea-level rise.
- The movement of coastal communities inland increases pressure on inland ecosystems.

5.2. Biotic Environment

Belize is located in the Mesoamerican biodiversity hotspot and is characterized by various terrestrial, marine, and freshwater ecosystems[153]. The country has been more classified explicitly as having eighty-five (85) terrestrial ecosystems, fifteen (15) marine ecosystems, and forty-three (43) different river ecosystems[154]. The country is recognized as having global Biodiversity where there is a continuous dependency on natural resources[155].

Belize has long been considered a conservation leader within the Mesoamerican region, retaining close to 60% of its natural and intact forest cover, with approximately 35.8% of Belize's land territory within protected areas. While 28% of territorial waters are under marine protective management, only 7.6% are through legally established replenishment zones. Running parallel to the coast, Belize's barrier reef, recognized as a Belize World Heritage Site, is among the valuable resources for traditional fishing communities and the sea-based tourism industry (BFD et al., 2019).

5.2.1. International recognition

The region's largest contiguous block of intact forest and the most crucial barrier reef in the Western Hemisphere stand out, with 19.8% of protected territorial waters (Table 9)[156].

[153] NCCO, 2016. Belize´s third National Communication to the United Nations Framework Convention on Climate Change.
[154] NCCO, 2016. Belize´s third National Communication to the United Nations Framework Convention on Climate Change.
[155] Ministry of Agriculture, Forestry, Fisheries, the Environment and Sustainable Development, Belize, et al., 2016. National Biodiversity Strategy and Action Plan 2016-2020.
[156] NCCO, 2016. Belize´s third National Communication to the United Nations Framework Convention on Climate Change.

Table 9. Sites of international recognition in the System of Protected Areas

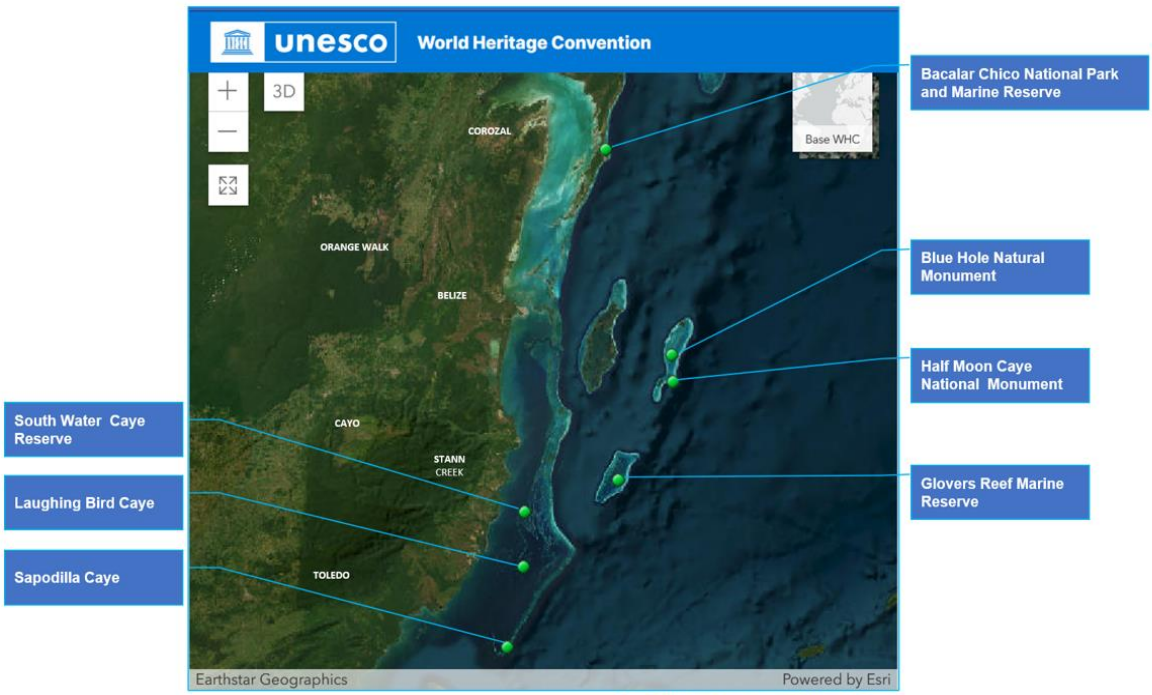
The protected areas system includes[157]	
Two large forest nodes, regionally crucial for biodiversity conservation	Maya Mountains Massif, and
	Part of the Selva Maya
Two RAMSAR sites declared their global importance in the protection of wetlands:	Crooked Tree Wildlife Sanctuary
	Sarstoon-Temash National Park
The Belize Barrier Reef is a biodiversity hotspot that includes:	A globally significant network of marine protected areas
	Seven marine protected areas form Belize's World Heritage Site.
	Twelve protected spawning aggregation sites, critical for regional fisheries viability

Source: NPAS, secretariat, 2015

- **The Belize Barrier Reef Reserve System World Heritage Site**

The Belize Barrier Reef Reserve System (BBRRS) was inscribed as a UNESCO World Heritage Site in 1996 *"...in recognition of the uniqueness of their contribution to the Belizean reef system, the largest and possibly the least impacted reef complex in the Atlantic-Caribbean area."* (BFD et al., 2019). The BBRRS is comprised of seven protected areas. (Figure 21)

Figure 21. Belize Barrier Reef Reserve System



Source: Compilation 2023 based on information supplied by https://whc.unesco.org/en/list/764/maps/

[157] NPAS, Ministry of Agriculture, Forestry, Fisheries, the Environment and Sustainable Development, Belize, et al., 2015. National Protected Areas System Plan

The largest reef complex in the Atlantic-Caribbean region represents the world's second-largest reef system. The seven protected areas that constitute the BBRRS comprise 12% of the entire Reef Complex[158]. Table 10 shows the name and coordinates of each protected area.

Table 10. Protected Areas of the BBRRS

ID	Name & Location	State Party	Coordinates	Property	Buffer Zone
764-001	Bacalar Chico National Park and Marine Reserve	Belize	N18 9 30.38 W87 50 9.77	10,700 ha	—
764-002	Blue Hole Natural Monument	Belize	N17 18 55.71 W87 32 38.95	4,100 ha	—
764-003	Half Moon Caye Natural Monument	Belize	N17 12 14.97 W87 32 11.74	3,900 ha	—
764-004	South Water Caye Marine Reserve	Belize	N16 40 1.71 W88 11 35.51	29,800 ha	—
764-005	Glovers Reef Marine Reserve	Belize	N16 47 59.82 W87 46 59.93	30,800 ha	—
764-006	Laughing Bird Caye National Park	Belize	N16 26 36.23 W88 11 49.8	4,300 ha	—
764-007	Sapodilla Cayes Marine Reserve	Belize	N16 6 32.9 W88 16 10.4	12,700 ha	—

Source: https://whc.unesco.org/en/list/764/maps/

The BBRRS includes a variety of ecosystems, including mangrove forests and sand Cayes. It contains the famous Blue Hole Natural Monument, a 144-meter sinkhole surrounded by coral reefs[159]. The importance of the reef to Belize from an economic perspective was mainly through the fishing industry. Since then, the benefits of the reef have expanded to include the growing tourism industry, the country's largest economic sector. Twenty-eight thousand eight hundred jobs are supported by Belize's reef-related tourism sector (BFD et al., 2017). Coral reefs and mangrove forests also provide vulnerable coastal populations with natural protection against storm surges, hurricanes, and erosion by absorbing and dissipating the energy of incoming waves. Mangrove forests cover about half of Belize's mainland coast, while coral reefs protect two-thirds of the coastline.[160]

The BBRRS was the first marine World Heritage Site in the Caribbean and Mesoamerican regions when it was added to the World Heritage List in 1996. The BBRRS is recognized not only for its outstanding universal value but also because half of Belize's population, or about 190,000 people, are supported by incomes generated through reef-related tourism and fisheries linked to the BBRRS. The annual economic contribution of reef-related tourism, fisheries, and scientific research is around 15 percent of Belize's gross domestic product (Cooper et al., 2009).

158 https://whc.unesco.org/en/list/764/

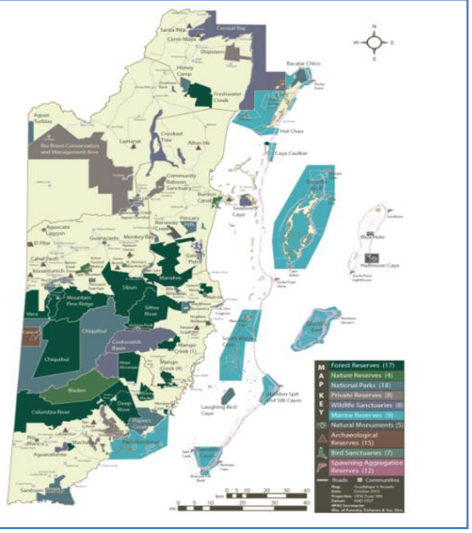
159 WWF et al., (2017). Natural heritage, Natural Wealth. Highlight the economic benefits of the Belize Barrier Reef Reserve System World Heritage Site.

160 BFD et al., (2017). Natural heritage, Natural Wealth. Highlight the economic benefits of the Belize Barrier Reef Reserve System World Heritage Site

5.2.2. Protected Area System

The National Protected Areas Systems are vital for Belize because of their high levels of Biodiversity and the tourism and fisheries economies they support[161]. According to information from the NPAS 2015, Belize has 103 protected areas within the SNAP (National Protected Areas System), within which 52 protected areas are under the administration of the Forest Department, with another nine marine reserves and 12 aggregation sites. Spawning (many of which overlap existing marine reserves), administered by the Department of Fisheries. (Figure 22)

Figure 22. National Protected Areas



Source: NPAS, Secretariat, 2015

Protected areas encompass nine different management categories, depending on the legislative framework they were designated. There is also a single mangrove booking. In addition, there are seven bird colonies (some monitored or managed) and four public reserves, both categories established under the Land Law. (Department of Land, Ministry of Natural Resources). Table 11 summarizes the main categories of protected areas within the NSPA (National System of Protected Areas).

Table 11.Protected Areas of Belize

Protected areas within the NPAS (National Protected Areas System)	
Forest Reserves	17
Nature Reserves	4
Nature Parks	18
Private Reserves	8
Wildlife Sanctuaries	8
Marine Reserves	9
Natural Monuments	5
Archaeological Reserves	15
Bird Sanctuaries	7
Spawning Aggregation Reserves	12

Source: NPAS, Secretariat, 2015

[161] NCCO, 2016. Belize´s third National Communication to the United Nations Framework Convention on Climate Change.

5.2.3. Marine protected areas

The concept of marine protected areas to preserve unique and essential marine habitats was first adopted in the early 1980s. The main objectives of the marine protected areas in Belize are the conservation of the diversity of ecosystems and species, the protection of commercially valuable species, tourism management, and recreational activities[162]. By Law, the Belize Fisheries Department has the legal mandate to declare and manage Marine Reserves in its Marine Protected Areas (MPA) category in Belize. Currently, the Belize Fisheries Department manages eight declared marine reserves, they are[163]:

1. Bacalar Chico Marine Reserve (BCMR)
2. Cayo Calker Marine Reserve (CCMR)
3. Glover´s Reef Marine Reserve (GRMR)
4. Gladden Spit and Silk Cayes Marine Reserve (GSSCMR)
5. Hold Chan Marine Reserve(HCMR)
6. Port Honduras Marine Reserve(PHMR)
7. Sapodilla Cayes Marine Reserve (SCMR)
8. Turneffe Atoll Marine Reserve (TAMR).

- **Zone 9 and Protected Areas**

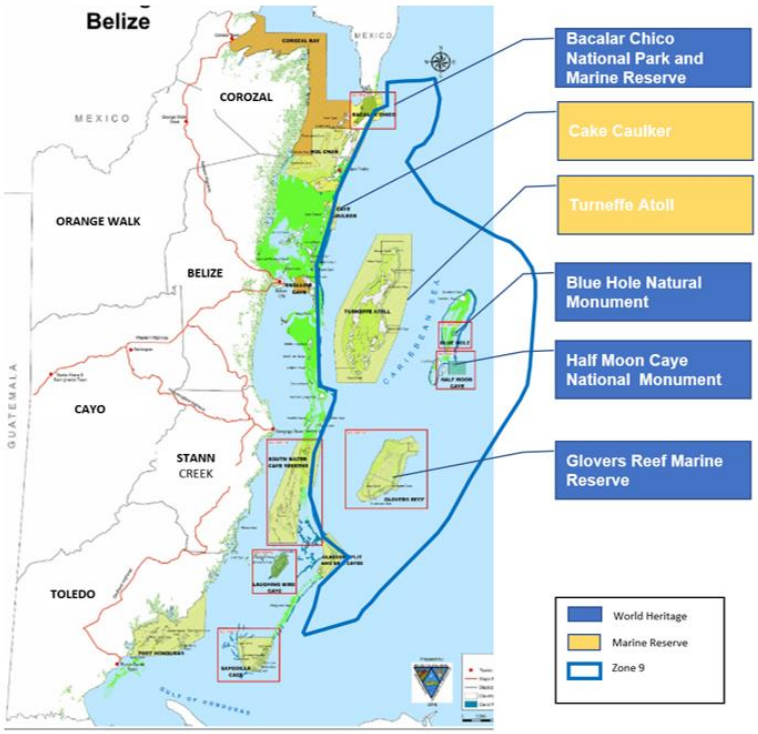
The delimitation of zone 9 includes areas of international recognition by UNESCO, such as Glover´s Reef Marine Reserve, Bacalar Chico National Park and Marine Reserve, Half Mon Caye Natural Monument, Blue Hole Natural Monument, and the Marine protected area of Turneffe Atoll Marine Reserve. Figure 23 presents the protected areas related to zone 9.

Likewise, in this Area 9, the Hol Chan and Caye Caulker Marine Reserves are identified under the KBA status of the national site: Coastal and near-coastal islands. These Key Biodiversity Areas of international importance meet the thresholds of at least one of the criteria outlined in the Global Standard for KBA Identification. Among the area's main species with migratory routes are the whale sharks, which arrive in the waters of Belize between April and May[164].

[162] Cho Leandra, 2005. Marine protected areas: a tool for integrated coastal management in Belize.
[163] https://fisheries.gov.bz/
[164] WWF, et al.,2008. Evaluación Ecorregional del Arrecife Mesoamericano.

At a general level, the scope of management plans for protected areas includes the following programs: (i) Management and Protection of Natural Resources; (ii) community participation; (iii) Tourism and Recreation Management; (iv) Administration and Infrastructure; (v) Investigation and Follow-up. This scope is in line with research projects and fishing exploration.

Figure 23. Zone 9, Marine Reserves and National Monuments



Source: Compilation 2023, based on information supplied by https://www.wwfca.org/publicaciones/belice_patrimonio_natural_riqueza_natural/

5.2.4. Biodiversity and Ecosystem Services

According to NBSAP, 2016, Belize is recognized as a global biodiversity hotspot (Conservation International, 2004). It conserves 61.6% of its natural and intact forest cover (Cherrington et al. 2012), of which approximately 35.8% is protected within SNAP. It has 25% of the region's largest contiguous block of intact forest and the most significant barrier reef in the western hemisphere, with 19.8% of protected territorial waters (Walker et al., 2014).

Belize protects 118 globally threatened species (9 critically endangered, 32 endangered, and 77 vulnerable) and 62 near threatened/most minor concerns (IUCN, 2016). Ecosystem services include water security, protection against tropical storms and floods, non-timber forest products, hydropower, and other benefits. In Belize, most of these services are intact and functioning, and the primary dependent natural resources (fisheries, agriculture, and forestry) support the population's livelihoods[165].

[165] Ministry of Agriculture, Forestry, Fisheries, the Environment and Sustainable Development, Belize, et al., 2016. National Biodiversity Strategy and Action Plan 2016-2020.

a. Coastal Habitats

Coastal-marine ecosystems provide many vital goods and services to Belize. They support artisanal fishing communities and stand at the center of a vibrant tourism industry, drawing snorkelers, divers, and sport fishermen worldwide[166]. In the coastal zone, habitats are characterized by numerous fringing reefs, patched reefs, mangroves, coastal forests, broadleaf forests, pine forests, savannahs, seagrass habitats, deep water systems, sand and silt-bottom habitats, and Cayes. These habitats are critical because of their high levels of Biodiversity and the tourism and fisheries economies they support (Meerman, 2005, mentioned by NCCO,2016).

- **Coral Reefs**

Belize also boasts the longest barrier reef in the Western Hemisphere, part of the biologically rich Mesoamerican Reef complex, stretching from Mexico to HondurasBelize's coral reef is critical to the national economy, food security, and cultural traditions. The reef also provides vital "ecosystem services" that include: providing habitat for commercially valuable fish, offering opportunities for recreation and tourism, and protecting from coastal erosion and hurricanes (CZMAI 2012, mentioned by CAMAI, 2016).

The Belize Barrier Reef Complex spans nearly the entire continental shelf of the country and includes mid-shelf, barrier, and atoll reefs, interspersed with fringe, patch, and pinnacle reefs. Belize's broad frame contains an impressive assemblage of coral reef habitats, seagrasses, mangroves, and lagoons, all of which contribute to the high Biodiversity of the region. The unique feature is the barrier reef, the longest and best developed in the Western Hemisphere. Also exceptional are the offshore atolls of Lighthouse, Turneffe, and Glover's Reef, which contain shallow lagoons surrounded by a halo of coral reef. Unique mid-shelf reefs and drowned reefs are also found in the deep southern lagoon, where the influence of the coastal mountains and the rivers becomes more evident (Kramer P et al., 2015).

The Belize Barrier Reef, home to the BBRRS, is renowned as the longest barrier reef in the western hemisphere. BBRRS was inscribed as a UNESCO World Heritage Site in 1996 and contained seven MPAs; Bacalar Chico National Park and Marine Reserve, Blue Hole Natural Monument, Half Moon Caye Natural Monument, South Water Caye Marine Reserve, Glover's Reef Marine Reserve, Laughing Bird Caye National Park, and Sapodilla Cayes Marine Reserve. The seven protected locations are dispersed across 235 km of the Belizean coast **(**BFD et al.,2017).

Anthropogenic emissions of greenhouse gases have caused an increase in global surface temperature of approximately one °C since pre-industrial times. This situation has led to unprecedented mass coral bleaching events, which, combined with increasing local pressures, have made coral reefs one of the most threatened ecosystems on Earth[167].

[166] Belize Fisheries Department et al., (2017). Natural heritage, Natural Wealth. Highlight the economic benefits of the Belize Barrier Reef Reserve System World Heritage Site.
[167] Ministry of Tourism & Diaspora relation, Caye Caulker Marine Reserve Management Plan. 2021-2026

- **Seagrass**

Seagrass beds are found in shallow areas with soft sandy bottoms protected from strong waves and currents. They are generally found growing inshore from the reef. Two seagrass species dominate in Belize: turtle grass (Thalassia testudinum) and manatee grass (Syringodium filiforme). Seagrass beds are critical in nutrient cycling, filtration, and sediment stabilization (Wildtracks 2010a, cited by OCEANA, 2020). In addition, mangroves serve as a habitat for many other species: a single acre of seagrass can support up to 40,000 fish and 50 million small invertebrates. Commercially important conch, lobster, tarpon, hogfish, yellowtail snapper, and great barracuda use seagrass beds as essential nursery grounds (Wildtracks 2010a cited by OCEANA, 2020). In addition, manatees and endangered green turtles depend on kelp beds for food.

Seagrass in Belize is widespread and crucial to the health of the country's coastal oceans. Healthy seagrasses support fisheries resources (commercial, recreational, and artisanal) and the clear marine waters that make Belize a tourist destination. Seagrass is a general indicator of coastal ecosystem healing; monitoring the status and trends of seagrasses is, therefor,e essential. The main threats are coastal pollution (mainly nitrogen loading), sediment inputs from upland deforestation and mangrove removal, onshore coastal development, agriculture, aquaculture, and direct Dredging and hardening in the coastal zone. (CZMAI 2012, mentioned by NBSAP, 2016).

- **Mangroves**

Mangroves play an important role in coastal communities' cultural and economic livelihoods and provide risk reduction measures to combat vulnerability to natural hazards, such as storms (CZMAI 2012, cited by NBSAP,2016). A national economic valuation study conducted by the World Resources Institute (WRI) found that: Belize's mangroves contribute an annual value approximately equivalent to 25% of Belize's gross domestic product through the provision of nursery areas for fish and invertebrates, habitat for wildlife, and physical buffers against pollution, cyclonic storms and coastal erosion (Cooper et al. 2009). Belize's coastal mangroves are also affected by a variety of other pressures, including the felling of charcoal and construction material, pollution of urban, industrial, and agricultural activities, direct destruction for urban growth, tourist and coastal infrastructure development, shrimp farming, and agriculture, as well as storm events (UNEP and CATHALAC 2010 mentioned by NBSAP,2016).

According to the Belize Mangrove Alliance Action Plan 2022-2027, the most significant negative impact on mangrove extent and removal is coastal/cay development driven by tourism development, urban sprawl, speculation of land, and the removal of fishing camps. Likewise, the impacts of basins on the water quality, the landscape, and the marine context were determined as critical influences on the condition of the mangroves. These impacts are related to water quality, such as agrochemical runoff into rivers, poor wastewater management in urban and coastal areas and critical communities, and poor solid waste disposal by sectors that work around mangroves, particularly coastal communities and the tourism sector.

b. Critical Habitats

Belize Barrier Reef Reserve System[168]

The coastal area of Belize is an outstanding natural system consisting of the largest barrier reef in the northern hemisphere, offshore atolls, several hundred sand cays, mangrove forests, coastal lagoons, and estuaries. The system's seven sites illustrate the evolutionary history of reef development and are a significant habitat for threatened species, including marine turtles, manatees, and the American marine crocodile.

The Belize Barrier Reef Reserve System is one interconnected system comprised of seven marine protected areas along the length of the barrier reef, the shelf lagoon, and offshore atolls. It is the most significant barrier reef in the Northern hemisphere. It represents all the main reef and coastal habitats, including rare littoral forests on sand cayes home to endangered flora and fauna. The network of protected areas is large enough to maintain the necessary ecological processes and support the BBRRS for the long term. Its geographic spread and diversity enhance its resilience, an essential factor in climate change with its risks of coral bleaching, stronger and more frequent hurricanes, and sea level rise.

Approximately 247 taxa of marine flora have been described within the complex. Over 500 fish, 65 sceleritian corals, 45 hydroid, and 350 mollusk species have also been identified, in addition to a great diversity of sponges, marine worms, and crustaceans. The property provides critical habitat for many threatened marine species, harbouring a number of species of conservation concern including the West Indian manatee (Trichechus manatus), green turtle (Chelonia mydas), hawksbill turtle (Eretmochelys imbricata), loggerhead turtle (Caretta caretta), and the American crocodile (Crocodylus acutus) as well as endemic and migratory birds which reproduce in the littoral forests of cayes, atolls and coastal areas. Major bird colonies include the red-footed booby (Sula sula) on Half-Moon Caye, brown booby (Sula leucogaster) on Man O'War Caye and the common noddy (Anous stolidus) on Glover's Reef.

Criterion (vii): The Belize Barrier Reef Reserve System (BBRRS) is unique worldwide for its array of reef types in a relatively small area. As the longest barrier reef in the Northern and Western Hemispheres and distinctive because of its size, the array of reef types, and the luxuriance of corals thriving in pristine condition, it provides a classic example of the evolutionary history of reefs and reef systems. The rise and fall of sea level over the millennia, coupled with natural karst topography and clear waters, results in a diverse submarine seascape of patch reefs, fringing reefs, faros, pinnacle reefs, barrier reefs, as well as off-shelf atolls, rare deep water coral reefs and other unique geological features such as the Blue Hole and Rocky Point where the barrier reef touches the shore. The spectacular picturesque natural setting of brilliant white sand cayes and verdant green mangrove cayes is in dramatic contrast to the surrounding azure waters[169]

Criteria (x): Home to a diverse array of top predators on the land, sea, and in the air, the jaguars of Bacalar Chico, the great hammerheads of the Blue Hole, and the ospreys of Glovers Reef are a testament to the property's importance and its ecological integrity. A total of 178 terrestrial

[168] https://whc.unesco.org/en/list/764/

[169] https://whc.unesco.org/en/list/764/

plants and 246 taxa of marine flora have been described from the area, while over 500 species of fish, 65 scleractinian corals, 45 hydroids, and 350 mollusks have been recorded. Numerous endangered species are protected within the boundaries of the BBRRS, including; the West Indian manatee, the American crocodile, and three sea turtle species. The property also provides valuable habitat for three species of groupers and the red-footed booby. The BBRRS is also home to endemic species, including several Yucatan birds, island lizards, fishes, tunicates, and sponges, making it an area with one of the highest levels of marine biodiversity in the Atlantic[170].

The Social Wrasse, Halichoeres socialis, is listed as 'Critically Endangered' on the IUCN Red List of Threatened Species™. The Social Wrasse is only found in the Pelican Cays of Belize, with a total range of less than 10 km^2. This species relies heavily on mangrove wetlands and coral reefs for spawning and feeding. In the past ten years, the Belize tourism industry has skyrocketed, and people worldwide are spending holidays there to enjoy the beautiful beaches and excellent diving. However, this growing industry has also led to the destruction of many mangrove and coral reef habitats, for development, off mainland Belize and the Pelican Cays. This rapid development and habitat destruction could further limit the already restricted range of the Social Wrasse and possibly lead to its extinction. Although the Pelican Cays is classified as a World Heritage Site, there are no measures to prevent further habitat destruction. The Social Wrasse must be closely monitored and studied to develop protective protocols to save this species and its habitat[171].

c. Ecosystems

Ecosystems and their biological diversity provide a stream of goods and services, the continued delivery of which remains essential to our economic prosperity and other aspects of our welfare. The 2030 Agenda for Sustainable Development is a global confirmation of the critical role of natural resources in achieving sustainable development. The sustainable and efficient management of natural resources is required for at least 12 of the 17 United Nations Sustainable Development Goals (SDGs) to be achieved (BFD et al., 2017).

The wide array of Biodiversity in Belize includes forty-three (43) species of freshwater fish, three hundred species of marine fish (300), hundred and fifty-eight (158) species of mollusks, hundred and twenty-two (122) species of reptiles, five hundred and seventy-six (576) species of birds, hundred and sixty-three (163) species of mammals, forty-two (42) species of amphibians and forty (40) species of corals. The country is also estimated to have four thousand (4,000) flowering plants, many of which are of medicinal value. Most of these species, considered under pressure in Central America, are being protected (Gillett and Myvette, 2008, mentioned by BBCO, 2016). An Assessment of Representation within the National System of Protected Areas (SNAP) identified that, in 2012, more than 90% of the recognized ecosystems of Belize had more than 10% representation within the SNAP, 60% of the ecosystems had more than 30% representation within the SNAP, meeting regional goals[172].

[170] https://whc.unesco.org/en/list/764/

[171] https://media.fisheries.noaa.gov/dam-migration/81_multi_species_marine_petition_2013-accessible.pdf

[172] National Biodiversity Strategy and Action Plan, Belize, 2016. Ministry of Agriculture, Forestry, Fisheries, the Environment and Sustainable Development, Belmopan, Belize.

According to NBSAP, 2016, the Belize Ecosystem Types are:

- **The Petén-Veracruz Humid Forest** comprises tropical broadleaf forests and is well represented in Belize but considered globally critical/endangered, a reflection of the high rate of deforestation and change in land use in the region.

- **Belize's pine forest,** also considered globally critical/endangered, represents one of the few examples of premontane pine forest in the Neotropics. Fire is the highest threat, with an increasing frequency of fires resulting in ecosystem degradation.

- **Yucatan Humid Forest** is considered vulnerable worldwide (Olson et al., 2002) and is limited to the country's northeast in Belize. Climate change predictions suggest that elements of the Yucatan Humid Forest will become more frequent in forest ecosystems further south as rainfall becomes less predictable.

- **The Belize Coastal Mangroves** ecoregion encompasses the diverse ecosystems on the mainland - extensive tracts of dwarf inundated mangroves in shallow coastal lagoons, upland mangroves, and coastal mangroves. These mangroves are recognized for their critical importance in coastal and cay protection and their role in fisheries, providing nursery functionality for many commercial and sport fishing species.

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

Table 12 presents the Ecosystems in the Marine Environment of Belize in various categories of the Caribbean Open Sea. (NBSAP, 2016)

Table 12. Ecosystem representation in the Marine Environment

MARINE ECOSYSTEM	TERRITORIAL SEA	WITHIN THE NPAS	% REPRESENTATION IN MPAS	% REPRESENTATION IN NTZ
Caribbean open sea abyssal	83,558.80	-	0.0	0.0
Caribbean open sea bathyal	391,715.50	982.95	0.3	0.2
Caribbean open sea mesopelagic	469,620.70	59,886.41	12.8	2.9
Coastal Shelf	119,939.54	39,585.56	33.0	7.8
Coral Reef	60,313.04	32,728.17	54.3	14.3
Deep Patch Reef and Seagrass	15,234.40	15,217.49	99.9	26.4
Deep Water Mud	262,250.09	57,644.78	22.0	2.9
Littoral Forest	16,820.53	1,437.05	8.5	2.7
Mangrove	62,154.08	10,441.30	16.8	3.2
Seagrass	379,130.90	89,764.68	23.7	1.9
Sparse Algae and Sea Grass	136,887.19	110,164.39	80.5	6.6

NTZ: No Take Zone
This estimation covers MPAs and protected areas up to 1km inland from the coast
Based on BTFS Ecosystem map (Meerman, 2004)

Source: TNC, 2014 mentioned by NBSAP, 2016

5.2.6. Ecosystems Services

According to the Environmental and Social Policy Framework IDB 2021, ecosystem services are the benefits that people, including businesses, obtain from ecosystems. There are four types of ecosystem services: (i) provisioning services, which are the products that people obtain from ecosystems; (ii) regulation services, which are the benefits that people obtain from the regulation of ecosystem processes; (iii) cultural services, which are the immaterial benefits that people obtain from ecosystems; and (iv) support services, which are the natural processes that maintain the other services.

This country heavily depends on its natural resources and the environmental services they provide – these are crucial to Belize's people's well-being and economy. Belize has different ecosystems according to whether they provide national, regional, or international services. Within the main ecosystems are the marine areas with coastal ecosystems such as mangroves and ecosystems of beaches and forests[173]. Both the marine and terrestrial protected areas of the National Protected Areas System (NPAS) integrate features that protect ecosystem services and provide some resilience to climate change[174] (Walker et al., 2013).

An effective network of marine protected areas with zones and regulations in force exists. As a fisheries management tool, most Marine Protected Areas are managed according to ecosystem-based management principles under the Belize Department of Fisheries. Bottom trawling has been prohibited, as it uses nets on the reef and the Fishing of herbivores critical to the reef's health. Managed access is being introduced as a management tool to reduce fishing pressure within marine protected areas and increase sustainability[175].

a. Economic importance of the ecosystem

The importance of the reef to Belize from the economic perspective was mainly through the fishing industry. Since then, the benefits of the reef have expanded to include the growing tourism industry, the country's largest economic sector. 28,800 jobs are supported by Belize's reef-related tourism sector. The fisheries sector employs 2,400 registered fishers and 15,000 persons in processing and exporting roles. Therefore, at least 46,000 people in Belize directly depend on the health of the reef and mangrove ecosystems for their livelihoods. Approximately 190,000 people in total, including the support for their families. Tourism revenue from reef-related activities, such as snorkeling, sport fishing, and accommodation, was estimated to be between US$182 and 237 million in 2014. The contribution of coral reefs and mangroves to Belize's fishing industry through the provision of habitats for almost all commercially caught species is estimated at US$14-16 million per year (Dahlberg 2016 cited by wwf et al., n.d).

Coral reefs and mangrove forests also provide vulnerable coastal populations with natural protection against storm surges, hurricanes, and erosion by absorbing and dissipating the energy of incoming waves. Mangrove forests cover about half of Belize's mainland coast, while coral reefs protect two-thirds of the coastline. This natural barrier protects the 40 percent of

[173] GEF, et al, 2017. Capacity Development in Belize.
[174] Walker, Z. and Walker, P. (2013). Rationalization Exercise of the Belize National Protected Areas System. Belize Forest Department, Ministry of Forest, Fisheries and Sustainable Development.
[175] GEF, 2014. Analysis of Biodiversity Targets

Belizeans who live and work in the coastal zone. The combined value of this protection, in terms of avoided damage to coastal properties, is estimated at between US$231 and 347 million per year (Cooper et al. 2009) [176].

- **The commercial value of the fishery[177]**

- **Lobster**

Lobster meat continues to be a complementary product extracted from lobster cephalothorax; production has fluctuated in the last five (5) years, wherein in 2021, a total of 13,350 were reported. This fishery has dominated the capture fishery in Belize. Over the past decade, reported production of lobster tails has ranged from 400,000 lbs. to 650,000 lbs. At the same time, the reported production of whole lobster has increased in the last five (5) years due to increased market demand. In 2021, fishing cooperatives and fishing companies reported a total of 411,364 lbs of whole lobster.

- **Queen Conch**

In 2003, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) imposed an embargo on three snail-exporting countries (Honduras, Haiti, and the Dominican Republic); while at the same time, CITES also recommended specific actions that various countries, including Belize, should take to continue exporting conch. Some of these actions for Belize included the establishment of a catch quota, conversion standards, and continuous assessment of the snail population (CITES, 2003). Compared to other fish populations in Belize, the queen conch population has been assessed multiple times. Its status and management measures have been continually reported to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Over the past decade, reported landings of conch meat have ranged from 700,000 lbs to 1,100,000 lbs. In 2021, 915,547 pounds of clean snail meat were produced for the market. Likewise, in 2021 a total of 958,400 lbs of clean market snails were exported, valued at US$7.9 million in foreign currency. Fishermen deliver their catch conch to the fishing cooperatives during the fishing season and receive a first and second payment for their catch. For the 2022/23 conch season, fishermen have been given a first payment of US$3.50 per pound, and the second payment will be given based on the year-end profits of the fishing cooperative.

- **Coastal Finfish fishery**

In 2013 a total of 525,879 lbs of whole fish was produced predominantly by RainForest Ltd. However, production decreases from 2014 to 2017. Records indicate that in 2017 a total of 33,720 lbs of whole fish was produced. Tewfik & Perez (2017) reported that 60 finfish species landed at four landing sites in Belize, where the snappers (*Lutjanidae*) and mojarras (*Gerridae*) represented the highest landings. Furthermore, Tewfik et al. (2020) stated that the Spatial

[176] WWF et al., (2017). Natural heritage, Natural Wealth. Highlight the economic benefits of the Belize Barrier Reef Reserve System World Heritage Site.
[177] FAO. IDB, BL-1042, 2023. Diagnostic of the Fisheries Sector and Identification of Portfolio Diversification and Improvement Opportunities.

Monitoring & Reporting Tool (SMART) data collection system identified 100 fish species that were landed from seven (7) Managed Access fishing Areas, which the snappers (*Lutjanidae*) represented 44 % of the total quantity. Note, Rainforest Seafood Ltd reported a total of 525,880 lbs of finfish was exported in 2013, but since then, production declined to less than 100,000 lbs. in 2019.

5.2.7. Species

Belize is part of the northernmost species range associated with South America, such as the Harpy eagle. It also has a Yucatan number reproof endemics of species associated with Mexico, like the endangered black Yucatan howler monkey (Alouawa pigra) and the more common Yucatecan magpie (Cyanocorax yucatanicus), which thrives in the driest northern forests. While species inventories are not yet complete for many taxa, it is known that Belize provides habitat for more than 118 worldwide threatened species (9 critically endangered, 32 endangered, and 77 vulnerable) and 62 others Near Threatened/Least Concern (IUCN, 2016 coted by NBSAP,2016).

According to BFD et al. (2017), the BBRRS Belize provides essential habitat for several threatened marine species, such as the Antillean manatee (Trichechus manatus), green turtle (Chelonia mydas), hawksbill turtle (Eretmochelys imbricata), loggerhead turtle (Caretta caretta), and the American crocodile (Crocodylus acutus) as well as endemic and migratory birds that breed in the forests to along cays, atolls, and coastal areas. It also serves as a support for bird colonies, including red-footed booby (Sula leucogaster) on Half-Moon Caye, brown booby (Sula leucogaster) on Man Caye O'War, and common blight (Anous stolidus) on Glover's Reef. Likewise, it is home to approximately 247 taxa of marine flora described within the reef complex. More than 500 fish, 65 species of sceleritian coral, 45 hydroids, and 350 mollusks have also been identified, in addition to a great diversity of sponges and crustaceans. Table 13 shows the national red list of species according to the UICN.

Table 13. National red list of species according to the IUCN

ANIMALIA – ACTINOPTERYGII	**Belize Anchovy**	*Anchoa belizensis*	Unknown	LC
ANIMALIA – ACTINOPTERYGII	**Belize Sea Catfish**	*Cathorops belizensis*	Unknown	DD
ANIMALIA – ACTINOPTERYGII	**Belize Sponge Goby**	*Elacatinus colini*	Unknown	LC
ANIMALIA – REPTILIA	**Belize Leaf-toed Gecko**	*Phyllodactylus insularis*	↓ Decreasing	VU
PLANTAE – MAGNOLIOPSIDA		*Rondeletia belizensis*	↓ Decreasing	VU
PLANTAE – MAGNOLIOPSIDA		*Zanthoxylum belizense*		EN

PLANTAE – MAGNOLIOPSIDA		*Gymnanthes belizensis*	↓ Decreasing	CR
PLANTAE – MAGNOLIOPSIDA		*Pouteria belizensis*	— Stable	VU
PLANTAE – MAGNOLIOPSIDA		*Inga belizensis*	— Stable	LC
PLANTAE – MAGNOLIOPSIDA		*Nectandra belizensis*	Unknown	VU
PLANTAE – MAGNOLIOPSIDA		*Cupania belizensis*	— Stable	LC
PLANTAE – MAGNOLIOPSIDA		*Purdiaea belizensis*	Unknown	LC
PLANTAE – MAGNOLIOPSIDA		*Monteverdia belizensis*	↓ Decreasing	VU
PLANTAE – MAGNOLIOPSIDA		*Coccoloba belizensis*	— Stable	LC
PLANTAE – MAGNOLIOPSIDA		*Chiococca belizensis*	— Stable	LC
ANIMALIA – REPTILIA	**Morelet's Crocodile**	*Crocodylus moreletii*	— Stable	LC
PLANTAE – MAGNOLIOPSIDA	**Big Leaf Mahogany**	*Swietenia macrophylla*		VU
PLANTAE – MAGNOLIOPSIDA	**Nahuacté**	*Oxandra maya*	Unknown	VU
PLANTAE – LILIOPSIDA	**Corojo**	*Acrocomia aculeata*	— Stable	LC

Source: https://www.iucnredlist.org/

Among the marine species classified as "high risk" within the Belize Marine Protected Areas System, according to BFD et al., 2019 are Goliath Grouper (Epinephelus itajara), Nassau Grouper (Epinephelus striatus), Sea Cucumber (Isostichopus badionotus), Great hammerhead shark (Sphyrna mokarran). Likewise, the BFD, 2019 identifies seventeen species in Table 14 with HIGH scores of "at risk" (>1.00 - 2.00), including Spiny Lobster (Panulirus Argus) and Queen conch (Strombus Gigas). These two commercial species are vital to supporting the Belizean fishing industry. Snapper (lamb and cubera snapper) and porcupine fish, all target species in the national fishery, are also considered HIGH risk throughout the system, as are sharks (great hammerheads and Caribbean reef sharks), with fishing global, transboundary, and national levels of these widely distributed species, reducing the viability of current populations [178].

[178] BDF, 2019.The status of protected areas – Belize.

It is important to note that the queen conch is included in Appendix II of CITES. Therefore, exports and trade of any product derived from the species are subject to strict regulation. The BFD has established a season, size limits, and quota system to ensure compliance. A special export permit is also required to export any queen conch product outside Belize. In addition to reinforced management measures, the country has established a scientific authority to monitor and advise on the effects of trade on the state of the species.

Table 14. Status and Trends of Marine Indicator Species of National Concern with the NPAs

SPECIES	# of MPAs with data	STATUS	TREND	RISK
Goliath Grouper (EN)	8	1.50	-0.88	0.62
Nassau Grouper (CR)	12	1.83	-0.75	1.08
Sea Cucumber	12	1.83	-0.75	1.08
Great Hammerhead (CR)	7	1.71	-0.43	1.28
Spiny Lobster	12	2.08	-0.75	1.33
Boulder Star Coral (EN)	10	2.00	-0.64	1.36
Star Coral (EN)	10	2.00	-0.64	1.36
Hogfish	11	2.18	-0.82	1.36
Mutton Snapper	12	2.25	-0.83	1.42
Caribbean Reef Shark	7	2.00	-0.57	1.43
Queen Conch	12	2.17	-0.67	1.50
Elkhorn Coral (CR)	11	2.09	-0.45	1.64
Staghorn Coral (CR)	11	2.09	-0.45	1.64
Grey Angelfish	7	2.29	-0.63	1.66
Cubera Snapper	7	2.43	-0.57	1.86
Rainbow Parrotfish	9	2.22	-0.25	1.97
Green Turtle (EN)	8	2.25	-0.25	2.00
Queen Triggerfish	10	2.50	-0.50	2.00
Lane Snapper	8	2.75	-0.63	2.12
Yellow-tail Snapper	9	2.67	-0.44	2.23
Hawksbill Turtle (CR)	8	2.38	-0.13	2.25

Source: BFD et al., 2019

5.2.8. Main issues related to loss of Biodiversity

Belize has several vulnerable ecosystems, including coastal forests, mangroves, and beach grass communities, all under heavy development pressure as Belize's coastal beaches and cays increase in popularity as tourism, investment, and retirement destinations. The sandy beaches are critical for nesting sea turtles and American crocodiles, and the littoral forest for the island's leaf-toed lizard, a species with widely disparate distributions, as well as numerous species of migratory birds[179].

☞ Threats to Coral Reef Ecosystems

According to BFD et al., 2019, four critical marine ecosystems were assessed, with coral reefs identified as the most 'at-risk' within the NPAS. Belize's reef is impacted by many anthropogenic

[179] GEF, 2014. Analysis of Biodiversity Targets

threats, including unsustainable fishing practices, transboundary incursions, reduced numbers of herbivores, and impacts from watershed pollution and coastal and caye development, exacerbating the impacts of the more significant issue of climate change. Despite this, protected area managers still consider that the reefs within their protected areas rate as FAIR, supported by Healthy Reefs data (McField et al., 2020) (McField et al., 2020 cited by BFD et al., 2019).

At the regional level (Mexico, Belize, Guatemala, and Honduras), in 2022 Report for the Mesoamerican Reef[180] noted that (Table 15): i) Live coral cover has slowly increased over the past 15 years, but disease and washing are beginning to have an impact while the MAR average is 19%, almost a 'Good' rating, there has also been a shift to more non-reef-building weedy species; ii) This persistent increase in fleshy macroalgae (FMA) it is fueled by nutrient pollution and low herbivory and threatens to stunt coral growth. The MAR average is 22%; iii) Herbivorous fish are needed to graze down macroalgae, cleaning the reef to allow for more coral growth. MAR average is 1,843g/100m²; iv) Critical Commercial fish biomass (snappers & groupers) indicates the extent of overfishing, critical habitat loss, potential biodiversity loss, and dire ecological consequences. MAR average is 499g/100m².

After a long streak of continuous improvement, Belize's Reef Health Index (RHI) decreased from 3.0 to 2.0 (just poor). Coral cover has increased by 1% since 2020, but the composition of the coral remains the leading cause for concern. Few of the largest reef-building species, such as boulders and brains, have recently been threatened by loss of stony coral tissue Illness. As of August 2022, the disease has been confirmed as far south as Ranguana Dropped. Fleshy macroalgae decreased by 1% (McField et al., 2022).

Table 15. Conditions of the reef subregions in Belize

Country / País	RHI Reef Health Index / ISA Índice Salud Arrecifal			2022 Indicator Values / 2022 Valores Indicadores				Reef Area Analysis / Análisis de Área Arrecifal			# Sites / Número de Sitios
Subregion / Nombre de la Subregión	2018 Report Card	2020 Report Card	2022 Report Card	Live Coral (% cover) / Corales Vivos (% cobertura)	Fleshy Macroalgae (% cover) / Macroalgas Carnosas (% cobertura)	Herbivorous Fish (g/100m²) / Peces Herbívoros (g/100m²)	Commercial Fish (g/100m²) / Peces Comerciales (g/100m²)	% of Reef in Fully Protected Zones / % de Arrecifes en Zonas Totalmente Protegidas	Reef Fully Protected Zones (km²) / Arrecifes en Zonas Totalmente Protegidas (km²)	Reef km² / Arrecife km²	
BELIZE / BELICE	**2.8**	**3.0**	**2.0**	**18**	**18**	**1313**	**330**	**7%**	**48**	**739**	**94**
North Barrier Complex / Norte de la Barrera	2.8	2.3	2.3	21	22	1741	334	22%	8	37	10
Ctr. Barrier Complex / Barrera Central	1.8	3.0	2.5	27	24	1879	361	6%	12	188	20
South Barrier Complex / Sur de la Barrera	3.8	3.3	1.8	16	16	795	198	3%	9	287	24
Turneffe / Turneffe	2.5	2.5	2.5	15	12	1228	483	7%	5	70	18
Lighthouse Reef / Arrecife Lighthouse	3.3	3.0	2.0	11	17	1499	288	14%	12	82	15
Glover's Reef / Arrecife Glovers	2.3	2.8	2.0	22	19	686	387	4%	3	75	7

Índice de Salud Arrecifal (ISA)

Very Good | Muy bien	4.3 – 5.0
Good | Bien	3.5 – 4.2
Fair | Regular	2.7 – 3.4
Poor | Mal	1.9 – 2.6
Critical | Crítico	1.0 – 1.8

Source: McField, et al., 2022. Report for the Mesoamerican Reef

[180] McField, et al., 2022. https://www.healthyreefs.org/cms/report-cards/

☞ Invasive Species[181]

In the terrestrial environment, the most significant concern is for vectors of human diseases, such as the African yellow fever mosquito (Aedes aegypti) (also vector for dengue), yellow fever, and chikungunya and zika viruses become more prevalent in Belize. For the marine and freshwater environment, the high connectivity means that invasive species control has not been possible. Among the invasive species in the marine environment are:

- ***Lion Fish***

At the sea level, the invasion of exotic lionfish (Pterois spp.) throughout the western Atlantic, the Gulf of Mexico, and the Caribbean over the last decade are one of the main threats to Biodiversity and marine livelihoods in the region (W. J. Sutherland et al., mentioned by BFD, 2018). Native prey consumed by lionfish includes small-bodied fish and invertebrates, commercially important grouper and snapper juveniles, and ecologically essential herbivores such as parrotfish and surgeonfish (J.A. Morris et al., 2009; M.Mizrahi et al., 2017 mentioned by BDF, 2018). Predation by lionfish has been associated with the rapid depletion of native reef fish, resulting in species extirpation in some cases (M.A Albins & M.A. Hixon, 2088; SJ Green et al., 2012, mentioned by BFD, 2018).

Belize has already made great strides in achieving effective lionfish control, having adopted a state-of-the-art approach involving restaurants, fishermen, and SCUBA divers, to control this invasive species. It is estimated that nearly 90,000 lionfish were taken from Belize's coral reefs in 2015, and surveys of lionfish conducted on coral reefs found that lionfish abundance was generally low. However, ecological models show that Significant declines in native fish populations could be expected at almost a quarter of the sites studied as a direct result of invasive lionfish[182].

- ***Sargassum***

Since 2011, the proliferation of populations of brown macroalgae of the genus Sargassum (Sargassum natans and Sargassum fluitans) around the Greater Caribbean Region has been observed even in places where, until recently, they were absent or were extremely rare. The potential impacts identified by the arrival of Sargassum in the shallow areas of the coastline and the beach are economic (tourism, fishing, nautical activities), environmental (disturbance of marine species, erosion of beaches, effects on mangroves, corals, and seagrasses) and sanitary algae decomposition and release of hydrogen sulfide. (NBSAP, et al., 2016).

☞ Other activities: *Sports Fishing*

Belize is known worldwide for its excellent sport fishing (reef, deep water, and fly). It is most famous for fly fishing for Bonefish, Permit, and Tarpon. Fishing for these three species is primarily conducted on shallows or back reef flats throughout the country from Northern Ambergris Caye, along the coastline and up to Punta Gorda. Tarpon is caught in channels, creeks, and rivers. Reef fishing is mainly conducted inside the barrier reef and its media. The

[181] NBSAP, et al., 2016. National Biodiversity Strategy and Action Plan 2016-2020.

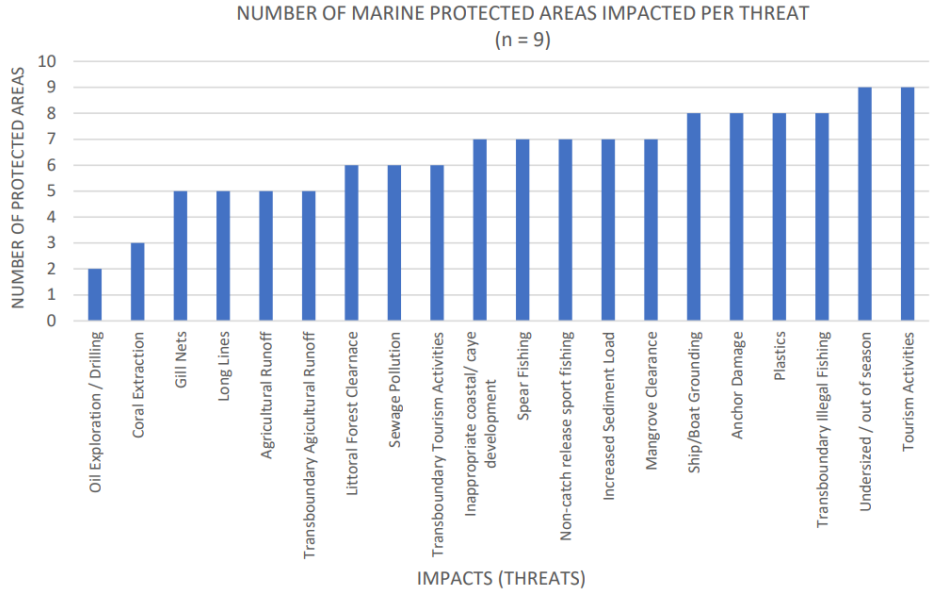
[182] Belize Fisheries Department, 2018. Belize National Lionfish Management Strategy. 2019-2023

most common catches include snapper, barracuda, grouper, and jacks. Sportfishing for billfish and other pelagics is gaining popularity as up to four major fishing tournaments are held yearly. The most common pelagic catches are tuna, blue marlin, dorado, king mackerel, wahoo, amberjack, and kingfish (NBSAP et al., 2016).

☞ Threats to Marine Reserve

According to BFD et al., 2019, twenty-one threats were identified in the marine environment impacting the nine Marine Reserves. Two impacts common to all marine reserves relate to tourism activities and unsustainable fishing practices, including illegal fishing/removal of snails, lobsters, and undersized fish/out-of-season fishing (Figure 24)

Figure 24 Threats in the marine environment that impact the nine Marine Reserves



Source: BFD et al., 2019

☞ Principal pressures on Biodiversity and Ecosystems

The rapid growth of the population and economic and socioeconomic development of Belize has increased the pressures on the National System of Protected Areas and biodiversity, generating unsustainable impacts such as resource extraction, land use change, coastal development, and reduced water quality (BFD et al., 2019). According to the NBSAP 2016, the principal pressures and threats to Biodiversity and Ecosystems are :

- Land-use change (deforestation, forest fragmentation, mangrove clearance, wetlands filling).
- Climate Change.
- Unsustainable exploitation of natural resources.
- Overfishing (concentration on lobster and conch, pressure on stocks increased)
- Illegal Fishing.

- Pollution (agrochemicals, industrial/urban effluent, solid waste, sewage, sedimentation).
- Anthropogenic fires.
- Invasive species.
- Unsustainable Tourism Practices (exceeding guide/visitor ratios, exceeding limits of acceptable change, poor boating practices, illegal wildlife interactions, negative impacts from large-scale cruise ship tourism).
- Natural disasters

Other pressures on marine biodiversity are related to the following:

➢ Unsustainable Fishing

Lobster and conch harvesting in Belize is a small-scale activity characterized by medium and low investment. However, at the same time, they share characteristics with large-scale fisheries since they are dependent on fossil fuels, are commercial, and mainly the sale of the catches is made to organized international markets. (Huitric, 2005). In the case of lobster extraction, in recent years, there has been a decrease in its production (CZMAI, 2016a, cited by Huitric, 2005). The threat of resource depletion became apparent in 2011 when fishermen's catches gradually declined[183]. The belief that the lobster could not be overfished suggests an understanding of the specific processes in the life cycle was lacking. However, previous studies show that fishermen in Belize are aware of declines in abundance and the possible causes and solutions to these declines (Espeut 1994, Heyman and Graham 2000 cited by Huitric, 2005).

Some of the consequences of unsustainable fishing are related to the following:

- Reduced livelihoods due to a reduced marine product.
- The decline of threatened species such as the Goliath grouper, the Central American terrapin, and the critically endangered hammerhead shark.
- Reduction of illegal species, such as sea turtles or commercial, taken out of season or by illegal cross capture, such as lobster and conch.
- Reduced resilience to climate change impacts in freshwater and marine environments

Unsustainable fishing is being addressed through the Managed Access (MA) framework. This rights-based fishing regiment supports fishers who regularly use fishing grounds in specific areas through managed area permits[184].

➢ Bycatch

One of the relevant problems in fishing activity is non-selective fishing which captures non-target organisms as 'bycatch,' generating a problem of critical importance for the oceans and concern for the conservation and management of resources. Bycatch is defined as a "catch that is not used or managed" when[185]:

[183] Martinez, Virginia et al., (n.d). Managed Access: A Rights-Based Approach to Managing Small Scale Fisheries in Belize
[184] NBSAP, et al., 2016. National Biodiversity Strategy and Action Plan 2016-2020.
[185] Davies RWD, et al., 2009. Defining and estimating global marine fisheries bycatch.

i) Unused catch is not used for consumption, sold for any purpose, or reused by the fisherman as bait. Includes discards (the part of the catch thrown overboard) and wasted catch after landing that is not directly sold or consumed.

ii) Unmanaged refers to catch, either categorized as individual species or groups of different species, that is not explicitly managed to ensure that the catch is sustainable (according to the FAO Code of Conduct for Responsible Fisheries)

Bycatch of non-target fish can contribute to overfishing and slow efforts to rebuild fish stocks. Bycatch can also have negative economic and social impacts on fishermen and their communities. For example, a fishery may close early because of the high bycatch of a non-target species. Ecologically, bycatch can change prey availability, affecting marine ecosystems and fisheries productivity [186].

According to the High Seas Fisheries Regulations 2014, Part II on Catch and Effort Level Data Reporting, "the level of allowable variation in the estimates recorded in the e-logs of the quantities in kilograms of fish held on board will be 10% for all species"[187]. Annex 3 presents some species that may have bycatch in the study area.

At the level of incidental capture of seabirds, the leading causes are attributed to the positioning and recovery of longline gear where scavenger seabirds can feed on the deployed bait used on the hooks and get hooked by the body or beak, which ultimately can cause drowning when the art is submerged[188].

➢ Abandoned, Lost, or otherwise discarded fishing gear

Abandoned, Lost, or otherwise discarded fishing gear (ALDFG) comprises a significant part of global marine plastic pollution, with adverse consequences for anglers, the seafood industry, and marine wildlife and habitats.[189] ALDFGs, often called “ghost gear,” can continue to capture and entangle target and non-target species (National Oceanic and Atmospheric Administration Marine Debris and Program, 2015; Stelfox et al., 2016, cited by Richardson, K, 2021). When the fishing gear is abandoned, lost, or discarded, it can sink to the seafloor, where it can damage habitats and benthic organisms through abrasion, dragging, and entanglement (Pham et al., 2014; National Oceanic and Atmospheric Administration Marine Debris and Program, 2016; Du Preez et al., 2020 cited by Richardson, K, 2021.). Abandoned gear can eventually wash ashore with negative impacts on coastal communities, including coastal aesthetics and tourism (Gunn et al., 2010; Matthews and Glazer, 2010; Marcou et al., 2016, cited by Richardson, K, 2021).

➢ Use of destructive fishing equipment

The following are considered destructive fishing equipment:

[186] NOAA, 2016. National Bycatch Reduction Strategy
[187] High seas fishing (Monitoring, control, and surveillance) Regulations, 2014.
[188] Ministry of Finance, Government of Belize, 2016. National Plan of Action of Belize for Reducing Incidental Catch of Seabirds in Long-Line High Seas Fisheries.
[189] Richardson K, et al., 2021. Global Causes, Drivers, and Prevention Measures for Lost Fishing Gear

☞ Trawling[190]

Trawls are one of the most destructive fishing gear in the world. Shrimp trawls are notorious for the amount of bycatch or non-directed catch that they catch. Thousands of sea turtles, marine mammals, and non-target fish are caught on shrimp trawlers yearly. Meanwhile, the ballasted nets of bottom trawlers scrub the ocean floor with each pass, destroying sensitive corals and anything else in their way. In December 2010, the Belizean government announced a ban on trawling in the country's waters, including its exclusive economic zone (EEZ). With this ban, which went into effect on December 31, 2010, Belize became one of the first countries in the world to institute a complete and permanent ban on trawling in all of its waters.

☞ Gillnets.[191]

Gillnets have been notorious for high levels of bycatch, often entrapping and killing marine mammals, sea turtles, sharks, and other ecologically and economically important fish. In Belize, there is evidence that the team catches, entangles, and kills protected species such as bonefish, tarpon, permit, manatees, and endangered species such as hammerheads. Gillnets are already credited with the regional extinction of the sawfish. Additionally, gillnets can be even more destructive when lost or forgotten in the water and continue to trap animals, a phenomenon known as "ghost fishing."[192]. The Government of Belize approved on November 5th, Law 158 of 202,0 under the Fishery Resources Regulation, the prohibition of using gillnets in the marine environment of Belize in the management zones and inland waters of the country.

☞ Loss traps

Damage to the marine habitat is the traps used by fishermen who, when lost, continue fishing and cause damage to the habitat by dragging themselves over seagrass beds or the reef. (Acheson 1988 cited by Huitric, 2005).

5.3. Social-Economic context

5.3.1. Social context in Belize

Belize is considered an upper middle-income country with per capita Gross Domestic Product (GDP) estimated at USD 4,8852. The Country's economic performance is highly vulnerable to external shocks such as commodity price variation, adverse climate-related occurrences (for example, hurricanes and droughts), and changes in the economic performance of its major trading partners[193].

[190] OCEANA, (n.d.). Destructive Fishing Gear. https://belize.oceana.org/destructive-fishing-gear/
[191] OCEANA, (n.d.). Destructive Fishing Gear. https://belize.oceana.org/destructive-fishing-gear/
[192] OCEANA, (n.d.). Destructive Fishing Gear. https://belize.oceana.org/destructive-fishing-gear/
[193] UNDP (2020). COVID-19 Socio-economic Impact Assessment.

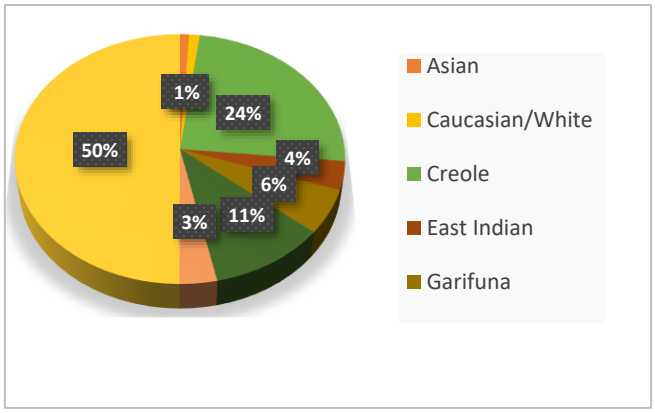
Population

The total population of Belize for 2020 is projected to be 421,464. Data disaggregated by gender indicated a slightly larger population of men (210,754) than women (210,709) [194]. According to the Abstract of Statistics projected for 2019-2021, the population of Belize is predominantly rural, with 55% of the total number of people in this area.

Ethnicity and multicultural diversity

An analysis by ethnicity in 2020 found that the most significant population identified as Mestizo/Hispanic, and the smallest population identified as Garifuna. The data indicated 200,248 Mestizo/Hispanic, 110,370 Creole, 41,528 Mayan, and 28,093 Garifuna. Notably, 40,398 identified themselves as "Other," while 825 respondents chose "Don't Know/Not Stated." For indigenous and Afro-descendant groups, gender-disaggregated data indicated 20,463 Mayan men and 21,065 Mayan women while also indicating only 12,846 Garífuna men and 15,248 Garífuna women[195] (Figure 25).

Figure 25. Percentage of Population by Ethnic Group



Source: Own data compiled using information from the SIB 2010

Indigenous People and Afro-Descendants (IPADs)

According to the IDB, indigenous peoples “refer to distinct social and cultural peoples that possess some of the following characteristics to varying degrees: i) Self-identification; ii) Collective attachment to geographically distinct habitats or ancestral territories; iii) Customary cultural, economic, social or political laws and institutions; iv) A distinct language or dialect, often different from the official language of the country or region in which they reside (IDB,

[194] IDB, FAO et al., 2022. BL-L042. “Diagnostic of the Fisheries Sector and Identification of Portfolio Diversification and Improvement Opportunities”
[195] FAO, Pinelo M. BL-L042. “Diagnostic of the Fisheries Sector and Identification of Portfolio Diversification and Improvement Opportunities”

Husle,2022). In Belize, two groups fit that criterion. They are the indigenous Maya and Garifuna peoples[196]:

There are three groups of Maya in Belize, the Mopan, Kekchi, and Yucatec. The Mopan and Kekchi are primarily located in the south of Belize (Stann Creek and Toledo districts), while the Yucatec Mayas mainly inhabit the country's northern part. One Mopan Maya community, San Antonio, is in the Cayo district (Western Belize). However, the Yucatec Mayas have become modernized and have mostly integrated into other multiethnic and multicultural communities of Belize; therefore, this report will only focus on the Kekchi and Mopan Maya[197].

The Mopan and Kekchi Mayas are from the same family – descendants of the Manche Chol Maya, who inhabited most of Mesoamerica, including parts of Mexico, Belize, Guatemala, Honduras, and El Salvador. During the Spanish conquest in the late 1500s, the Mopan Maya lived in “parts of central Belize and the adjacent Peten in Guatemala“ (Shoman, 1994, p. 105). According to Shoman, by the late 17th century, the Spanish had pacified and converted them. The British colonizers later drove them out of Belize (18th – 19th centuries). The Mopan Maya returned to Belize around 1886 to escape forced labor and taxation in Guatemala. They settled in Pueblo Viejo, Toledo[198].

Shoman, quoting Wilk, says, “the Kekchi of southern Belize is a small splinter group from a much larger population whose homeland is the dissected plateaus and rugged mountains of the Alta Verapaz Department of Guatemala.” During the Spanish conquest, they were proselytized by Dominican priests and forced to live in congested villages. This led to high death tolls from diseases. After Guatemala gained independence, the Kekchi were further dispossessed of their lands and forced into debt peonage by wealthy coffee barons. Between 1881 and 1890, many began fleeing into Belize[199].

The Garifuna are a people of African, Arawak, and Taino ancestry who the British exiled from the island of St. Vincent to the Island of Roatan in Honduras. Due to unfavorable conditions in Roatan, many Garifuna had left for Trujillo on the mainland. By 1832 however, they fled Trujillo for Belize after backing the losing side of the revolt in Honduras (Shoman, 1994). The Garifuna settled in various areas along the coast of southern Belize, forming the communities of Dangriga and Hopkins in the Stann Creek district and Seine Bight and Barranco in the Toledo district, among others that no longer exist today[200].

According to the 2010 Belize Institute of Statistics Census, the indigenous population comprises 11.3%. Indigenous peoples of Mayan origin are present in all six districts. They live mainly in rural areas in essentially peasant communities but are not distributed uniformly throughout the country (Table 16).

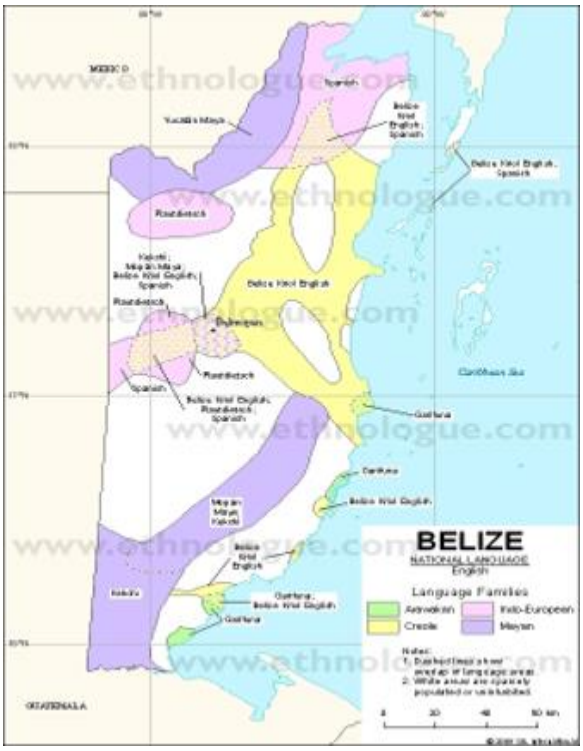
[196] IDB, Hulse C. BL-L1041. Sociocultural Analysis and Indigenous Peoples Plan
[197] IDB, Hulse C. BL-L1041. Sociocultural Analysis and Indigenous Peoples Plan
[198] IDB, Hulse C. BL-L1041. Sociocultural Analysis and Indigenous Peoples Plan
[199] IDB, Hulse C. BL-L1041. Sociocultural Analysis and Indigenous Peoples Plan
[200] IDB, Hulse C. BL-L1041. Sociocultural Analysis and Indigenous Peoples Plan

Table 16. Population by Maya Ethnic Group Affiliation and District

Ethnic Groups	Country Total	Corozal	Orange Walk	Belize	Cayo	Stann Creek	Toledo
Maya Ketchi	20,616	399	254	1,118	1,904	1,852	15,089
Maya Mopan	13,022	169	297	926	2,371	3,910	5,349
Maya Yucatec	2,869	590	226	278	1,699	47	29
Total	36,507	1,158	777	2,322	5,974	5,809	20,467

Source: IFAD, 2017

Figure 26. National languages in Belize



The main concentration of indigenous communities is based on languages spoken, Yucatec, Mopan, and Kekchi. The highest concentration of Mayas is found in the Corozal, Orange Walk, Cayo, Stann Creek & Toledo districts (see areas in purple). The main concentration of Afro-descendent communities (Garifuna) is located in Stann Creek and Toledo Districts (see areas in light green) (Figure 26)[201]

The Garifuna people are the predominant ethnic group in the six communities of Dangriga, Hopkins, Seine Bight, Georgetown, Punta Gorda, and Barranco. However, like the Maya, many Garifuna people are scattered throughout the country after migrating from their traditional lands in search of better economic opportunities, mostly in urban areas. There were 28,093 Garifuna in Belize in 2020, accounting for 6.1% of the population. Most Garifuna lives in the Stann Creek district (27.5%), while 6.4% live in the Belize district and another 6.1% in the Toledo district[202].

It must be noted that Garifunas are categorized as both afro descendants and indigenous. The Mayas hold customary land rights as indigenous peoples, but the Garifunas do not have such rights. In addition, it must be noted that the term afro-descendants are seldom used to describe Creoles and Garifunas in Belize[203].

- **Gender**

As defined by World Bank (2012, 2016 cited by IDB, FAO et al., 2022), gender refers to the social, behavioral, and cultural attributes, expectations, and norms associated with being male

[201] IDB, FAO et al., 2022. BL-1041. Gender, Youth and Indigenous People Assessment
[202] IDB, Hulse C. BL-L1041. Sociocultural Analysis and Indigenous Peoples Plan
[203] IDB, FAO et al., 2022. BL-1041. Gender, Youth and Indigenous People Assessment

or female. Gender equality (or inequality) refers to how these factors determine how women and men relate to each other and the resulting differences in power between them. Although women comprise half of Belize's population, they lag behind men in positions of power and political leadership. They continue to face barriers to economic empowerment and are the primary victims of gender-based violence (GBV). Women's access to health and education has improved. Yet, there are gaps in adolescent health, mental health, and girls' and women's access to non-traditional training and job opportunities.

Nevertheless, boys and men face challenges with social violence and school dropout. Men are victims of homicide at a higher rate than women. They also engage in more risky behaviors that lead to road traffic accidents and HIV transmission.

A recent study by the World Bank suggests that Belize stood out in the World Economic Forum's (WEF) Gender Gap Report as one of the three countries in Latin America and the Caribbean (LAC) with the most substantial reduction in the gender gap, as measured by the Global Gender Gap Index. Nonetheless, Belize still ranks only 23rd out of the 26 countries in LAC included in the WEF's Global Gender Gap Index. According to the observed in other countries, youth, women, indigenous people, and afro descendants face specific challenges for better participation and access in the sector's activities throughout the value chain. General information suggests this is the case in Belize (Carneiro, 2016, cited by FAO, Pinelo,2022).

Belize, in 2010 was in the last position (131) on the Global Gender Gap Index in the political empowerment of women. In addition, the United Nations has classified Belize as out of place regarding the promotion of gender equality and the empowerment of women, goal #3 of the Millennium Development Goals (UNDP 2013). This classification was based on the proportion of women employed in the non-agricultural sector and the proportion of women's seats in the National Parliament. Beyond the MDGs, the female unemployment rate is significantly higher than the male unemployment rate across the country, although the unemployment rate is high overall. (Muñoz & Gibson, 2015).

Agriculture and Fishing continue to be one of Belize's vital economic sectors. While primary industries account for Belize's second-largest share of workforce production, totaling 20,2060 workers in 2015, 93.3% of workers in the sector are men, or 18,907, compared to 6.7 % or 1,353 women. The sexual division of labor in agriculture and Fishing, in part, underlines the differential impact of policy decisions on women and men. Secondary industries account for the second-highest industry share of GDP in Belize. However, with the inclusion of mining and quarrying, only 15,508 males and 3,930 females are employed in the sector, comprising 19,438 or 14.4% of the total labor force. Male labor thus accounts for 79.7% of employment in the industry. D (Huggis T. 2016).

Gender-based violence includes child abuse, domestic violence, commercial sexual exploitation of children and adolescents, commercial sex work, human trafficking, rape, and sexual assault. It also includes male violence in the streets. Domestic violence continues to be reported, especially by women. Between May and November 2003, the staff of the Women's Department tracked the issue of domestic violence. Boyfriends, partners, or ex-partners allegedly killed at least ten women. Many more are victims of beatings, mutilations, and other forms of abuse[204].

[204] Ministry of Health Belize, 2014. Sector Strategic Plan 2014-2024

According to the Belize Crime Observatory (2021), there was an increase in sexual violence reports for both rape and sexual assault. Rape cases increased by 43% from 21 to 30, and unlawful sexual intercourse (sex with a minor) increased by 37% from 49 to 67 in 2018 and 2019, respectively. Adolescent boys and girls comprised the majority of rape survivors. In 2019, 60% of rape survivors were under 18, and 50% were female minors. Reports of domestic violence increased by 10% in 2019 from 517.78 to 571.86 (per 100,000 population). Intimate partner violence accounted for 80% of all domestic violence reports. Furthermore, an average of 73% of domestic violence reports were against a present or past intimate partner. This percentage varied by district, with all districts, except the Orange Walk District, showing below 73%[205].

Belize is the Caribbean country with the second highest rate of CMEU. According to the Belize Multiple Indicator Study (MICS) 2015, 3.9% of women, or 675 women aged 15 – 19, and 5.1% of men, or 884 men aged 15- 19, first married or entered a marital union before their 15th birthday. Some 20.8% of women, or 3,601 women, and 10.7% of men, or 1,855 men, 15-19 years, are married or in a union. While the percentage of women 15-19 who got married before age 15 has decreased since 2011, the percentage of women who are married or in a union has increased. The MICS does not make a distinction between those who are in formal or informal unions. However, evidence from focus group discussions in preparation for developing a Road Map to End CMEU and data on early pregnancy suggests that informal unions account for a more significant percentage of those in a union than formal unions.

- **Other issues relevant**

  - **Education**

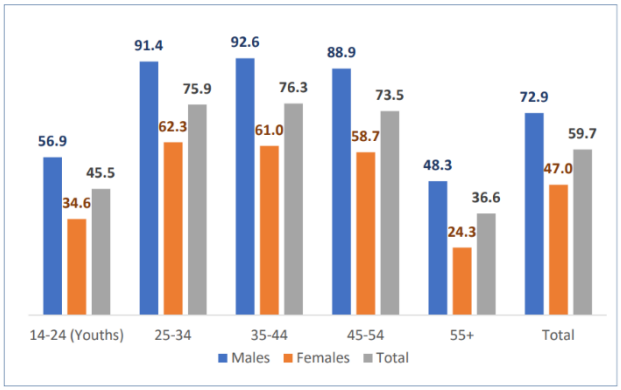
Belize's school attendance is the lowest in Latin American and Caribbean regions[206]. Among children of primary school age (5 to 12 years), 95.9 percent attended formal school in 2010. In Belize, 8% of children do not complete primary school, while 31% do not complete secondary school. In 2015, about 9.5% of children of lower secondary school age were not attending school. Children with lower levels of education are at greater risk of living in poverty throughout their lives, seeing reduced life expectancy, and experiencing more health problems (UNICEF,2021).

  - **Labour Force**

Figure 27 represents the labor force participation rates by sex and age group for 2021. The highest levels of labor force participation were observed in males between 35 and 44 years old, with 92.6 percent, while the lowest levels were found in the groups of men older than 55 years, with 48.3%. The highest participation rate of women occurs between 25 and 34 years old, with 62.3%, while the lowest participation is registered among women over 55 years old, with 24.3%. (LFS,2021).

[205] IDB, FAO et al., 2022. BL-L042. "Diagnostic of the Fisheries Sector and Identification of Portfolio Diversification and Improvement Opportunities
[206] NCCO, 2016. Belize´s third National Communication to the United Nations Framework Convention on Climate Change.

Figure 27. Labour Force Participation Rates by Sex and Age Groups 2021



Source: Statistical Institute of Belize. Labour Force Survey, April 2021.

There was an estimated 17,644 unemployed persons in September 2021, a net decrease of 5,531 persons since September last year. Although the unemployment rate also decreased for females, from 17 percent in September 2020 to 13 percent in September 2021, this was still almost double the rate of joblessness among their male counterparts. Half of all unemployed persons in September 2021 reported being jobless for at least a year, a significant increase compared to September 2020, when 19.1 percent of unemployed persons reported that they had been without a job for a year or more. This suggests that many persons who lost their jobs in 2020 were still looking for work more than a year later. As was the case in September 2020, the most common reason for unemployment was COVID-19[207].

➢ Poverty

The World Bank's 2009 Belize Country Poverty Assessment shows that the population living below the poverty line increased from 34% in 2002 to 41% in 2009. The proportion of households living below the poverty line increased from 25% in 2002 to 31% in 2009[208]. The poverty rate in rural areas increased slightly in 2018 to 59%, compared to 55% in 2009. However, the poverty level in urban areas showed a further increase from 28% in 2009 to 43% in 2018. All districts except the Corozal district saw increases in the poverty level in 2018 compared to 2009. Corozal had the lowest poverty rate in 2018, at 45 percent. It also showed the most significant drop in the indigence rate, from 16 percent in 2009 to 5 percent in 2018. As in 2009, the Toledo district experienced the highest poverty rate in 2018 at 82 percent, a sharp increase. 60 percent in 2009. This District also had the highest homelessness rate in 2018 at 30 percent. (The Belize Institute of Statistics, 2021).

The highest poverty rate was observed among children (0-14 years) by nearly 60 percent. This group also experienced the highest level of homelessness at 12 percent. In contrast, the elderly (65 years and older) showed the lowest poverty level at 43 percent. (BIS, 2021).

[207] IDB, FAO et al., 2022. BL-L042. "Diagnostic of the Fisheries Sector and Identification of Portfolio Diversification and Improvement Opportunities

[208] 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. 24 p

- **Transboundary Incursions**

There have been raids in the army atmosphere in Belize, with fishermen from Guatemala and Honduras entering Belizean waters and Fishing directly or buying products from fishermen in Belize. Both activities are illegal. “These fishermen have no incentive to follow Belizean rules and take prohibited, out-of-season, and undersized species, including critically endangered sea turtles and ecologically significant parrotfish” (NBSAP, 2016).

5.3.2. Project Beneficiaries

The beneficiaries will be vulnerable populations who are individual entrepreneurs (including fishers), members of associative arrangements, and owners of MSMEs of the selected sectors. The operation will focus on women, youth, indigenous people, afro-descendants, and migrants. The operation will have national coverage[209].

5.3.3. Social aspects of the fishing population

According to data from the Belize Fisheries Department (BFD), as of July 2022, 2,411 fishermen were registered. Below is an analysis of some relevant aspects of the BDF’s registered fishermen’s database.

Faced with specific challenges when accessing sector’s activities throughout the Belizean domestic marine finfish market and value chain (fishing-processing-exportation-retail-consumption), women, youth, indigenous peoples, and afro descendants (IPADs) remain among the most vulnerable populations. It is therefore important to recognize and quantify the importance of these target populations in fisheries in Belize to measure such contribution to poverty alleviation and national development. A mapping of poverty income in Belize using satellite imagery and machine learning indicates that the Corozal District and Toledo District are the poorest districts (IDB, 2020) which also coincides with the geographic locations of communities of IPADs.

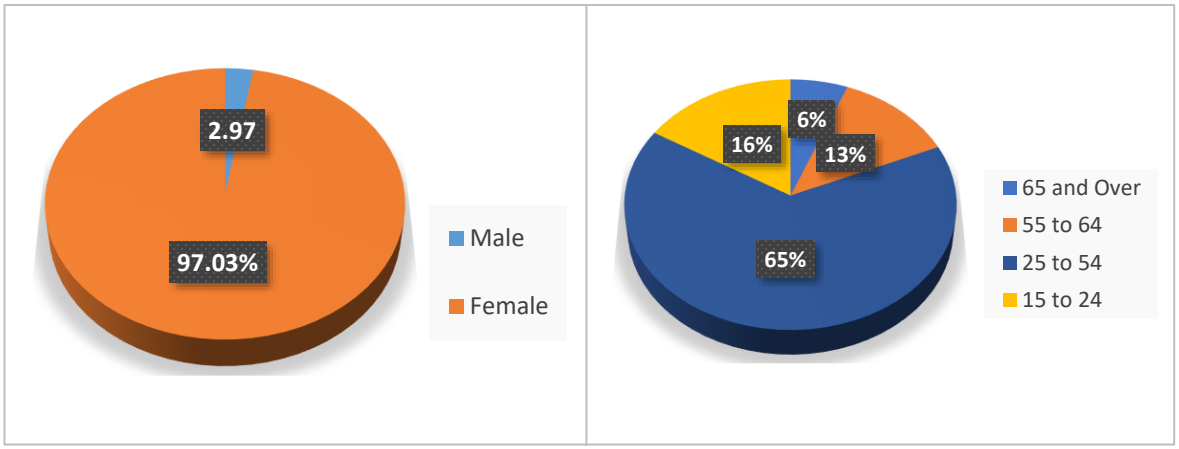
- **Composition by sex and age**

The fisheries industry in Belize is primarily male-dominated, with only 2.7% of female representation. In some communities, traditional marine fishing is a responsibility that both men and women share, although they have distinct roles. For example, men go out to fish. At the same time, women support cleaning and selling fish, manage the household fishing income, and remain the primary caregivers within their families. Therefore, women participate in the fishing sector but at the lowest value chain level (i.e., processing). According to Oceans and Economic Trade Strategy (2020), 60-70 percent of the processors within cooperatives in Belize are women. Under the Marine Conservation and Climate Change Project (MCCAP) project, a woman in fisheries forum was first scheduled in 2017. The forum aimed to: (i) increase

[209] IDB, 2023. BL-L1042. Promoting Sustainable Growth in the Blue Economy. Gender & Diversity Assessment

awareness of women's roles and challenges in the fishing industry; (ii) disseminate information on gender equality in small-scale fishing, and (iii) develop networks for information sharing[210]. The percentage distribution by age shows that the highest percentage of registered fishermen are under 55, and the lowest rate is 65 and over. (Figure 28).

Figure 28. Percentage Distribution of fisherfolk by sex and age

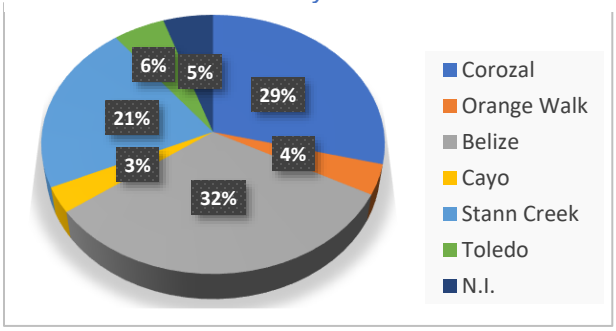


Source: Own data compiled using Belize Fisheries Department (BFD) Base Data July 2022

- **Location of fisherfolks by District**

Figure 29 shows the percentage distribution of registered fishermen by District, where it stands out that approximately 88% live in the coastal Districts of Belize, Corozal, Cayo, and Toledo. The remaining 12% includes the Districts of Orange Walk and Cayo, where it is evident that there is a socioeconomic relationship between the coastal districts and the rest of the country.

Figure 29. Percentual Distribution of fisherfolk by District



Source: Own data compiled using Belize Fisheries Department (BFD) Base Data July 2022

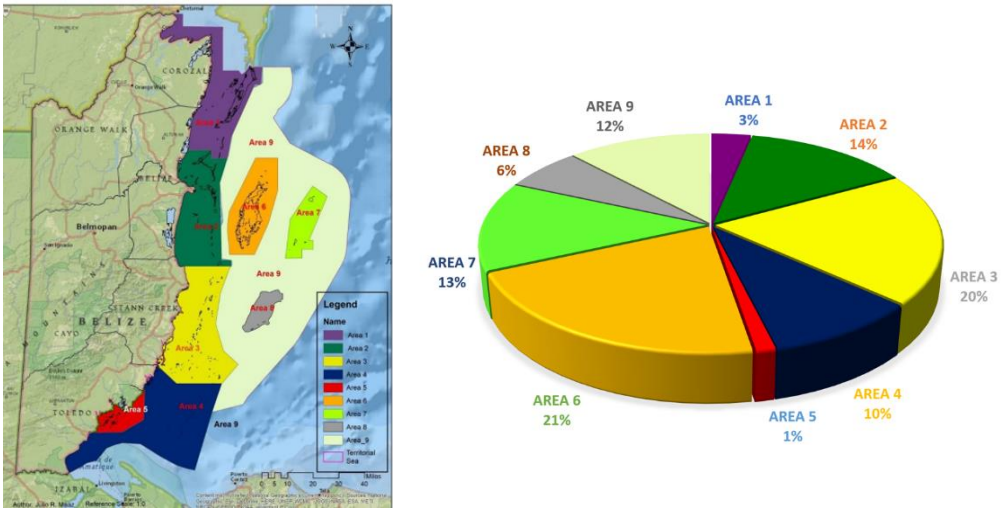
[210] IDB, 2023. BL-L1042. Promoting Sustainable Growth in the Blue Economy. Gender & Diversity Assessment

- **Fisherfolk's Licenses**

In 2016, the Fisheries Department transitioned from an open-access fishery to a Managed Access regime (the regime of territorial use rights in fishers known as TURFs). Divided into seven principal components, this new regime was developed in response to illegal fishing, the decline in landings, and the increasing number of fishers in Belize. This regime aims to empower traditional fishers by enabling them to participate and contribute to managing fishing areas. The territorial sea has been divided into nine fishing areas, where area 9 has been designated for deep slope fishing. Each angler is licensed to fish two (2) fishing areas inclusive of area 9[211]

Considering the information on the BFD, each new fisherfolk can access two fishing areas[212]. Figure 30 shows the map of areas and the distribution percentual of licenses granted to fisherfolk up to July 2022 by fishing area. This figure highlights that the areas with the highest number of licenses are Areas 6,3,7 and 2, for 68%. The remaining 32% of the licenses are located in Areas 1, 4, 5, 8, and 9, registering the lowest number of licenses in Area 1.

Figure 30. Distribution percentual of fisherfolk licenses by fishing area



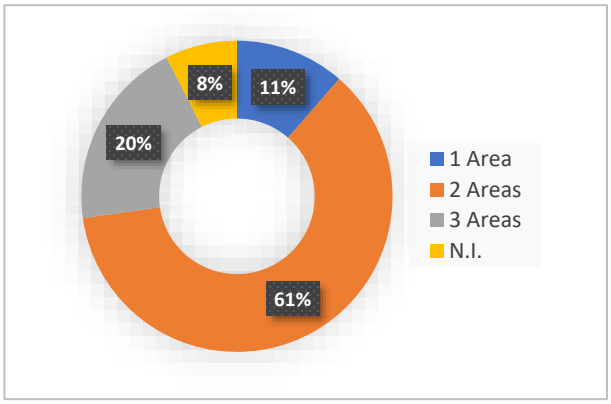
Source: Own data compiled using Belize Fisheries Department (BFD) Base Data July 2022

- **Number of registered areas per fisherman**

Figure 31 shows the percentage distribution of the areas used for Fishing by fisherfolks registered in BFD. This information indicates that approximately 1,479 fisherfolks use 2 fishing areas, 477 fisherfolks use 3 fishing areas, 275 fisherfolks use 1 fishing area, and 180 did not report how many areas they use to fish.

[211] Carcamo Ramon, 2022. Rapid Diagnosis of Belize´s fisheries sector
[212] https://fisheries.gov.bz/documents/#license-forms

Figure 31. Percentage distribution of the number of registered areas per fisherman.

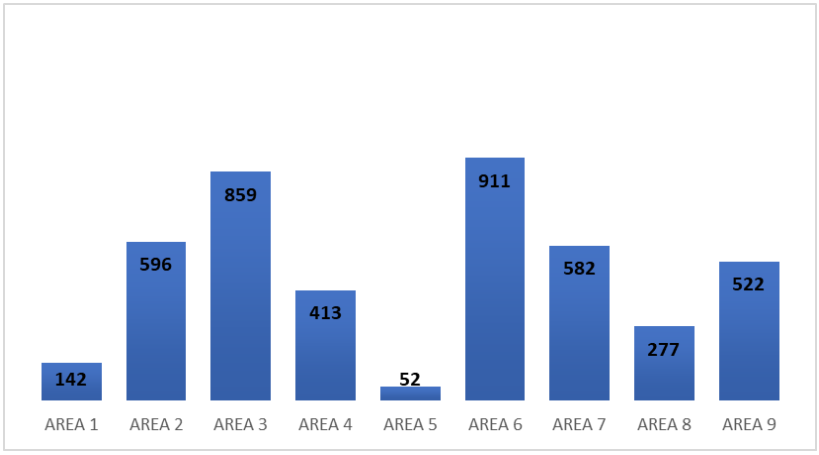


Source: Own data compiled using Belize Fisheries Department (BFD) Base Data July 2022

- **Group of fishermen located in Area 9**

According to the BFD database, 2022 Figure 32 shows the number of registered fishermen in Zone 9.

Figure 32. Number of registered fishermen by area



Source: Own data compiled using Belize Fisheries Department (BFD) Base Data July 2022

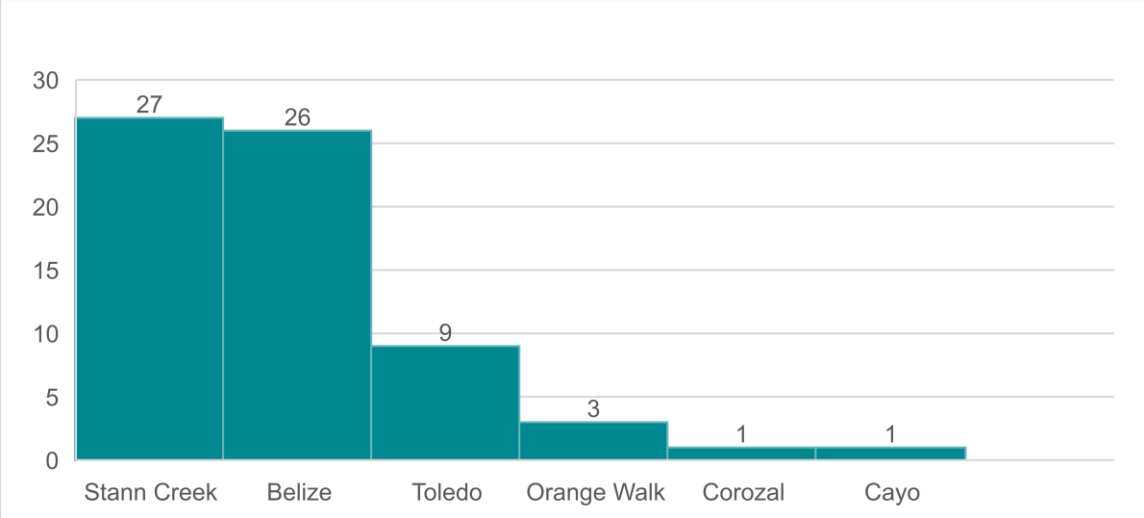
From the previous figure, it is highlighted that approximately 522 fishermen may be possibly affected by the temporary closure of Zone 9.

5.3.4. Participation of Vulnerable Population in the Fisheries Sector

- **Women**[213]

The National Trade Policy 2019-2030 highlights policy prescriptions to integrate the gender and disability agenda into trade and development. The Policy acknowledges the "involvement of women in fisheries and seafood processing and recognizes the importance of mainstreaming gender and disability." Yet, a registry under the Belize Fisheries Department (BFD) indicates that a little under 3% or 67 of total registered fisherfolks are women. A further breakdown of registered women in fisheries by districts indicates that the majority of registered women in fisheries can be found in the Stann Creek District, followed by the Belize District. (Figure 33)

Figure 33. Women in Fisheries Registered by District in Belize



Source: IDB, 2023. BL-L1042. Gender & Diversity Assessment

- **Youth**[214]

The Student Engagement and Awareness Strategy, devised under the Northern Communities Engagement and Investment Strategy and developed jointly by the Belize Audubon Society (BAS) and the Sarteneja Alliance for Conservation and Development (SACD), was evaluated in 2019 to assess the effectiveness of the five different youth engagement programs is one example of more targeted interventions for youth engagement linked to the fisheries sector (MAR Fund, 2019). It is based on the lessons learned, perceptions, and outputs from the youth engagement program assessment and the participatory planning process with BAS, SACD, and other MPA co-management partners. It aims to develop a collaborative framework for a structured youth engagement strategy. It integrates a focus on class-based activities and 'learning by doing' through outdoor experience. The strategy provides opportunities for class and field activities from infants through high school, integrating existing activities by multiple organizations, reducing overlap of effort, and standardising messages to ensure students are immersed in and inspired by conservation experiences throughout their school life - from primary

[213] IDB, 2023. BL-L1042. Promoting Sustainable Growth in the Blue Economy. Gender & Diversity Assessment
[214] IDB, 2023. BL-L1042. Promoting Sustainable Growth in the Blue Economy. Gender & Diversity Assessment

to high schools – and continuing beyond. Results of the assessment indicate that there is a high level of youth engagement, with positive behavioural change, especially when field activities are part of the structured learning activities. This is critical as field activities such as the BAS Reef Protectors and SACD Volunteer and Internship Programmes engage environmental interest and build conservation leadership skills in these vital fishing communities.

- **Indigenous Peoples & Afro Descendants (IPADs)** [215]

The economic basis of the survival of indigenous peoples is increasingly under threat. The state provides no financial support for Maya or Garifuna farmers to practice their traditional farming. Furthermore, since the 1990s, the government has granted logging concessions to foreign companies covering hundreds of thousands of acres of land in Toledo. These concessions have impacted heavily on indigenous communities and their way of life. These communities continue to fight to defend their land rights from encroachment and expropriation by large corporations and illegal miners. A landmark judgment in 2015 ruled in favor of the 39 Mayan communities in Southern Belize, concluding that they had rights to the lands they had historically occupied. As with gender, existing national data in reports and datasets is lacking to determine precisely how indigenous and afro descendants score in any of these areas within the coastal zone and fisheries sector.

5.3.5. Results of the sociocultural analysis study[216]

The main results of the sociocultural study prepared by the IDB for this Program are transcribed below:

“The focus group discussions conducted in February 2023 allowed for greater identification of priority areas among fisherfolks and insights into opportunities and recommendations from respondents. While the number of respondents remains small (with only fifteen participants), the discussions validated either entry-points and interventions presently being proposed under BL-L1042 or highlighted the need to explore further interventions that can be designed, particularly under Component II: Direct support to anglers and fishing groups for sustainable and inclusive development of the fisheries sector of Belize. Using a thematic approach, the following areas are discussed:

- **Economic Interest**

Respondents expressed agreement with the need to improve landing sites and meet both sanitary conditions and support refrigeration systems. Fishers in Belize City agreed that the site of the present landing site is seen as a historic landmark but needs upgrading to ensure sanitary requirements for handling seafood are met. Fishers in Dangriga expressed interest in relocating and establishing a landing site that meets sanitary requirements and provides a refrigeration system on-site.

[215] IDB, 2023. BL-L1042. Promoting Sustainable Growth in the Blue Economy. Gender & Diversity Assessment
[216] IDB, 2023. BL-L1042. Promoting Sustainable Growth in the Blue Economy. Gender & Diversity Assessment.

Respondents generally expressed interest in receiving matching grants as fewer fisherfolks opt for commercial loans. Respondents described how the often make informal loans from relatives or friends to invest in their equipment, supplies, etc. A few respondents reported using savings from the credit union and discussed the limitations of becoming eligible for loans as their income is not fixed.

Respondents expressed interest in support of diversification either associated with the sector (e.g., sea cucumber) or linked indirectly (e.g., establishing a restaurant). While there were no discussions on business plan formalization, respondents shared various business ideas to assist in offsetting the longer hours at sea with less produce as compared to times when they could go out to fish for two (2) hours and yield enough for a day's catch either as subsistence or commercial fishers.

☞ Social Protection

Respondents reported that they do not have any medical or insurance schemes to cover injury or sick benefits for anglers. They do not pay sick or injury benefits under the Social Security (SS) Act. While fishers can pay as self-employed under SS laws, few opt to do so as their income is not fixed, and they would be unable to meet monthly contributions under such a scheme.

Respondents also confirmed that the Government of Belize had provided no subsidy or direct financial support. While stakeholders in other sectors (e.g., tourism) received assistance post-pandemic, anglers have not received such support.

☞ Health & Safety

Respondents expressed concerns for personal safety and often reported to the Belize Fisheries Department (e.g., illegal fishing and pirating). Women fishers described concerns about being out at sea, but most reported joining their parents, husbands, or sons when fishing.

Respondents reported that all anglers must carry a first aid kit onboard as required by law; however, when asked about skills in first aid, only three (3) of the fifteen (15) respondents had training in first aid. These respondents explained that they had learned such skills at their previous (e.g., a former fisheries officer or student) or present roles/jobs (volunteer at the Belize Defence Force).

☞ Grievance Mechanism

Respondents confirmed that a grievance mechanism allows anglers to report directly to Belize Fisheries Department (BFD) or via there fishers' association. However, of those who responded, there were reports of little to no satisfaction with the process (many respondents opted not to comment). Respondents described personal grievances and reports on observations of illegal activities lodged at BFD but had not received any follow-up.

☞ Risks as Perceived in Collaboration with the Government

Respondents described several risks as perceived and based on experience with past government projects. Generally, respondents listed several risks ranging from corruption among government officials to 'little to no support' to fishers if the Government of Belize (G0B) becomes an intermediary. Several examples of past projects were cited where fishers were consulted, but no tangible investment was ever completed in their communities. Respondents claimed that the GoB used finances to purchase vehicles and were still not amenable to visit associations when associations requested that government officials provide information sessions or training.

Respondents also expressed a lack of trust in government and non-government organizations (NGOs) if future project funds were directed via such a department. A few respondents recommended more consultation with fishers directly before projects are designed, as fishers are seldom consulted in many processes. Respondents reported that most grant funding is spent on advocacy and training with no money for equipment to benefit the fisher. Without equipment, there is no application and benefit to stakeholders after training.

☞ Assets Owned

Of the respondents interviewed, only three (3) owned their boats, with the majority either borrowing boats or going along with relatives or friends when they needed to fish.

☞ Gender Characterization

Of the fifteen (15) anglers interviewed, seven (7) were not association members. Of these seven (7), six were women".

5.3.5. Map of stakeholders in the project area

In the early stages of project design, it is important to involve stakeholders as it helps to: [217]

- Capture the points of view and perceptions of the people who may be affected by the execution of the Program's projects to improve design and implementation, reduce adverse impacts, and improve benefits.
- Provide an essential source of validation and verification of data obtained elsewhere and improve the quality of environmental and social impact assessments.
- Enable people to understand their rights and responsibilities concerning a project.
- Improve trust, project buy-in, and local ownership through increased transparency and stakeholder engagement,

According to the field work carried out in 2022, as well as the list of BFD records, the groups of actors identified are presented below:

[217] Adapted from Inter-American Development Bank 2017. IDB Series on Environmental and Social Risk and Opportunity: Meaningful Stakeholder Consultation

- **Group 1: Fishermen:** The actors in this group are considered potential beneficiaries of the Program. This group includes fishermen, and within this group are included vulnerable people such as women, youth, Afro-descendants, and people belonging to indigenous groups.

- **Group 2: Associations, Cooperatives, and other organized groups:** The actors in this group are considered potential beneficiaries of the Program. This group includes the different organized groups that may be interested in the Program's actions. This group included vulnerable people such as women, youth, Afro-descendants, and people belonging to indigenous groups.

- **Group 3: Support Organizations:** The actors in this group are considered drivers of value chains for the fishing sector. The actors in these value chains play an important role in product processing, distribution, trading, and marketing. As part of this group would be the Regional Organizations, Universities, NGOs, the private sector, and representatives of the National Bank.

- **Group 4: Institutional:** This group includes representatives of some of the institutions directly related to the Program at the level of ministries, coastal zone management, port authorities, tourism, and public or private maritime transport**.**

Table 17 presents some of the relevant stakeholders for the project. It should be noted that the contact information for each of these actors is found in the BFD database.

Table 17. Stakeholders of the Program

Group				Description*
G1	**Fishermen**	Representatives of potential beneficiaries for each of the districts. (Women, young, afro descendants and indigenous people)		Representative fishermen of Corozal
				Representative fishermen of Belize
				Representative fishermen of Stann Creek
				Representative fishermen of Cayo
				Representative fishermen of Orange Walk
				Representative fishermen of Toledo
G2	**Associations, Cooperatives, and other organized groups**	Representatives of potential beneficiaries of organized groups		Northern Fishermen Cooperative Association
				Wabafu Fishermen Association
				Rio Grande Fishermen Cooperative
				National Fisheries Producers Cooperative
				Sarteneja Fisherman Association
				Belize Women's Seaweed Farming Association
				Marigold Women's Coopertative
				Toledo Fishermen Association
G3	**Support Organizations**	Representatives of companies, groups, NGOs, academy, and the private sector that are considered drivers of value chains for the fishing sector		Caribbean Regional Fisheries Mechanism (CFRM)
				Senator NGO's /OCEANA
				Galen University
				University of Belize
				Central Bank of Belize
				Belize Chamber of Commerce
G4	**National institutions**	Institutions	BELTRAIDE	Belize Trade and Investment Development Service
				Coastal Zone Management Authority and Institute
			BCCI	Belize Chamber of Commerce & Industry
				Belize Coast Guard
				Ministry of Finance, Economic Development & Investment
				Ministry of Tourism & Diaspora Relations
				Ministry of Natural Resources, Petroleum & Mining
				Belize Port Authority
				Belize Tourism Board
				Water taxi representatives
			INMARBE	International Merchant Marine Register of Belize

Source: Own data compiled using information from BFD, 2022.

5.3.3. Economic context

- **Industries**

Belize has a small open economy that depends on its natural resource endowments. Historically, the country has relied on the agricultural and forestry industries for economic development. Exporting sugar, citrus, bananas, and forestry contributed significantly to the country's economic growth (NCCO_2016). The Belize Institute of Statistics estimates the value of the country's GDP at BZE 2,635.6 million dollars based on 2014 data.

The primary industries, which include agriculture and forestry (10.15%), Fishing (3.08%), and mining and quarrying (0.46%), gave a minor contribution of 13.70% and a total of BZE 381 million dollars. Secondary industries such as manufacturing (9.90%), construction (2.81%), and electricity and water supply (3.33%) are the second-highest income earners, contributing to 16.03% of the GDP with a total of BZE $407.2 million. Tertiary industries, including the tourism and services sector, have contributed 60.29% of GDP, totaling BZE $1,589.1 million in 2013. This industry includes wholesale and retail trade and repairs (15.36%), hotels and restaurants (4.72%), transport and communications (11.01%), financial intermediation (6.65%), and real estate (10.15%) and community services (4.72%), among others. (NCCO, 2016).

- **Tourism**

The tourism sector in Belize is one of the most important for the country's economy. This industry was the largest source of income in 2005 and 2006, accounting for about BZ$350 and 400 million in profits, respectively (Belize Tourism Board (BTZ): Summary of Travel and Tourism Statistics, 2012). In 2015 Belize had approximately 1,299,100 visitors who traveled. However, around 73% of visitors arrived via cruise ships. Over 326,000 were overnight visitors (BTB, 2016), critical to ensuring that tourism benefits are distributed and reach communities throughout Belize (NBSAP et al., 2018.).

Tourist visits to national protected areas are a significant financial contribution to the cash management of these sites. The collateral benefits of tourism-related protected areas for communities are evident in rural areas, such as the Mayan Center, adjacent to the Cockscomb Basin Wildlife Sanctuary, where the women have a thriving craft market. Many hunters have now moved on to provide guided visits to the protected area (NBSAP et al., 2018). The expansion of the tourism industry has occurred without proper strategic and technical planning, including land-use planning and zoning, infrastructure, human capital development, and a comprehensive strategy to preserve tourist attractions. Tourism growth has been driven mainly by cruise ship visitors, who spend less than overnight. (IDB,2020).

- **Fishing industry**

The fishing industry contributes significantly to Belize's economy, mainly through lobster, conch, and shrimp exports. The Fishing Subsector contributed 2.2% to Belize's Gross Domestic Product (GDP) in 2008 (Belize Institute of Statistics, 2008). For 2008, Fishery export statistics reflected earnings valued at Bze$43.6 million, with lobster contributing Bze$14.0 million, conch

Bze$6.5 million, and farmed shrimp and fish Bze$22.8 million (Belize Department of Fisheries, 2008). (CCSI, 2014).

Belize's fishing industry has contributed significantly to the country's development by providing direct employment for fishers and processing plant personnel. The fishing industry is divided into two main sectors: wild capture fishery and aquaculture. The wild capture fishery sector is predominantly a small-scale fishery, conducted primarily within the protected shallow waters of the main barrier reef (flat reef and reef slope), including the three atolls (Isla Turneffe, Glovers Reef, and Lighthouse Reef). (CCSI, 2014).

The sector is characterized as a commercially artisanal industry except for the industrial trawl fishery of shrimp, which employed approximately 2,759 active anglers in 2009. The artisanal fishing fleet comprises 628 open boats, sail sloops, and canoes. The industry is considered lucrative and successful mainly because of the reasonable prices on the foreign market and because most fishers belong to one of the four primary cooperatives. They play a dominant role in the industry and are owned by local investors and fishers, the principal shareholders (Wade, 2010). The economic dependence on the traditional fishing industry is high, particularly in the north coastal communities, where options are limited for diversification into other livelihoods. Fishing depends heavily on the reef's health, which faces multiple pressures from unsustainable Fishing and land-based pollution, climate change, and ocean acidification. (CCSI, 2014).

- **Belize's artisanal fisheries**

Approximately 2,590 people are actively working as fishers in Belize (pers. comm., Belize Department of Fisheries, 2016), with a total direct income from the fishing industry in 2011 estimated at USD 22 million. Artisanal fisheries, dominated by queen conch (Lobatus gigas) and Caribbean spiny lobster (Panulirus argus), account for 95% of national fish landings and generate more than USD 13 million per year in revenue. Artisanal fish fishing provides a vital source of income and essential food security, considering that 41% of the population lives below the poverty line. Belizean fisheries are under increasing pressure, partly due to the erosion of markets for sugarcane in the US and Europe, leading farmers to convert to the fishing industry. Improved fisheries management, alternative income, and diversification are recognized needs (BFD, 2018). Until the 1950s, the fisheries in Belize were artisanal, but later they became commercial fisheries, albeit on a small scale (Berkes et al., 2001, cited by Huitric, 2005).

- **Fishing Cooperatives**

In 1960, 39 fishers from Caye Caulker came together to form the Northern Fishermen's Cooperative Society (Sutherland 1986). In 1965, the Government of Belize passed a law that only cooperatives would be granted export quotas (Daly Price 1986). This shut down all foreign exporters and ensured that the revenues from the export of marine products remained in Belize. Many cooperatives were started in subsequent years, although most were short-lived (Belize Fisheries Department 2001). Four cooperatives have persisted: Northern Fishermen's Cooperative Society and National Fishermen Producers' Cooperative Society based in Belize City, Placencia Producers' Cooperative Society in Placencia, and Caribeña Producers' Cooperative in San Pedro. Since the early 1990s, when the cooperatives in Placencia and San Pedro discontinued processing and exporting their catch because of increased costs and decreased landings, the two cooperatives in Belize City have dominated the industry. A more

recent change has been improved infrastructure in the south. In response to decreased yields in the north after Hurricane Keith, the Northern Fishermen's Cooperative Society opened a receiving station in Mango Creek to encourage their members to move southward. In 2001, the Rio Grande Cooperative was established in Punta Gorda[218].

Belize is unusual in the Caribbean for its strong and active fishermen's cooperatives (Brown and Pomeroy 1999). Cooperatives were essential in enabling a fairer distribution of profits from the industry, which has generated wealth and created opportunity in local communities (Gordon 1986, Sutherland 1986). This has been an excellent success for the cooperatives. The cooperatives increased fishermen's income by providing direct access to an unsaturated foreign market. Cooperatives developed for economic reasons and not for resource use management, and their economic impacts have been a significant industry driver. When cooperative yields stabilized in the 1980s, cooperatives began to compete with each other for production. Cooperatives created incentives to continue fishing despite declining catches, including direct subsidies, such as for ice and low-interest loans, and indirect subsidies, for example, allowing loan abuse and providing place disembarkation to non-members. This artificially changes the market risks, rewards, and costs of fishing (Roodman 1996, Myers and Kent 1998). Fishing has become economically constrained by investment and fuel costs to overcome environmental constraints[219].

- **Livelihoods**

Belize's commercial and subsistence fishing is essential to the livelihoods of approximately 2,800 fishermen, their families, and coastal fishing communities. The Belizean fisheries were considered open access to the fishery until 2011. The threat of resource depletion became evident when fishermen's catches gradually decreased. As a result of this situation, the Belize Fisheries Department (BFD), in association with NGOs, implemented a rights-based approach to fishing management known as managed access. The program was designed to empower traditional fishers by ensuring greater participation in the decision-making process affecting their livelihoods. It enhances the benefits of fish stocks in terms of increased fish landings, reduced effort fishing, larger size classes, and higher prices and revenues[220].

In the process of the national expansion of Managed Access. In June of 2016, Managed Access was rolled out to the entire territorial waters of Belize, and it now secures tenure for fishermen to fish in two of eight designated fishing areas, called TURFs (Territorial User Rights for Fishing), with the additional option of Area 9 that is designated for deep-sea fishing. The Belize Fisheries Department Managed Access Task Force evolved into the Managed Access Working Group (MAWG), which now incorporates a broader array of stakeholders. The establishment of the MAWG was realized to have a better participatory intervention of both stakeholders and technical capacities that would better guide the expansion under an ecosystem-based approach[221].

[218] Huitric, Miriam. 2005. Lobster and Conch Fisheries of Belize: a History of Sequential Exploitation.
[219] Huitric, Miriam. 2005. Lobster and Conch Fisheries of Belize: a History of Sequential Exploitation.
[220] Martinez, Virginia et al., (n.d). Managed Access: A Rights-Based Approach to Managing Small Scale Fisheries in Belize
[221] Martinez, Virginia et al., (n.d). Managed Access: A Rights-Based Approach to Managing Small Scale Fisheries in Belize

- **Aquaculture**

Aquaculture in Belize formally began in 1982 with the development of pilot programs led by the private sector. Aquaculture production still represents a small share of total fish production. Its percentage in total production has varied between the 19 percent recorded in 2003 and the 1 percent recorded in 2016. As to the external sector, aquaculture products represented more than four fish exports in 2014. In 2017, they still represented 25 despite the notable decrease in production. The reason is twofold. First, prices of aquaculture products such as shrimps are relatively high compared to other more substitutable products. Second, species groups such as Tuna Sardines or Mackerels directly landed in foreign countries are not counted as exports from Belize (UNCTAD, n.i.).

Belize is subdivided into two (2) climate systems with subtropical conditions in the northern lowlands and central interior areas with tropical conditions in the southern and coastal areas, allowing for increased product diversification prospects. However, Belize's aquaculture industry is highly vulnerable to adverse weather and disease outbreaks in a room with increasingly less seasonal weather patterns and a high risk of increased hurricane and tropical storm activity. Belize's National Biodiversity Strategy and Action Plan highlighted that droughts and floods increasingly affect aquaculture farm production. (NBSAP, 2016 – 2020). Shrimp farming forms the aquaculture industry's basis and relies on a clean and adequate water supply. Historically, shrimp production has been about 10 tons a year. The 13 shrimp farms employ over 1,000 people, predominantly from the southern communities (BSGA, pers. com., 2014, cited by GEF et al., 2020).

CHAPTER 6: STRATEGIC OPTIONS

CHAPTER 6. Strategic Options

This chapter summarizes the strategic options Program's Promotion of Sustainability in the Blue Economy as the basis of the SESA. The strategic socio-environmental options are derived mainly from the analysis of the Policies, Plans, and Programs (PPs) related to the object of evaluation, which is the Program[222].

6.1. Strategic Framework

➢ Alignment with national and international priorities

The project is aligned with Horizon 2030, the National Development Framework for Belize and its Growth and Sustainable Development Strategy, the Government's five-year strategic management plan for BE, its National Climate Resilience Investment Plan, the 2014-2024 National Environmental Policy & Strategy, and its Updated Nationally Determined Contribution 2021. This aligned is consistent with and seeks to implement interventions and investments identified and prioritized under the action plan of Belize's Ocean Economy and Trade Strategy (2020) for the country's marine fisheries and seafood processing sector, as developed by the United Nations Conference on Trade and Development (UNCTAD). The project is expected to contribute to Sustainable Development Goals: 1 No poverty, 5 Gender Equality, 12 "Responsible consumption and production"; 13 "Climate action," and 14 Life below water[223].

➢ Strategic objectives of the IDB intervention in operation BL-L1042[224]

- ☞ The operation is consistent with the Update to t 2020-2023 (AB-3190-2) Institutional Strategy and is expected to contribute to the 2020-2023 (GN-2727-12) Corporate Results Framework through the development challenges of:
  - ☞ Productivity and Innovation
  - ☞ Economic integration, since the project will promote an export-oriented market sector.
  - ☞ Additionally, the operation is aligned with the cross-cutting themes of:
    - **Gender equality and diversity**, since the project will include specific gender-sensitive approaches.
    - **Climate Change and environmental sustainability**, since it will promote sustainable management of natural resources.

222 In this case, the object of evaluation is the Program Promoting Sustainable Growth in the Blue Economy, which under the execution of its activities, may generate some risk or socio-environmental impact.

223 IDB, 2022. Project Profile Promoting Sustainable Growth in the Blue Economy Program (BL-L1042).

224 IDB, 2022. Project Profile Promoting Sustainable Growth in the Blue Economy Program (BL-L1042).

- **Institutional Capacity** and the rule of law, since it will support institutional strengthening for sector management.

The operation is consistent with the Sector Frameworks for i) Environment and Biodiversity, ii) Climate Change, and Water and Sanitation Sector.

6.2. Strategic Reference Framework (SRF)

The Strategic Socioenvironmental Reference Framework (SRF) identifies the links or gaps between the central Policies, Plans, and Projects (PPP) related to the Program, the fishing sector, and the socioenvironmental component. This SRF aims to establish the SESA's strategic foundation and critical decision factors. The central policies, strategies, or plans analyzed are listed below:

- **"National Biodiversity Strategy and Action Plan (NBSAP) 2016-2020."**[225]

Vision: *"The natural environment of Belize is valued, improved, and enjoyed for all and contributes to improving the quality of life of their people."*

The NBSAP and Action Plan are based on Belize's commitment to the conservation and sustainable development of national biological diversity. The Plan is supported by fifteen guiding principles grouped into four areas: i) Respect, ii) Responsibility, iii) Environmental context, and iv) Commitment.[226]

- The Goal of the NBSAP is divided into the:

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

- Fundamental to effectively implementing the National Biodiversity Strategy and Action Plan is achieving positive behavior change by fostering an understanding and appreciation of biodiversity, its benefits, and values at all levels of society.

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

- Belize recognizes the importance of reducing direct and indirect pressures on biodiversity and the critical need to implement the National Land Use Planning Framework. To fulfill this purpose, Belize must promote the sustainable management of primary industries such as

[225] Ministry of Agriculture, Forestry, Fisheries, the Environment and Sustainable Development, Belize, et al., 2018. National Biodiversity Strategy and Action Plan 2016-2020.
[226] Ministry of Agriculture, Forestry, Fisheries, the Environment and Sustainable Development, Belize, et al., 2018. National Biodiversity Strategy and Action Plan 2016-2020.

agriculture, fishing, and forestry, among other crucial aspects, to ensure balanced and sustainable development.

- Strengthen the system of protected areas and the protection of species to recognize the importance of natural ecosystems in the most significant land and seascapes, mitigate impacts and implement actions to build resilience towards climate change.

- The NBSAP strategies identify the need to support the Land Use Planning Framework and Integrated Coastal Zone Management Plan, focused on balancing development needs while maintaining ecosystem services. This Goal also focuses on integrating traditional knowledge and customs into protected area management and valuing and safeguarding knowledge and businesses.

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

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

- **The National Trade Policy 2019–2030**[227]

Vision: *"To develop a competitive economy by utilizing trade as a significant driver for inclusive and sustainable socioeconomic development."*

Three Principles guide the National Trade Policy: Promoting Competitiveness, Attainment of Asymmetrical Treatment, and Commitment to Regionalism. Policy pillars are i) Supply Capacity; ii) Institutional Strengthening; iii) Enhancement of Market Access, and iv) Trade Facilitation.

- General Policy Objectives[228].

The Trade Policy seeks to achieve the five (5) general objectives outlined below.

- Reduce business costs, enhance competitiveness, and develop efficient production systems and capacities.
- Improve trade performance, diversify production and export basket, and enhance value addition.

- Develop and enhance services trade growth and establish a practical institutional and legal framework.

[227] Ministry of Economica Development, Petroleum, Investment, Trade & Commerce, 2019. Government of Belize. The National Trade Policy (2019-2030).
[228] Ministry of Economica Development, Petroleum, Investment, Trade & Commerce, 2019. Government of Belize. The National Trade Policy (2019-2030).

- Build and strengthen multilateral, regional, and bilateral trade relations and enhance market access and entry.

- Build a solid and practical institutional and legal framework for trade development with competent human capital and an entrepreneurial mindset.

Explicitly related to marine fisheries, section 9.6 of the policy sets out the objective to promote investments within Belize's EEZ.15 Section 10.4 highlights the importance of linking trade and the environment to achieve sustainable development. (UNCTAD, 2020).

Likewise, regarding socio-environmental aspects, the National Trade Policy (2019-2030) of Belize describes issues related to the inclusion of gender and disability in section 10.2 and in section 10.4, aspects related to the promotion of coherence between trade policies and the environment to achieve sustainable development[229].

- **Integrated Coastal Zone Management Plan 2016–2020**

Vision: *"A sustainable future where healthy ecosystems support, and are supported by, thriving local communities and a vibrant economy."*

The objective of the national ICZM coastal zone management strategy in Belize is "To support the allocation, sustainable use and planned development of Belize's coastal resources through increased knowledge and building of alliances, for the benefit of all Belizeans and the global community."

Below are four strategic objectives for achieving this vision for a sustainable coast[230].

- Encouraging Sustainable Coastal Resources Use

  There is a growing need to advance the economic and resource attributes of the coastal and marine protected areas system and to improve the management of natural habitats and wildlife. Scientific research and monitoring are central to the process.

- Supporting Integrated Development Planning

  Integrated resource use and development planning, both on land and at sea, is a critical issue that requires control over unplanned development through better planning, coordination, legislation, and regulations to reduce the impact of both marine and terrestrial development on the Belizean coast.

- Building Alliances to Benefit Belizeans

[229] Ministry of Economica Development, Petroleum, Investment, Trade & Commerce, 2019. Government of Belize. The National Trade Policy (2019-2030).
[230] Coastal Zone Management Authority and Institute (CZMAI). 2016. Belize Integrated Coastal Zone Management Plan. CZMAI, Belize City.

Building bridges between and among various interest groups is essential to improve public education and form functional linkages for effective coastal area management. Such links will strengthen the capacity to monitor and enforce a large coastal area, especially where institutional resources are stretched to achieve their mandates.

- Adapting to Climate Change.

  It is related to aspects are socioecological vulnerability and resilience, socioeconomic adaptation capacity, prioritization of ecosystem-based adaptation, and governance as a tool for resilience building.

- **Maritime Economic Plan (MEP)**

The Maritime Economic Plan (MEP) is presently finalizing by MBECA and Belize Blue Economy Development Policy, Strategy, and Implementation Plan (BBEDPSIP) 2022-2027[231].

➢ The bedrock sectors[232]

- Energy

  Emerging opportunities: Emerging green technologies and the opportunities to research them should be a focus in the coming years. Belize has the potential to develop wind, solar, and biomass energy, which are critical elements for the country to achieve its Nationally Determined Contributions (NDC).

- Shipping & ports

  The expansion of the Port of Belize is proposed to expand the cargo and container port areas, which must involve dredging and deepening entry channels for larger vessels. There is also a demand for an additional passenger cruise terminal port in addition to the cargo port (in the NAREM complex).

- Fisheries

  The opportunities for the sector lie in using sustainable energies to contribute to reducing production costs and adding value. Likewise, the accreditation of fishing, the development of new fishing gear, and the improvement of the spatial management of fisheries can reduce competition between users (fishing activities vs. tourism, marine protected areas, maritime transport, etc.) and find the regional and national collaboration of the CZMAI, Department of Fisheries and Regional Organizations.

[231] IDB, 2022. Project Profile Promoting Sustainable Growth in the Blue Economy Program (BL-L1042).
[232] Draft Maritime Economy Plan – Belize (2021) jointly developed between the Government of Belize and the Commonwealth Marine Economies Program supported by UK AID.

Although lobster and conch fisheries are mature, there are opportunities to develop new products in emerging countries' market trends, such as the red snapper fishery, which could help increase the presence of Belizean products in the US market.

- Marine Mineral Exploitation

  There are few opportunities to develop marine mineral exploitation due to the lack of available aggregate sources and the potential risks dredging poses to the coral reef system and the tourism/fishing sectors it supports.

- Tourism

  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 Belize's most unspoiled offshore islands. There are numerous opportunities for growth and investment in tourism, including ecotourism, adventure, nature, cruise, and nautical tourism (yachting and sports fishing) and decentralization 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 necessary, 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 solid waste management).

  Marketing the 'ridge to reef' concept will be necessary for future tourism development and considering how maritime tourism can assist broader terrestrial ecotourism development. Both aspects will benefit from enhancing the interaction and links between fisheries and tourism.

- Emerging sectors: Not established are i) Offshore Renewable Energy (ORE), ii) Mariculture, and iii) Biopharma

▪ A national Climate Change Policy Strategy and Action Plan to address Climate Change in Belize[233]

Vision: ***"****Demonstrating leadership and commitment in ensuring the challenges of Climate Change and sea-level rise are fully addressed, harnessing necessary resources to support the development of special programs that are effective, resilient, and sustainable."*

➢ Goal

The National Climate Change Policy aims to guide the short, medium, and long-term processes of adaptation and mitigation of Climate Change following national prospects for sustainable development in addition to regional and international commitments. This policy shall ensure an integrated and well-coordinated approach to Climate Change adaptation and mitigation by

[233] CCCCC, MDDSD. 2014. National Change Policy, Strategy and Action Plan. https://www.climate-laws.org/geographies/belize/policies/national-climate-change-policy-strategy-and-action-plan

fostering the development of appropriate administrative and legislative mechanisms in Alignment with national sectoral policies and adaptation plans. The policy will further guide mainstreaming along a low-emission development pathway by focusing on reducing anthropogenic emissions of greenhouse gases.

➢ Objectives

The objectives of the National Climate Change Policy are to:

- Integrate Climate Change adaptation and mitigation into critical national developmental plans, strategies, laws, regulations, and budgeting.
- Build Climate Change resilience to prevent, reduce or adapt to the negative impacts of Climate Change on critical sectors, economic activity, society, and the environment through policies and strategic processes.
- Promote capacity building and networking across all implementing/involved agencies and secure adequate financing for effective and timely adaptation and mitigation responses over the short, medium, and long-term periods.
- Capitalize on opportunities currently available through Climate Change negotiation processes that can enhance the nation's development prospects.
- Ensure that all national sectors are adequately prepared to address the negative impacts of climate change.
- Encourage the private and public sectors to invest in Climate Change Adaptation and mitigation initiatives by providing economic incentives.
- Enhance diplomatic and negotiating capacities to address better Climate Change concerns and interests on the regional and international stage.
- Promote the development of efficient and relevant institutional mechanisms to enhance the planning and response capacity to Climate Change.

- **National Integrated water resources Management Policy (including Climate Change)[234]**

The fundamental principles of this water policy include the following:

- Water is a finite and vulnerable natural resource essential to sustain life, the environment, the economy, and national development.
- As a national resource, water belongs to Belize's people, now and forever.

[234] CCCCC, 2008. National Integrated water resources Management Policy (including Climate Change) for Belize. Belmopan, Belize

- Water is vested in the state, the guardian and guarantor of water rights.
- The state governs, manages, and promotes the rational use of water resources for the benefit of the Belizean people at all times.
- Access to safe and affordable water is a fundamental right of all Belizeans, and water availability is directly correlated to levels of health and poverty.
- Watersheds and their surface and subterranean linkages to the marine environment are the basic functional units for achieving Integrated Water Resources Management.
- Water is economically valued, and the "user pays" principle ensures resource sustainability.
- Water has equity value, and water rights are allocated by the state and are tradable.
- Global climate change, climate variability, and land use will impact the availability and use of water resources.

➢ Socio-environmental Aspects (SA)

The socio-environmental issues identified in the different PPPs of the Strategic Reference Framework described above include:

- Biodiversity
- Sustainable use of coastal and marine resources
- Conservation, Monitoring
- Water resources
- Fisheries
- Tourism
- Shipping and ports
- Pollution
- Coastal Development
- Gender
- Institutional Framework.

6.3. Strategy Formulation (SF)

The Formulation Strategy was based on a SWOT analysis (Table 18) (strengths, weaknesses, opportunities, and threats) to evaluate the fishing sector's position within:

- Promoting Growth in Sustainable Blue Economy Program
- National Biodiversity Strategy and Action Plan (NBSAP) 2016-2020.
- The National Trade Policy 2019–2030
- Integrated Coastal Zone Management Plan 2016–2020
- Maritime Economic Plan (MEP)
- A national Climate Change Policy Strategy and Action Plan to address Climate Change in Belize
- National Integrated water resources Management Policy (including Climate Change)

The SWOT analysis considered internal and external factors, presented in a square segmented into four quadrants, each dedicated to a SWOT element. Although all the points under a particular heading may not be equally important, they all represent critical ideas about balancing opportunities and threats, advantages and disadvantages, etc. At a general level, the SWOT analysis includes the following:

Strengths	The strengths describe what the country stands out for at the level of its strategic geographical position, protected areas, natural resources, sustainability, and management actions of the fishing resource by the Government with the support of regional and international organizations.
Weaknesses	The weaknesses include issues related to the need for support tools for the institutions in charge of ensuring compliance with operating regulations in the fishing sector and environmental protection.
Opportunities	Opportunities refer to favorable external factors that could give the sector a competitive advantage through the implementation of value chains and the improvement of products and livelihoods of fishermen.
Threats	They refer to factors affecting an institution or territory according to its vulnerability. Among these factors are the contamination of resources, risks, and natural threats.

The SWOT interpretation was carried out under the analysis of the four possible strategies, these were:

- Offensive Strategy: Strengths and Opportunities.
- Defensive Strategy: Threats and Strengths.
- Reaction Strategy: Weaknesses and Opportunities.
- Survival Strategy: Weaknesses and Threats.

Table 18. Internal and External SWOT

STRENGTHS		WEAKNESSES	
Incorporation of measures to ensure sustainability in development planning in the protection, management, and strengthening of coastal resources	Internal	Unsustainable exploitation of natural resources (fishing, hunting, illegal wildlife trade), land-use change (including mangrove clearance, wetland filling)	Internal
Improvement of marine protected areas of natural importance to make them climate-smart, with marine spatial plans, fisheries management approaches based on regulated coastal development areas, and ecosystem rehabilitation.	Internal	Coastal policies, plans, climate hazards, and coastal ecosystem services must be integrated into decision-making, lack of awareness and resources to develop EIAs, climate-resilient water quality, erosion management, and fisheries.	Internal
Oversight of compliance with EIA regulatory requirements for coastal mangroves and implementation of recommendations for developing a coastal management plan.	Internal	Need for training in hydrographic surveys, maritime engineering, port waste management, and EIAs to support growth in the environmentally sensitive sector	Internal
		The market focused on lobster and shell without exploitation information to validate fisheries management and sustainable fisheries.	Internal
		Capacity gaps in the training of fisheries and natural resource managers by competition for space.	Internal
		Low empowerment of women with wage gaps and gender disparity; no data on employment in the maritime sector in Belize.	Internal
Management plans, mangrove conservation, habitat protection, and fisheries to protect wetlands and seagrass beds from supporting fisheries to become resilient to climate change by encouraging the diversification of fish species.	External	Water resources management is currently shared among various government agencies with overlapping actions.	External
Consolidation and strengthening of the MPA system through the establishment of Fish Reserves. Expand the no-fishing zone in MPAs and invasive species management at the national and regional levels.	External	Standards according to the needs of the market and value chains to compete internationally.	External
Support in the design and implementation of projects with International Organizations, WB, IDB, IFAD	External		E
OPPORTUNITIES		**THREATS**	
We are incorporating measures to ensure sustainable development planning in protecting, managing, and strengthening coastal resources.	Internal	Under control of the extraction and use of water resources	Internal
Improvement of institutional capacities in the development of the blue economy to be climate smart.	Internal		
Update marine fisheries plans with sustainable management approaches based on regulated coastal development areas and ecosystem rehabilitation.	Internal		
Improvement of data acquisition, information management, and communication systems.	Internal	Increasing demand for marine and coastal resources requires growing navigational, human, technical, and equipment capabilities with improved port, sewer, wastewater, and coordination for resource management.	Internal
Improvement of the fisheries sector by increasing technical assistance and conditions for fishermen.	Internal		
Identification of alternative livelihood portfolios for coastal communities due to the growth of the coastal population and the increase in pressure on coastal areas due to the demand for resources.	Internal	Explore the development of alternative livelihood plans for fishers who affected by the imposition of restricted fishing measures	Internal
Develop a regular public clearinghouse on the impacts of climate change on marine and coastal ecosystems	External	Cross-border incursions (both land and sea; Guatemala, Honduras and Mexico)	External
Strengthen the sector to meet national and international needs through responsible and sustainable fisheries management.	External	A national approach to address climate adaptation as the threat of sea level rise, especially for the population settling on the coast and keys.	External
	External	Currently excessive dependence on lobster and snail fishing with h strong reliance on the US market under invasive species.	External

Source: Own data 2022 completed using information by (1) "National Biodiversity Strategy and Action Plan (NBSAP) 2016-2020; (2) The National Trade Policy 2019–2030; (3) Integrated Coastal Zone Management Plan 2016–2020; (4) Maritime Economic Plan (MEP) ; (5) A national Climate Change Policy Strategy and Action Plan to address Climate Change in Belize; (6) National Integrated water resources Management Policy (including Climate Change

As a result of the strategies analyzed and according to the Program Components, it was identified that the most favorable strategy for developing the Program according to the proposed objective is the "Reaction Strategy," which links weaknesses with opportunities (W-O). This strategy aims to overcome internal weaknesses by minimizing them and taking advantage of external opportunities by maximizing them. Table 19 shows the most relevant Reaction Strategies for the Program.

Table 19. Reaction Strategies

#	Weakness	#	Opportunities	Options	Pillars
D1	Unsustainable exploitation of natural resources (fishing, hunting, illegal wildlife trade), land-use change (including mangrove clearance, wetland filling)	O1	To incorporate measures to ensure sustainable development planning in protecting, managing, and strengthening coastal resources.	D1O1	Measures for sustainability
D2	Coastal policies, plans, climate hazards, and ecosystem services must be integrated into decision-making; lack of awareness and resources to develop EIAs, climate-resilient decisions, water quality, erosion management, and fisheries.	O2	Improvement of institutional capacities in developing the blue economy to be climate smart.	D2O2	Capacity Enhancement in Ecosystem Services
D3	Need for training in hydrographic surveys, maritime engineering, port waste management, and EIAs to support growth in the environmentally sensitive sector	O3	Update marine fisheries plans with sustainable management approaches based on regulated coastal development areas and ecosystem rehabilitation.	D3O3	Sustainable fisheries management
D4	The market focused on lobster and conch without exploitation information to validate fisheries management and sustainable fisheries.	O4	Improvement of data acquisition, information management, and communication systems.	D4O4	Sustainable fisheries management
D5	Capacity gaps in the training of fisheries and natural resource managers by competition for space.	O5	Improvement of the fisheries sector by increasing technical assistance and conditions for fishermen.	D5O5	Technical Assistance
D6	Low empowerment of women with wage gaps and gender disparity; no data on employment in the maritime sector in Belize.	O6	Identification of alternative livelihood portfolios for coastal communities due to the growth of the coastal population and the increase in pressure on coastal areas due to the demand for resources.	D6O6	Improvement of quality of life
D7	Water resources management is currently shared among various government agencies with overlapping actions.	O7	Develop a regular public clearinghouse on the impacts of climate change on marine and coastal ecosystems	D7O7	Climate Change Resilience
D8	Low standards according to the needs of the market and value chains to compete internationally.	O8	Responsible and sustainable fisheries management will strengthen the sector to meet national and international needs.	D8O8	Sustainable fisheries management

Source: Own data 2022 completed using information by (1) "National Biodiversity Strategy and Action Plan (NBSAP) 2016-2020; (2) The National Trade Policy 2019–2030; (3) Integrated Coastal Zone Management Plan 2016–2020; (4) Maritime Economic Plan (MEP) ; (5) A national Climate Change Policy Strategy and Action Plan to address Climate Change in Belize; (6) National Integrated water resources Management Policy.

➢ Recommended Strategic Options (S) for the SESA base

As a result of the integration of the SWOT Matrix and the strategic objectives of the Program, the following strategy recommended for the SESA is: “Promote socio-environmental measures that minimize the impacts generated by the implementation of actions of the Program related to capacity improvement, sustainable fisheries management, technical assistance, improvement of quality of life, and resilience to climate change.”

6.4. Critical Factors for Decision (CFD)

The Critical Decision Factors (CDF) are the integrating themes that reflect the issues involved in the guidelines of the strategic reference framework, the strategic questions of the object of evaluation, and the socio-environmental aspects on which some affectation can be presented. Table 20 shows the key factors and indicators identified in the analyses of the different PPPs and the relevant Baseline issues.

Table 20. Critical Decisions Factors (CDF)

Topics	Critical Factor	Criteria			Description
Abiotic	Natural resources strategic	Soil		1	The erosion of the beaches corresponds to the processes of loss of the continental zone due to the advance of the sea in the interior of the continent that affects the coastline, the displacement and the deposit of sand, as well as the affectation of the soil due to processes of contamination by solid and liquid waste.
		Water availability		2	It includes reducing water both at the surface and underground levels due to climate change and the absence of rain with prolonged periods of drought. This groundwater reduction is often manifested in changes in recharge, base flow, seawater intrusion from coastal aquifers, or increased evapotranspiration under dry conditions and high temperatures.
		Water quality		3	Water is an element circulating or resting on the surface of the area to be evaluated at a superficial and underground level. The water quality can be affected by sediments, saline intrusion, contamination, and dredging, among other aspects.
		Air quality		4	Air quality is defined as the levels of Greenhouse Gases over time, either by increasing them or removing them (GHG). They correspond to the gases defined by the IPCC and their equivalents. This factor includes those substances (solid, liquid, or gaseous) that affect air quality and are not considered GHG.
Biotic		Terrestrial ecosystems	Terrestrial fauna	5	Corresponds to the different groups of wild animals and their interactions (food webs), such as insects, amphibians, reptiles, birds, and terrestrial and flying mammals
			Vegetable cover	6	Includes Submarine Pine Forests; Underwater Broadleaf Forests; Mangrove and coastal forests; Sea beds and marshes; and riparian scrub.
			Protection Areas	7	Corresponds to protected areas with international recognition and Key Biodiversity Areas (KBAS); NSPA (National System of Protected Areas); RAMSAR sites; The Belize Barrier Reef
		Aquatic ecosystems		8	Aquatic flora and fauna, their populations, and interactions are located in the study area in the rivers, streams, lakes, lagoons, and ocean.
Economic	Economic dynamics and livelihoods	Economic activity		9	In the context of fishing activity, it corresponds to the dynamics and condition of socio-productive activities, which include technologies, infrastructure, inputs, financing and investment, areas, volumes, and types of production, networks, marketing chains, and markets.
		Productive systems		10	It corresponds to the fisheries' use conditions and the set of techniques and labor traditions linked to the production and organization of the fishing population.
		Livelihoods		11	Includes artisanal or traditional fisheries that involve fishing communities where fishing is the subsistence economic activity that allows basic food and local consumption by the family linked to this activity.
		Employment		12	Generation of value from the activity produced by a person or a group. The employee contributes with his work and knowledge in favor of the employer, in exchange for an economic compensation known as salary.
Sociocultural	Quality of life and inclusion	Associativity dynamics		13	It includes the degree of social and associative participation of fishing groups in implementing plans, projects, networks, and relationships in the fishing sector.
		Health		14	It includes the different aspects that may affect the occupational safety and health of people engaged in fishing activity and research activities.
		Population Inclusion		15	It includes the inclusion of women, the indigenous population, Afro-descendants, and young people, within the context of equality and participation in the community without discrimination.
Institutional	Management	Capacity		16	Includes actions to improve the effectiveness and efficiency of MBECA officials and the Belize Department of Fisheries
Climate Change	Natural desasters	Vulnerability		17	It includes the different aspects related to the susceptibility of the fishing sector to face the adverse effects of climate change.

Source: Own elaboration, 2022

- **Alternative Analysis**

Below are the two alternatives analyzed according to the Critical Factors and the evaluation criteria in Table 21. Alternative 1 comprises the current scenario without Program. Alternative 2 corresponds to the procedure applying for the Promoting Growth in Sustainable Blue Economy Program in Belize.

Table 21. Alternative Analysis

Topics	Critical Factor	Alternative 1: Without Program	Alternative 2: With Promoting Growth in Sustainable Blue Economy
Abiotic - Biotic	**Natural resources strategic**	In Belize, the deep-slope fishery needs to be developed with a limited number of fishermen involved, inadequate fishing vessels, safety methods, and equipment, and biologically insufficient fisheries quality data and statistics to support future decisions (BID, FAO, 2022).	Implementing exploratory campaigns to be carried out by the Program will allow obtaining data on fish resources and relevant fishing techniques in Managed Access Fishing Zone 9, which will support decision-making around sustainable development.
		There are only formal assessments for pink snail and lobster fisheries where. The most recent, for the pink snail, was five years ago, and that of the lobster was 15 years ago. Although harvest rates may be estimates, they need to reflect the current state of these resources adequately ((BID, FAO, 2022).	The evaluation, updating, and validation of the spiny lobster management plan and the conch management plan to be carried out by the Program will allow for having updated information to guide the exploitation of these resources sustainably and minimize the impacts that overexploitation of them can generate.
Economic	**Economic dynamics and livelihoods**	Belize's fishing industry is currently heavily dependent on the U.S. market for export, which is a high risk for the sector. Consolidated products are lobster and snail, which in turn are affected by the adverse effects of climate change (BID, FAO, 2022).	The program will implement projects to diversify the fishing industry by developing actions to add value to lobster and conch and strengthening the sustainable blue economy and resilience to Climate Change.
Sociocultural	**Quality of life and inclusion**	The most recent record provided by the Belize Department of Fisheries as of July 2022 indicates that of 2,411 registered fishermen, only 3% correspond to registered women.	The program will implement inclusive projects where it will support the participation of vulnerable groups such as women, youth, Afro-descendants, and indigenous peoples, who will be able to receive technical assistance and subsidies to implement business plans.
Institutional	**Management**	Currently, the Belize Department of Fisheries (BFD) does not have a robust data management system to guide the development of harvest policies and strategies (BID, FAO, 2022)	The Program will strengthen institutional capacities in data collection and monitoring by implementing actions such as purchasing equipment and software that will allow the BFD to better plan the environmental sustainability of natural resources.

Climate Change	**Natural disasters**	Due to Belize's geographical location, the country is susceptible to the effect of various natural hazards caused by phenomena such as storms and hurricanes, whose frequency and intensity. The last Hurricane Lisa in 2022 recorded significant losses to fishermen at the level of damage and loss of gear and equipment. (Usher, 2023)	The Program will support individual fishermen and groups to improve their livelihoods and product positioning through matching grants. The actions of the Program will increase the resilience to climate change on the part of the group of beneficiary fishermen.

Source: Own data compiled using information from BID, FAO, 2022.

CHAPTER 7: SOCIO-ENVIRONMENTAL ASSESSMENT OF IMPACTS AND RISKS

CHAPTER 7: Socio-environmental Assessment of Impact and Risks

7.1. Evaluation of strategic option

The evaluation of the strategic option called “Alternative 2” in Chapter 6 of this study includes the development of three fundamental aspects: i) The socioenvironmental factors that may be affected by the actions of the Program projects; ii) The actions of the projects that have the potential to cause a change in the critical socio-environmental factors, and; iii) The identification and characterization of the impacts and the evaluation of risk. As a result of this evaluation, the positive and negative impacts generated by the actions of the Program projects and their corresponding socio-environmental measures are presented.

- **Identification of environmental factors**

Critical socio-environmental factors were identified in Chapter 6 of this study and correspond to the following: i) Natural resources strategy, ii) Economic Dynamic and livelihoods, iii) Quality of life and inclusion, and iv) Management

- **Impact identification matrix**

Table 2 2shows the interaction matrix between the socio-environmental actions of the Program and the environmental factors likely to receive impacts from project activities, both for the execution and operation/closure stages. Each interaction is identified with a corresponding letter and number.

Table 22. Matrix of interactions

Component	Critical Factors	ID	Criteria	COMPONENT 1: Strengthening the capacities of government institutions			COMPONENT 2: Direct support to fishers and fishing groups		COMPONENT 1: Strengthening the capacities of government institutions		COMPONENT 2: Direct support to fishers and fishing groups	
			Projects /Lines Actions	EXECUTION STAGE					OPERATION/CLOSURE STAGE			
				Exploration and research	Planning and markets	Sustainable fishing	Individual support	Support to groups	Exploration and research	Sustainable fishing	Individual support	Support to groups
				Exploratory fishing campaigns	Management plans and other studies	Refrigeration system and equipment	Individual Technical Assistance	Technical assistance to groups	Exploratory fishing campaigns	Refrigeration System, equipment	Individual grants	Grants to groups
				A	B	C	D	E	AO	CO	DO	EO
Abiotic	Natural resources strategic	1	Soil	A1							DO1	EO1
		2	Water availability									
		3	Water quality	A3							DO3	EO3
		4	Air quality	A4						CO4		
Biotic		5	Terrestrial ecosystems Terrestrial fauna									
		6	Terrestrial ecosystems Vegetable cover									
		7	Marine and coastal Ecosystem protected areas and conservation sites Cultural heritage (BCRBB)	A7								
		8	Aquatic ecosystems	A8	B8							
Economic	Economic Dynamic and livelihoods	9	Economic activity									
		10	Productive systems							CO10		
		11	Livelihoods	A11			D11				DO11	EO11
		12	Employment								DO10	
Social	Quality of life and inclusion	13	Associativity dynamics					E13				EO13
		14	Health	A14		C14					DO14	EO14
		15	Population Inclusion				D15	E15			DO15	EO15
Institutional	Management	16	Capacity	A16	B16	C16			AO16			
Climate Change	Natural disaster	17	Vulnerability to climate change	A17							DO17	EO18

Source: Own data 2023

7.2. Identification of potential impacts and risks

The IDB has classified the operation as Category "B," where the environmental and social impacts are likely to be moderate, temporary, and localized, for which mitigation measures are readily available. The identified impacts correspond to direct impacts because, according to the analysis, the Program will not have indirect effects, nor will it contribute to their generation.

Due to the nature of the Program aimed at strengthening institutional capacities and supporting Belizean fishermen within the framework of environmental sustainability, most of the socio-environmental impacts have been identified as positive. However, it is essential to highlight that some projects include actions that can generate negative impacts. In the event of possible negative and unforeseen impacts, it is clear that these may arise in compliance with the well-intentioned objectives of the Program.

7.2.1. Potential Positive Impacts

The potential positive impacts of the Program are identified in the execution, operation/close stages. The following is a general analysis of the positive impacts :

- **Execution Stage**

Below is a description of the potential positive impacts:

- **Institutional strengthening:** The development, validation, and updating of the different management plans for fisheries, spiny lobster, and conch management, among others, will allow the Executing Agency to have planning tools for better resource management. Carrying out exploratory campaigns will allow the collaborators of the Executing Agencies to improve their knowledge of the scientific way of obtaining data when carrying out this work. Likewise, acquiring equipment such as fishing gear, emergency plants, software, and hardware for systems will improve the institutional capacity to meet the demands of fishermen.

- **Improvement of sustainable economic activities:** The support of the Program to the fishermen through technical assistance for the elaboration of individual plans in phases 1 (lobster), 2 (snail), and 3 (deep-sea species) will gradually allow the incorporation of actions aimed at improving their livelihoods life and resilience to climate change. Likewise, technical assistance in group business plans will strengthen the association to enhance the fishing value chain and strengthen the maritime economy and environmental sustainability.

- **Increased partnership dynamics:** Technical assistance by formulating business plans will allow organized groups to have better social participation where associativity can be strengthened. Likewise, this assistance will serve the groups to propose development projects to improve the fishing sector, environmental sustainability, and resilience to climate change.

- **Sustainable management of living resources:** The preparation of different studies related to management plans, frameworks, protocols, and updated to national evaluations of the population of spiny lobster and queen conch, as well as the implementation of digitized fishing databases and traceability systems, will allow MBECA and the BFD sustainable management of living natural resources through the application of sound management practices and available technologies.

Table 23 shows the Subproyects of the Program that causes the potential positive impacts identified in the execution stage.

Table 23. Potential positive Impacts in the stage of execution

Stage	ID	Impact	Subprojects	Factor	Name of Impact
EXECUTION	A16	Positive Impact	Exploratory fishing campaigns	Institutional	Institutional strengthening
EXECUTION	B16	Positive Impact	Management plans and other studies	Institutional	Institutional strengthening
EXECUTION	C16	Positive Impact	Refrigeration system and equipment	Institutional	Institutional strengthening
EXECUTION	D11	Positive Impact	Individual technical support	Livelihoods	Improving sustainable economic activities
EXECUTION	E13	Positive Impact	Technical assistance to groups	Associativity dynamics	Increased partnership dynamics

Source: Own elaboration 2023

- **Operation/close stages**

In these stages, the Program will generate positive impacts such as:

- **Institutional strengthening:** The exploratory campaigns' operational activities will allow the Executing Agencies' collaborators to improve their knowledge about the scientific way of working with the data collected during the different tasks.

- **Improvement in the production chain:** Refilling refrigeration equipment will improve the cold production chain and compliance with international phytosanitary standards, boosting activity toward opening new markets.

- **Participation of vulnerable groups:** The Program will open participation to vulnerable groups such as women, the indigenous population, Afro-descendants, and youth in activities related to implementing individual Plans and business plans for groups. With the implementation of these plans, new economic opportunities can be generated that will support the socio-economic conditions of these groups and resilience to climate change.

- **Strengthening the dynamics of associativity:** Implementing the Business Plans will allow the generation of added value to fishing products and the search for new market niches. This dynamic will enable the establishment of social participation processes where associativity will be the basis of the common good, strengthening and creating new organizations that will help promote the development of the fishing sector.

Table 24 shows the Subproyects of the Program that causes the potential positive impacts identified in the operation/close stages.

Table 24. Potential positive Impacts in stages of operation/close.

Stage	ID	Impact	Subprojects	Factor	Name of Impact
OPERATION	AO16	Positive Impact	Exploratory fishing campaigns	Institutional	Institutional strengthening
OPERATION	CO1O	Positive Impact	Refrigeration system and equipment	Production Systems	Improvement in the production chain
OPERATION	DO10	Positive Impact	Individual and group grants	Employment	Employment generation
OPERATION	DO15, EO15	Positive Impact	Individual and group grants	Inclusion of population	Participation of people from vulnerable groups
OPERATION	EO13	Positive Impact	Grants to groups	Associativity dynamics	Strengthening the dynamics of associativity

Source: Own elaboration 2023

7.2.2. Potential negative impacts

The potential negative impacts of the Program are identified in the execution, operation/close stages. The following is a general analysis of the negative impacts :

- **Execution Stage**

- **Solid waste generation:** Fisheries waste is the household solid waste from fishing vessels and is deposited in bins and collection points on docks. The garbage generated on ships includes plastics (polluted and clean), fishing gear waste, and household waste such as paper, cardboard, fluorescent lamps, synthetic material, sheets, metal cans, lids, glass, pantry packaging waste, etc. This waste can deteriorate the soil resource and marine areas near the collection points.

- **Generation of oily liquid waste:** Oily waste generated through shipping includes oily bilge water, oily residues (sludge), washed oily tanks (slops), and some types of operational waste such as used cooking oil, used lubricants, and oil rags. This waste can affect water quality and aquatic ecosystems, especially in invertebrates and larval forms of vertebrate fish.

- **Wastewater generation:** Wastewater can be generated mainly by commissioning the Reefers of the refrigeration system and by operating the vessels in the exploratory campaigns, which can generate waste from sources such as toilets and urinals, drainage of sinks and washing tubs, among others. These wastewaters can contain bacteria and other components that can affect seawater quality and, in turn, biodiversity**.**

- **Discharge of setine liquids:** Inside the hull of the ships, in the lower part, liquid waste of seawater, cleaning water, oil, and fuel, generated in the different operations carried out in navigation, repair, or maintenance, usually accumulates. This mixture of effluents is generally called bilge liquids. The effects of the discharge of bilge liquids into the sea can affect marine flora and fauna.

- **Gas emissions:** During exploratory fishing campaigns, boat engines can generate exhaust gas emissions from diesel engines. These gases contain nitrogen oxides (NOx), sulfur dioxide (SO2), hydrocarbons, carbon monoxide (CO), carbon dioxide (CO2), and particulate matter (PM) that can cause air pollution.

- **Noise pollution:** The noise of fishing boats, amplified under the sea, and the variation of sound pressure in the vicinity can affect marine mammals that use sounds to communicate and find food or as an alarm signal. Noise pollution can disrupt their normal behavior and force them to flee to calmer waters.

- **Bycatch:** During the fishing exploration campaigns, activities that include mortality due to incidental capture and discarding of species that are not the object of the studies will be carried out. Species commonly found in bycatch include birds and mammals. Likewise, endangered species such as the Queen Conch species registered in CITES list II can do incorporated by incidental capture. (Annex 3).

- **Overexploitation of fishing resources:** This temporary impact can occur during the execution of exploratory campaigns when implementing the population evaluation methods. These methods include (i) the stock reduction method, ii) models structured by size/age, and iii) the distance method. These methods are applied temporarily to know the availability of resources and their utilization rates. The purpose of this population assessment is to guarantee the sustainability of the fishing system by carrying out activities following the principles and criteria of sustainable fishing.

- **Disruption of spawning time, migration, and peak abundance of fish:** The determinants of marine ecosystems interact at different spatial and temporal scales, and any change generates a network of interactions between the other factors. The exploratory fishing campaigns where the fishing gear is drifting longline can generate changes in migration times and peaks in fish abundance.

- **Fish processing waste:** Fish processing can be presented in exploratory campaigns. This processing involves grading, slimming, heading, washing, scaling, evisceration, finning, meat-from-bone separation, and filleting. Throughout the process, a significant amount of waste is

generated (20 to 80% depending on the level of processing and the type of fish), which is thrown into the sea, causing the BOD to enter the water with implications for water quality.

- **Temporary loss of access and use of the fishing zone:** The implementation of fishing research campaigns requires, during the time that the investigations are carried out, the use of some areas of Fishing Zone 9 without disturbance by the fishermen who use it as a traditional fishing site.

- **Temporary affectation to maritime traffic**: Implementing fishing research campaigns in some areas of Zone 9 may affect the marine traffic of water taxi routes, navigation lanes, and cruise ships since this activity requires special conditions for its execution.

Table 25 shows the Subproyects of the Program that causes the potential negative impacts identified in the execution stage.

Table 25. Potential negative Impacts stage of execution

Stage	ID	Impact	Subprojects	Factor	Name of Impact
EXECUTION	A1	Negative Impact	Exploratory fishing campaigns	Soil	Solid waste generation
EXECUTION	A3	Negative Impact	Exploratory fishing campaigns	Water quality	Generation of oily liquid waste
EXECUTION	A3	Negative Impact	Exploratory fishing campaigns	Water quality	Wastewater generation
EXECUTION	A3	Negative Impact	Exploratory fishing campaigns	Water quality	Discharge of setine liquids
EXECUTION	A4	Negative Impact	Exploratory fishing campaigns	Air quality	Gas emissions
EXECUTION	A4	Negative Impact	Exploratory fishing campaigns	Air quality	Noise pollution
EXECUTION	A8	Negative Impact	Exploratory fishing campaigns	Aquatic Ecosystems	Discard of fishing gear
EXECUTION	A8	Negative Impact	Exploratory fishing campaigns	Aquatic Ecosystems	Overexploitation and depletion of stocks
EXECUTION	A8	Negative Impact	Exploratory fishing campaigns	Aquatic Ecosystems	Mechanical damage to the reef by deployment and recovery anchor
EXECUTION	A8	Negative Impact	Exploratory fishing campaigns	Aquatic Ecosystems	Bycatch
EXECUTION	A8	Negative Impact	Exploratory fishing campaigns	Aquatic Ecosystems	Altered timing of spawning, migration and/or peak abundance
EXECUTION	A8	Negative Impact	Exploratory fishing campaigns	Aquatic Ecosystems	Waste from fish processing
EXECUTION	A11	Negative Impact	Exploratory fishing campaigns	Livelihoods	Displacement of economic activities
EXECUTION	A14	Negative Impact	Exploratory fishing campaigns	Health	Accidents at work
EXECUTION	C14	Negative Impact	Refrigeration system and equipment	Health	Accidents at work
EXECUTION	D15, E15	Negative Impact	Individual technical support	Inclusion of population	Delay for project start-up
EXECUTION	D15, E15	Negative Impact	Individual and group technical assistance	Inclusion of population	Change in the social environment due to project activities

- **Operation/close stages**

- **Solid waste generation:** The generation of solid waste may appear in implementing some projects to support individuals and groups of fishermen in obtaining alternative non-extractive resources that support their livelihoods. These activities can generate household solid waste such as paper, cardboard, plastic, sheets, lids, glass, pantry packaging waste, etc. This type of waste can cause deterioration of the soil resource.

- **Wastewater generation:** The wastewater source can be the implementation of subprojects to promote alternative non-extractive resources to the livelihoods of fishermen. These subprojects may generate some liquid waste, such as gray and black water, that may lead to the deterioration of water quality.

Table 26 shows the Subproyects of the Program that causes the potential negative impacts identified in the operation/close stages.

Table 26. Potential negative Impacts stages of operation/close

Stage	ID	Impact	Subprojects	Factor	Name of Impact
OPERATION	DO1/EO1	Negative Impact	Implementation of individual and group plans	Soil	Solid waste generation
OPERATION	DO3/EO3	Negative Impact	Implementation of individual and group plans	Water quality	Wastewater generation
OPERATION	CO4	Negative Impact	Refrigeration system and equipment	Air quality	Generation of ozone-depleting substances (ODS)

Source: Own elaboration 2023

7.2.3. Potential Risks

Potential risks for this Program are defined as the probability of an event, situation, or disaster occurring with the potential to affect human life, property, normal development of activities, or productive capacity. Below is a description of the possible risks identified, both from the subprojects to the environment and from the environment to the subprojects. The following is a general description of the Program´s risks:

- **Risk of discarding fishing gear:** During exploratory fishing campaigns, losing or discarding fishing gear may be risky. These losses can have particularly damaging impacts at sea, producing the effect known as 'ghost fishing,' where accidentally lost nets continue to fish and trap animals. Abandoned fishing gear, such as nets or pots, is one of the main types of litter that affect marine protection areas.

- **Risk of underwater noise emissions.** The industrial fishing vessels used in exploratory campaigns can be sources of underwater noise due to using engines and hydro sonometers to locate stocks. These emissions can cause physiological or behavioral effects on marine fauna, specifically marine mammals[235].

- **Risk of mechanical damage to the reef by deployment and recovery of the anchor:** When carrying out the anchor deployment and recovery activity in the anchoring system of the boats, fishing campaigns can cause mechanical damage to the corals and their rupture.

- **Risk of generation of ozone-depleting substances (ODS):** The operation of refrigeration systems can generate risks of air pollution due to fugitive emissions due to breaks or leaks of refrigerant gas such as chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs). These emissions are causing the depletion of the ozone layer.

- **Risk of displacement of economic activities:** The restriction of access to the fishing zone 9 of the group of fishermen who use it as a means of subsistence can generate the displacement of economic activities and the risk of impoverishment for this group. This economic displacement is temporary and may occur when it is necessary to close the entry of fishermen to the areas of zone 9, where the exploratory fishing campaigns will be carried out.

- **Risk of low participation of women:** It is expected that there will be a risk of low participation of women in the execution of the projects. This situation is generated both by the low participation of women in fishing activities and by sociocultural aspects where the role of women in their homes, as mothers and wives, prevents them from leaving their daily activities to participate in projects**.**

- **Risk of work accidents:** Fish exploration campaigns and implementation of individual or business plans may involve physical exertion, improper postures, repeated movements, and handling loads in all their forms (lifting, transport, pushing, dragging). These aspects influence the possibility of suffering accidents while working, such as slips, falls, or animal attacks. Work accidents during the adaptation of the site and installation of refrigeration equipment can occur due to environmental factors such as noise, vibrations, high temperatures, humidity, etc., which can generate problems for workers' health.

- **Risk of delay in the start and execution of Program projects:** The implementation of the Program will require both institutional coordination between the Ministry of the Blue Economy and Civil Aviation (MBECA), the Ministry of Finance, Planning, Economy, the Department of Belize Fisheries (BFD), the Program Executing Unit (UEP) and the participation of stakeholders. The group of stakeholders will include the participation of vulnerable groups that will require different time and socio-cultural conditions than regular development times, which may delay or inhibit the development of the projects.

[235] SEA, 2022. Prediccion y evaluación de impactos por ruido submarino.

- **Risk of social conflicts due to unequal accessibility to areas:** According to the BFD, the fishermen's territorial use rights regime known as "TURF" is divided into nine fishing zones (Zone 1 to 9) where each fisherman has a license to fish in two (2) fishing zones, including Zone 9. The Program will benefit fishermen interested in fishing in Zone 9 with counterpart subsidies, and for this, the BFD must grant fishing licenses. Due to the preceding, it is expected that a possible conflict could arise between fishermen who have two licenses and those who, through the Program, could have access to one more license.

- **Risk of change in the social environment due to expectations for matching grants:** Change in the social environment is related to implementing individual plans, technical assistance, and matching grants that provide for using new fishing technologies by the Program. This implementation can generate social conflicts due to the competition between the traditional knowledge of fishing that some communities have and the latest fishing technologies they want to implement, as well as the possible expectations that these technologies can generate about the socioeconomic conditions of the fishermen.

- **Risk of low participation of vulnerable groups:** The implementation of the projects may have the risk of the non-participation of some people belonging to vulnerable groups, such as women, youth, Afro-descendants, or indigenous people. This situation can occur due to two efforts that these people must make: the first is economical since people must leave their daily activities to join the projects, and the second effort is cultural, especially for women, where they must go their role in the home to participate in the Program's projects.

- **Risk of disturbing national monuments and marine reserves** located in zone 9 due to implementing the exploratory campaigns that will be carried out in areas close to these sites.

- **Risk of spill into the Ocean by the ship:** Considering that the exploratory fishing campaigns will be carried out using a vessel in the Ocean, the risk of fuel spillage may occur in the event of a grounding, collision, or sinking, which could affect Areas close to where the boat route is, such as Maritime Areas of the National System of Protected Areas (NSPA) and areas near world-renowned sites.

- **Risk of Collision Accidents:** Exploratory campaigns may risk collision accidents with cetaceans and other maritime transport vessels when: i) they are anchored at sea in fishing grounds at night or ii) against another type of vessel, elements of nature.

- **Risk of sinking and grounding of the ship:** The risk of running aground or sinking the boat can be generated by the excessive approach of the vessel to the insular platform, where an accident can occur that causes damage to the hull of the ship. This risk can lead to the sinking of the vessel and fuel spillage.

- **Risk of fire on the ship:** The risk of fire during exploratory fishing campaigns can arise from causes such as overheating of electrical circuits, excess load, rusty plugs, improperly sized fuses, or fuel leaks, among others.

- **Risk of increase in energy consumption:** The installation of refrigeration equipment will require electricity for its operation. However, there may be a risk of increased electricity consumption due to inadequate refrigerant charging, which can compromise efficiency and increase the risk of early failures of equipment components; when a system loses more refrigerant, the higher energy costs.

- **Risk due to natural disasters and Climate Change:** At the level of risk of natural disasters and Climate Change, it is considered that the projects evaluated may present a moderate exposure to this type of risk. This risk can generate interruptions in the operation's development and loss of assets.

7.2.4. Conclusions of the identified and evaluated impacts

Once the impact and risk assessment has been carried out, the following conclusions are reached:

- Once the identification of impacts and the socio-environmental evaluation of the activities of the subprojects of the Program has been carried out, it is concluded that these subprojects are socio-environmentally viable and essential for supporting research in the fishing sector and the development of the livelihoods of the fishermen.

- As a result of the assessment process, it was verified that operation BL-L1042 continues to be classified as "Category B," where the socio-environmental impacts are of a small and medium scale of intervention. Likewise, it is expected that the impacts resulting from the different activities implemented by the Program will be temporary and localized and that socio-environmental measures will be available for their management

- Once the assessment of the impacts was carried out, it was determined that no impact qualifies as a "Severe impact." The potential impacts in the execution, operation, and closure stages are due to specific interventions in spatial terms. Later, the environment will return to the initial conditions quickly. For this reason, the impacts are considered internally and can be fully controlled by the prevention and correction measures contemplated within the Environmental Management Plan.

CHAPTER 8: ENVIRONMENTAL AND SOCIAL MANAGEMENT SYSTEM (ESMS)

CHAPTER 8: Environmental and Social Management System (ESMS)

ELEMENT 1. Environmental and Social Framework of the Project

1.1. Objectives and Principles

a. Objectives

The Project's Environmental and Social Management Framework (ESMF) establishes the principles, objectives, guidelines, and procedures for socio-environmental performance to be implemented in Program projects by the executing agency. This framework is oriented under compliance with the national legislation of Belize as well as the IDB Environmental and Social Policy Framework and its ESPSs 1 to 10 and the international treaties and conventions applicable to the environmental and social management of the Program.

As specific objectives are:

- Guarantee the execution of the Program's projects under the ESPS of the IDB and the national socio-environmental regulations.
- Prevent environmental and social risks and impacts, define prevention and mitigation measures not contemplated in the Environmental Management Plan, and propose the socio-environmental measures necessary to solve them.
- Guide the actions to guarantee the participation of the interested parties in the stages of the projects.
- Review the status, scope, and specific conditions of all the socio-environmental permits and licenses required by each project of the Program before it starts.

b. Principles

The IDB's Environmental and Social Policy Framework guides adopting the principles that will guide this ESMF. These principles provide high-level governance for the subprojects developed in this Program. The role of the ESMF is to verify the adherence of the Program's subprojects to these principles. The nine principles to be adopted follow the approach based on the ESPS of the IDB, which were grouped into five basic principles:

P1. Principles of commitment: The commitment of the Senior Management of the Ministries to the ESMF is fundamental o providing the resources, means, and adequate conditions for the fulfillment of the national regulation for workers, the community, heritage, and gender equality.

P2. Planning Principles: For each hierarchical level established and defined by the ESMS, measures must be shown to implement actions, update information, consider rights of all kinds, and comply with planned consultations.

P3. Principles of Implementation and Operation: The ESMF must implement and operate in pursuit of biodiversity conservation and sustainable management of natural resources.

P4. Principles of Measurement and Evaluation: The ESMF shall establish, implement, and maintain procedures to manage non-conformities, annoyances, complaints, and actual and potential claims to carry out the necessary preventive and corrective actions.

1.2. Values and Conduct Code

a. Values[236]

- **Respect for human rights**: recognize that people and those who inhabit their environments have rights under the laws of Belize. Respect for human rights includes the settings where man lives, has dignity, and deserves attention and care. This value is associated with good treatment, consideration, and harmonious coexistence among all the country's species.

- **Promotion of gender equality:** This principle is framed in the need for each beneficiary of the Program to recognize their duties and rights in environmental matters and to have equal access to all offers, avoiding exclusion due to issues related to environmental thinking. Each member has equal access to all opportunities, preventing discrimination on matters related to environmental review. Promoting non-discrimination and inclusion of vulnerable groups: implies access to justice with adequate distribution according to the conditions and context.

- **Respect for the rights of indigenous people**, Afro-descendants, and other traditional peoples: a fundamental human right to meet individual needs to preserve the environment of Belize's irreplaceable heritage. The process is developed throughout life with the teamwork of the interested parties to improve living conditions.

- **Fostering resilience to disasters and climate change and minimizing greenhouse gas emissions** involves taking and correcting actions that include increasing the capacity to improve and reduce emissions in the face of climate change. Enhancing the participation of stakeholders: access to the means of development to obtain better employment conditions.

[236] Adaptation of: "IDB's Commitment to Environmental and Social Sustainability." Online: mpas | IADB, recovered [May 30, 2022]

b. Code of Conduct

The code of conduct guides the Executing Entities' members to behave based on the ethical principles described above. At a general level, the code of conduct seeks:

- Highlight the principles and values proposed for the Program under a behavior model oriented to the correct performance of the IDB's socio-environmental policies and goals.
- Provide clear and precise evidence of convictions or sanctions for violating what is established by the ESPS.

SEA and unique code of conduct guidelines (to be adapted to the project context) are presented in Annex 1.

1.3. Program description

a. Objectives

The general objective of the Program is to improve the income generation capacity of artisanal fisherfolks and to maintain export levels of fisheries products while ensuring the sustainable use of marine resources. As specific objectives, it has: (i) To enhance the Government's ability to manage the key species in the fisheries sector sustainably; (ii) To promote the adoption of sustainable technologies and best fishing practices by artisanal fisherfolks. The Program will be inserted within the framework of the Blue Economy, which promotes economic growth, social inclusion, and the improvement of livelihoods, in addition to seeking to guarantee the environmental sustainability of the oceans and coastal zones.

c. Components[237]

The Program will be structured around the following components:

Component 1. Institutional strengthening for the sustainable and resilient management of the fisheries sector (IDB: US$ 4,549,288). To support scientific evidence-based decision-making, better accountability to third parties, and more efficient public services provision at MBECA and the Belize Fisheries Department (BFD). This component is divided into three subcomponents, and they are: Subcomponent 1: Knowledge management for the sustainable development of the finfish fishing industry; Subcomponent 2: Knowledge management for the sustainable development of spiny lobster and queen conch fisheries industry; Subcomponent 3: Information Management System for the fisheries sector

Component 2. Direct support to artisanal fisherfolk (IDB: US$1,684,072). To support individual or group-based investments in sustainable, environmentally friendly, and climate-smart technologies or equipment, the project will finance a matching grant program. The matching grant

[237] IDB, 2022. Project Profile Promoting Sustainable Growth in the Blue Economy Program (BL-L1042).

program will finance technical assistance to all participants: beneficiary fisherfolk will receive tailored technical assistance focused on elaborating and improving their Individual or Group Business Plans and training on best practices in sustainable fisheries for the Belizean context.

Other costs (IDB: US$766,640). This category includes administration, monitoring, evaluation, and auditing costs

1.4. Regulatory framework and applicable standards

a. International Agreement

Belize is a party to the three principal global fisheries treaties: the 1982 United Nations Convention on the Law of the Sea, the 1995 UN Fish Stocks Agreement, and the FAO Compliance Agreement[238]. Likewise, Belize is a party to many international agreements and participates in various regional and international organizations about fisheries management[239], for which it has adopted necessary regulations under international treaties and agreements within which the following stand out[240]:

- Convention on Biological Diversity (CBD)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- United Nations Convention on the Law of the Sea (UNCLOS)
- Ramsar Convention on Wetlands of International Importance (RAMSAR)
- Code of Conduct for Responsible Fisheries(FAO).
- Caribbean Regional Fisheries Mechanism (CRFM)
- Central America Fisheries and Aquaculture Organisation (OSPESCA)
- Centre for Marketing Information and Advisory Services for Fishery Products in Latin America and the Caribbean (INFOPESCA)
- Inter-American Tropical Tuna Commission (IATTC)
- International Commission for the Conservation of Atlantic Tunas (ICCAT)
- International Whaling Commission (IWC)
- Western Central Atlantic Fishery Commission (WECAFC)

Likewise, Belize is part of several international institutions and agreements to regulate and monitor international trade related to fishing. Below are some of the relevant agreements[241]:

- United Nations Conference on Trade and Development (UNCTAD)
- World Trade Organization (WTO)
- Caribbean Community (CARICOM)
- CARIFORUM-European Union Economic Partnership Agreement (EPA)

238 USAID, 2011. Belize National Fisheries Act Analysis.
239 UNCTAD and DOALOS, 2019. Draft report. Oceans Economy and Trade Strategy: Belize
240 CANARI, 2021. Institutional Analysis of enabling conditions for ecosystem stewardship in the fisheries sector of Belize.
241 UNCTAD, 2020. Oceans Economy and Trade Strategy: Belize Marine Fisheries and Seafood Processing

- African, Caribbean, and Pacific Group of States (ACP)
- Central American Integration System (SICA)
- FAO Code of Conduct for Responsible Fisheries (1995).
- MARPOL Convention and Annexes I,II,III,IV,V & VI.
- CITES Belize Trade in Endangered Species Bill 2022 (July 11, Final House Version).
- Belize is part of the OSPESCA and OLDEPESCA agreements regarding regional cooperation and the formulation of agreements, standards, and practices that include preparing fishing plans for resources such as conch.
- International Maritime Organization:

Belize is a member of IMO and has become a party to the following Conventions: Safety of Life at Sea, 1974, as amended; Loadlines, 1966 and amendments; Prevention of Pollution by Ships, 1973 as modified by the Protocol of 1978, Tonnage Measurements of Ships, 1969, Civil Liability for Oil Pollution Damage, 1969, Establishment of an International Fund for Compensation for Oil Pollution Damage 1971, 1976 and 1992 Protocols, Civil Liability Convention (CLC) 1969, 1976, 1992 Protocols, Regulations for Preventing Collisions at Sea, 1972, Limitation of Liability for Maritime Claims, 1976, Standards of Training, Certification and Watchkeeping, 1978/1995, SOLAS Protocol 1988, MARPOL Protocol 1997, LOADLINES Protocol of 1988.

b. Regulatory framework of fisheries

The Belize Department of Fisheries (BDF) monitors the fishing sector and seafood processing.
In the mid-1980s, the Fisheries Administration, the predecessor of the BFD, realized that fisheries were collapsing around the world due to overexploitation, poor management strategies, habitat destruction, and climate change, and, therefore, decided that fisheries management in Belize should incorporate an ecosystem management approach by establishing a territorial use right in fisheries regime for all artisanal fishers in Belize.[242]

In 2009, Belize began reforming fisheries practices and including fisherfolk in management decisions. The Managed Access (MA) Program was implemented in 2011 as a Territorial User Right for Fisheries (TURF), where fishermen under a license had access and extraction rights to fish in selected areas. This MA program spanned over a decade of planning and involved stakeholders, including the Belizean Government, the Environmental Defense Fund (EDF), and Belizean non-governmental organizations (NGOs)[243]. Following a preliminary assessment of documented declines in illegal fishing and increased reported catches (N.Catzim, Z Walter, 2013 cited by Alves Catherine et al. 2022), the Belizean government and partner NGOs began a national campaign in 2014 to educate fishers and the public about the proposed national expansion of MA[244].
In 2016, the Department transitioned from an open-access fishery to implementing the Managed Access Program (the regime of territorial use rights in fishers known as TURFs). This regime aims

[242] UNCTAD, 2020. Oceans Economy and Trade Strategy: Belize Marine Fisheries and Seafood Processing
[243] Alves Catherine et al. (2022). Fisher's perceptions of Belize's Managed Access program reveal overall support but a need for improved enforcement
[244] Alves Catherine et al. (2022). Fisher's perceptions of Belize's Managed Access program reveal overall support but a need for improved enforcement

to empower traditional fishers by enabling them to participate and contribute to managing fishing areas. Divided into seven principal components, the new regime was developed in response to illegal fishing, the decline in landings, and the increasing number of fishers in Belize[245]. The Managed Access program was implemented nationwide across Belize, adding seven fishing areas to the pre-existing two pilot sites[246]. The territorial sea is now divided into eight closed fishing areas and a ninth area open for deep slope fishing where fishers can register for two areas[247].

The legal framework for sustainable marine fishing in Belize is the Fisheries Resources Law No. 7 of 2020. This Law details the management provisions for commercial and subsistence fishing in inland waters, territorial seas, and Exclusive Economic Zones (EEZs) of Belize through licenses granted by the Fisheries Administrator and validating licenses for fishing areas under the system of managed access areas. Although the Fish Resources Act of 2020 repealed the Fisheries Act of 2003, some statutes and regulations related to species regulation (Part II of the Fisheries Regulations) refer to the criteria for fishing certain species in Belizean waters. Focus species in the seafood processing sector (lobster and queen conch) have criteria related to size limits, gear restriction, seasons, and total allowable catch[248].

- Legal framework for updating management plans and regulation of fishing sites

  - Declaration of fishing zones: Fisheries Act and Regulation Chapter 210 of the Laws of Belize Revised Edition 2000-2003, under the provisions made following Statutory Instrument number 54 of 2012 (Regulation 24 A (1)).

  - Sharks and Lobster Amendment Regulations Statutory Instrument No. 128 of 2021.

  - Statutory Instrument No. 69 of 2022 Fisheries Resources (High Protection for Biodiversity Marine Reserves) Order, 2022.

  - Statutory Instrument No. 70 of 2022 Fisheries (South Water Caye Marine Reserve) (Amendment), Order, 2022.

  - Statutory Instrument No. 71 of 2022 Fisheries (Turneffe Atoll Marine Reserve) (Amendment), Order, 2022.

  - Statutory Instrument No. 72 of 2022 Forests (South Water Caye Forest Reserve, Sapodilla Cayes Forest Reserve, and Bacalar Chico Forest Reserve) Order, 2022.

  - Statutory Instrument No. 73 of 2022 Fisheries Resources (High Protection For Biodiversity Marine Reserves) Regulations, 2022.

[245] UNCTAD, 2020. Oceans Economy and Trade Strategy: Belize Marine Fisheries and Seafood Processing
[246] Alves Catherine et al. (2022). Fisher's perceptions of Belize's Managed Access program reveal overall support but a need for improved enforcement
[247] UNCTAD, 2020. Oceans Economy and Trade Strategy: Belize Marine Fisheries and Seafood Processing
[248] UNCTAD, 2020. Oceans Economy and Trade Strategy: Belize Marine Fisheries and Seafood Processing

- Statutory Instrument No. 74 of 2022 Fisheries (South Water Caye Marine Reserve) (Amendment) Regulations, 2022.
- Statutory Instrument No. 75 of 2022 Fisheries (Turneffe Atoll Marine Reserve) (Amendment) Regulations, 2022.
- Statutory Instrument No.78 of 2011 about the use of nets and traps.

➢ Exporting fisheries

Concerning exporting fisheries and seafood products, section 20(1) of the Fisheries Resources Act 2020 states that a person or entity wishing to export, attempting to export, or purchasing to export any fish must be the holder of a valid fish exporter's license. (Order 2 of the Fish -Export Duty- Order) (UNCTAD, 2020).

The Fisheries Regulations[249] part IV outlines regulations about the processing of fish and fish products, including providing for quality assurance (section II); labeling requirements (section III); Construction of equipment for fish processing establishments (section IV); and operating requirements (section V) (UNCTAD, 2020). Below are the most relevant aspects regarding sessions IV and V of this regulation.

➢ Section IV: Construction of Equipment for fish Processing: The regulation establishes guidelines related to structures used by fishing activities, such as floor surfaces, Drains, Wall covers, Ventilation, Space free of cracks, Windows with meshes, Automatic closing doors, Sanitary sinks, Sanitary water, Disinfection of protective equipment, Skinning boards, non-corrosive materials, use of metal frames, construction of tables, containers for preparing fish, storage of giblets, channels for transporting fish, sanitary facilities, among others.

➢ Section V: Operating Requirements: This section establishment topics related to the processing of fish, Ice, Food handler's certificate, Washing of hands, No nail polish, Disinfection of hand coverings, overalls, waterproof garments, Cleaning, Insect control, etc.

c. Regulatory framework of socio-environmental aspects

The socio-environmental regulatory framework related to the Program is established under the following laws:

- The Belize Barrier Reef Reserve System (BBRRS), inscribed as a UNESCO World Heritage Site in 1996, is comprised of seven protected areas; Bacalar Chico National Park and Marine Reserve, Blue Hole Natural Monument, Half Moon Caye Natural Monument,

[249] Chapter 210, Fisheries regulations. 2003.

South Water Caye Marine Reserve, Glover's Reef Marine Reserve, Laughing Bird Caye National Park and Sapodilla Cayes Marine Reserve. Protected Area Conservation Trust Act, Cap. 218.

- Environmental Protection Act, Cap. 328
- Pollution (Amendment) Regulations, 2009
- Environmental Impact Assessment regulations, 2007.
- Refrigeration Technicians (Licensing) Act, 2010.
- Forests Act (CAP 213)
- National Parks System Act (CAP 215)
- Wildlife Protection Act, Cap. 220.
- Waste Management Authority Act, Cap. 224
- Workers' Compensation Act, Cap. 303
- Act, Cap 118 abatement of nuisances.
- Impact Assessment Regulations, Cap. 328 Section 21
- Regulation of pollution, Capt. 328 Section 45
- High Seas Fishing (Monitoring, Control, and Surveillance) Regulations, 2014
- Social Security Regulations, Chap. 44
- Labour Act Regulations working conditions, Chap. 297
- Protection Against sexual harassment Act Chapter 107
- Immigrant Regulations, Cap. 156 Section 35
- Cooperative Societies Act (CAP. 313)

➢ Other legislation

- Registration of Merchant Ships Act (CAP 236)
- Belize Port Authority Act (CAP. 233)
- Belize National Coast Guard Service Act (No. 19 of 2004)

1.5. Compliance of the Program with the ESPS of the IDB

Table 27 shows the ESPSs applicable to the Program for the Promotion of Growth in the Sustainable Blue Economy.

Table 27. ESPS´ IDB applies to Program

ESPS Requirements	Compliance	Proposed action
ESPS 1: Assessment and Management of Environmental and Social Risks and Impacts		
The borrower shall undertake an environmental and social assessment process and establish and maintain an ESMS commensurate with the project's nature and scale and consistent with its level of environmental and social risks and impacts.	**ESPS 1 Applies to this Program:** In compliance with ESPS 1, a Strategic Environmental and Social Assessment (SESA) was prepared with its respective Environmental and Social Management Plan. Likewise, the Environmental and Social Management System (ESMS) of the Program did develop, which is composed of the following elements: (i) Specific environmental and social framework of the Program (MGAS), (ii) Identification of risks and impacts, (iii) Management programs, (iv) Organizational capacity and competence, (v) Preparedness and response to emergencies, (vi) Participation of stakeholders and (vii) Monitoring and evaluation.	The borrower must comply with the national fisheries and socio-environmental regulatory framework, especially with: the National System of Protected Areas (Act. 2015); the Fisheries Act (Act, 2020); the provisions of the Department of the Environment (DOE); and the Belize Fisheries Department (BFD) to the level of compliance with the requirements of the Management Plans of each marine reserve, licenses and permits for vessels; Labour Act Chapter 297 and National Youth Development Policy of Belize (2012). If the Law requires less IDB ESPS, the IDB ESPS will apply. The IDB's Environmental and Social Policy Framework (MPSA) classified the operation as Category "B." The subprojects to be financed with Program must be aligned with the classification. The Program will include eligibility y criteria to exclude activities that can be identified as Category A.
ESPS2: Labor and Working Conditions		
The requirements stipulated in the standard arise from many international conventions and instruments, such as those of the International Labour Organization (ILO) and the United Nations. The borrower shall adopt and implement policies and procedures related to (i) labor management appropriate to the nature and size of the project and its workforce; (ii)provide workers with documented, clear and understandable information about their rights under national labor law; (iii) Recognize the rights to associate; (iv) Non-discrimination and equal opportunities; v) Implement actions in case of reduction of the labor force; (vi) Establish a workers' grievance mechanism; (vii) Not to employ children; (viii) Not to use forced labor; (ix) Provide workers with a safe and healthy working environment taking into account the risks inherent in the project.	**ESPS 2: Applies to this Program**. The Program will generate labor engagement opportunities by addressing aspects such as labor conditions, labor organizations, non-discrimination, and equal opportunities, reduction of the labor force, grievance mechanisms, protection of the labor force (not child labor and not forced labor), health and safety at work during the life cycle of the Program. The Program will provide participation opportunities for vulnerable groups by establishing eligibility criteria with specific weights that ensure the inclusion of these groups. Contractors and suppliers, in turn, must generate mechanisms to include the participation of vulnerable groups. The measures contemplated in this operation will fully align with the IDB Group Measures to Address the Risk of Forced Labor in the Supply Chain of Solar Panels and the IDB's procurement and contracting policies.	The borrower/executing agency will comply with the international and national legal framework provisions related to Labor, Labor Human Rights, and working conditions. In particular, it must comply with the national regulations of the Worker's compensation Act. Chap 303; Social Security Regulations Chap. 44 and Labor Regulations Chap. 297, among others. It will also implement the management policies and procedures to address the labor conditions, safety, and labor human rights of the Program and the requirements of ESPS2. The borrower must also: i) Implement eligibility criteria that ensure the inclusion of vulnerable groups; ii) Implement actions so that contractors and primary suppliers comply with the provisions of national regulations and ESPS2 related to labor and labor human rights. In addition to compliance with this Standard, the Occupational Risk Prevention Program is included in the ESMP to minimize the possible impacts of occupational accidents that implementing the program's actions may generate.

ESPS 3: Efficiency in the Use of Resources and the Prevention of Contamination		
The borrower must consider the risks and impacts of its activities on environmental and public health conditions (such as ambient air quality, noise levels, soil, surface water and groundwater quality, biodiversity conditions and living natural resources, impacts on the community, etc.)	**ESPS 3 Applies to this Program**. The Program focuses on research, strengthening institutional capacities, improving the artisanal fishing value chain, and supporting fishermen. The Program excludes the use of highly toxic products and hazardous substances prohibited by international conventions, IDB, and World Bank Group policies. However, some activities of the Program, such as fishing exploration campaigns, improvement of the refrigeration system, solar panels, and support for fishermen, may have impacts related to i) the generation of solid and liquid waste and (iii) contamination by fugitive emissions from GHG. These possible impacts and risks will require measures for adequate environmental management.	The borrower must comply with IOM's provisions on the International Convention for the Prevention of Pollution from Ships (MARPOL). At the national level, it must comply with socio-environmental regulations, especially those related to i) Environmental Impact Assessment of the Environmental Protection Act Chapter 328; (ii) Belize Department of Fisheries (BFD) research permits and fishing vessel licenses; iii) DOE regulations at the level of environmental studies, effluents, pollution, and refrigeration regulations; iv) CZMAI Guidelines and; v) Comply with the regulation of the Management Plans of each marine reserve near the fishing exploration sites. Likewise, the borrower must implement the control measures and management plans of the ESMF to prevent the contamination of air and water contamination during the execution, operation, and closure of activities.
ESPS 4: Community Health and Safety		
The borrower will assess the risks and impacts on the health and safety of people affected by the project during its life cycle and establish prevention and control measures in line with recommended good international practices for the relevant sector, such as those contained in the World Bank Group's environmental, health, and safety guidelines or other internationally recognized sources.	**ESPS 4 Apply to this Program.** The Program will not finance large vessels or equipment at the commercial level. The actions of the Program correspond to research studies to determine the status of stocks and the development of a demersal fishery. However, some project activities may be exposed to risks due to natural hazards and climate change. At a general level, this evaluation did not find evidence of a worsening of risks due to implementing the program project activities.	As part of the ESMS, the borrower must implement the appropriate emergency preparedness and response plan for the execution, operation, and closure stages of the project, which includes measures to prevent, mitigate, respond to, and recover from potential emergencies that may arise. Likewise, the borrower must implement procedures for labor conditions, the establishment of contracts, equal opportunities, PGV, prevention of child and forced labor of workers, social security following national regulations, and good industry practices.

ESPS 5: Land Acquisition and Involuntary Resettlement		
The borrower will consider viable alternative project designs to avoid or minimize physical or economic displacement. In cases where displacement cannot be avoided, the borrower shall provide the people affected by the project with compensation for the loss of property at total replacement cost and other assistance to help them improve or restore their standard of living or livelihoods.	**ESPS 5 Apply to this Program**. The actions of the Program will not generate physical displacement. However, there is a risk of economic displacement and impoverishment of a group of fishermen due to restricted access to zone 9, where they fish due to restricted access when carrying out fishing exploration campaigns. Therefore, the Program must implement actions to prevent this risk.	The borrower must implement the Program's ESMF, which includes an iterative consultation process with stakeholders reporting on the potential impacts of economic displacement from Program actions and the Livelihood Substitution Plan Framework. Once the consultation process is completed, it should incorporate the views of those potentially affected as part of the adjustments to the design and development of the Program.
ESPS 6: Conservation of Biodiversity and Sustainable Management of Living Natural		
The borrower shall seek to avoid impacts on biodiversity and ecosystem services by taking into account: (i) Protection and conservation of biodiversity; (iii) Natural habitats; (iv) Critical habitats; (v)Legally protected areas of high biodiversity value; (vi) Invasive alien species; (vii) Management of ecosystem services; (ix) Sustainable management of living natural resources and (x) Principal Suppliers.	**ESPS 6 Applies to this Program.** The Program will support fishermen by providing them with equipment, tackle, fishing boats, low-consumption motors, and safety equipment to make the activity in established fishing areas more efficient. The Program will not support actions that could significantly convert or degrade natural habitats or affect sites of biological importance. The activities of the Program will not be affected by the use or introduction of invasive alien species. The Program will carry out exploratory fishing campaigns to determine the status of the populations, find out what types of fisheries exist, and establish the management measures required for marine resources. The exploratory fishing campaigns will be implemented in sites outside the National System of Protected Areas (NSPA) and outside internationally recognized sites. However, the exploratory campaigns are expected to be carried out near the previously mentioned areas.	The borrower must comply with the national socio-environmental regulatory framework, especially that of the National System of Protected Areas, the Fisheries Law, and implement the request of i) The Belize Department of Fisheries (BFD) on research permits and licenses of fishermen and fishing vessels. As actions to mitigate the impacts and risks identified, the following are proposed: Comply with the provisions of the Fishery Resources Act of 2020 in matters related to operations, discards, bycatch, lost or abandoned gear, and impacts on other marine species and ecosystems. Consider Annex II of the Endangered Species Trade Act (CITES), 2022, related to Pink Snail species. Likewise, the borrower must implement the control measures and management plans of the ESMF and the Vessel Investigation Plan to prevent and control the possible effects that may occur on protected areas and marine fauna, paying particular attention to i) Protection of living resources; ii) Prevention of affectation of protected areas and iii) Control to avoid the introduction of exotic species.

ESPS 7: Indigenous Peoples		
The borrower will consider the following fundamental aspects: (i) Indigenous rights; (ii) Avoidance of adverse impacts; (iii) Transboundary indigenous peoples; (iv) Indigenous peoples in isolation and initial contact; (v) Participation and Consent; (vi) Relocation of indigenous peoples from their lands; (vii) Cultural heritage; (viii) Mitigation and development benefits.	**ESPS 7 Applies to this Program.** The implementation of the subsidies will allow the participation of individuals or groups that belong to indigenous groups as beneficiaries of the Program. In this context, the following risks may arise: i) Restriction of access and use of traditional sites or ecosystem services (cultural/traditional); ii) Generation of conflicts of inequality in the distribution of access to the benefits of the Program; iii) Delay in the start of projects because execution with indigenous peoples requires more planning and execution time.	The Borrower shall implement actions related to i) Promoting the participation of meetings with Indigenous Peoples that include their ancestral knowledge; ii) To avoid conflicts of inequality in the distribution of access to the benefits of the Program, eligibility criteria will be established that provide equal opportunities; iii) Implement a Participation strategy that allows the feedback of information and the faster identification of obstacles in the development of the subprojects.
ESPS 8: Cultural Heritage		
The borrower shall protect the cultural heritage from adverse impacts of project activities in areas such as (i) Project design; (ii) Cases of chance finds; (iii) Community consultation and access; (iv) Removal of cultural heritage; (v) Use of cultural heritage.	**ESPS 8 applies to this Program**. The Program excludes direct actions that may impact cultural sites. However, in study area 9, four sites are part of the Belize Barrier Reef Reserve System (BBRRS), registered as a World Heritage Site by UNESCO in 1996. There is a risk of disturbing two national monuments and a marine reserve located in zone 9 due to implementing the exploratory campaigns that will be carried out in areas close to these sites. Likewise, in 2007, Belize ratified the Convention for the Safeguarding of Intangible Cultural Heritage. The "Proclamation of Masterpieces of the Oral and Intangible Heritage of Humanity" is a part. The Garífuna people were one of the recipients of this proclamation because of their language, dance, and music. Thus, considering that implementing individual and group matching subsidy plans may include people from the Garífuna people, it is necessary to establish culturally appropriate actions for their proper management.	To minimize any possible impact on cultural heritage, the borrower must comply with national legislation on the protection of cultural heritage and the obligations assumed under the Convention Concerning the Protection of the World Cultural and Natural Heritage. Likewise, it must ensure: i) the application of recognized international practices for protection, field studies, and a documented process; ii) Include this aspect in the consultation process with the interested parties and iii) as part of the ESMF, incorporate an asset protection procedure.

ESPS 9: Gender Equality		
The borrower will carry out a preliminary analysis of the project to i) identify potential gender risks and impacts; (ii) avoid, mitigate, and compensate for impacts and risks; (iii) Evaluate and prevent the risks of sexual violence; (iv) Participation of all genders in the consultation processes.	**ESPS 9 Applies to this Program.** The Program seeks to be inclusive in the participation of men and women in the different activities it will develop, prioritizing support for vulnerable groups (women, youth, Afro-descendants, and indigenous women) and gender equality. No impacts of exclusion against women's participation have been identified. However, there is a risk of exclusion from the participation of women as beneficiaries due to socio-cultural conditions and the multiple activities carried out by women as wives, mothers, and caretakers of the household that prevents them from leaving their daily activities to participate in projects.	The Borrower shall ensure that the Program's actions do not adversely affect women or gender equality. The program will provide opportunities to promote gender equality and empower women to understand their limitations as housewives, mothers, wives, or daughters. To this end, it will develop: (i) A strategy for linking women beneficiaries of the Program; (ii) conduct campaigns to help prevent gender-based violence; (iii) support the creation of care networks so that women can participate in projects; iv) Implement the measures proposed in the Gender and Diversity Plan BL-L1042.
ESPS 10: Participation of Stakeholders and Information Disclosure		
Stakeholder engagement is about establishing a strong, constructive, and responsive relationship between the borrower or project and stakeholders, especially those affected by the project, throughout the project life cycle. The nature, scope, and frequency of stakeholder engagement shall be commensurate with the nature and scale of the project, its development and implementation schedule, and its potential risks and impacts.	**ESPS10 Applies to this Program.** During the Program's life cycle, the participation of the interested parties will be a process to be developed continuously. In compliance with ESPS 10, the Stakeholder Participation Plan (SEP) is included as part of the SGAS. It will contemplate a gender-sensitive approach and methodology to promote the equal participation of men, women, the community, and vulnerable groups. The SEP includes (i) identification of actors; (ii) Participatory strategies; (iii) Public Consultation; (iv) Grievance and grievance mechanisms.	The Borrower/Executing Agency will implement the Stakeholder Engagement Plan (SEP) with the support of the Belize Fisheries Department (BFD) Communication, Education, and Public Awareness Strategy and Action Plan for the Fisheries Department. Likewise, the Borrower will implement the complaints mechanism to receive and facilitate the resolution of possible conflicts with the affected Communities by resolving concerns and claims regarding the environmental and social performance of the different projects.

Source: Own elaboration 2023

ELEMENT 2. Identification of Risks and Impacts

2.1. Identification and evaluation of risks and impacts of the operation

Considering the objectives of the Program, it is expected that, as a result of the implementation of the projects, the impacts will be mainly positive. However, some projects may have potentially adverse environmental and social impacts. To facilitate the socio-environmental management of the projects, below are some tools and methods that support the Program Executing Unit (UEP) in the identification, evaluation, and management of environmental and social impacts and risks.

The identification and evaluation of the socio-environmental impacts and risks of the operation's projects include the following steps:

A. Preliminary analysis of the project, identifying its eligibility, the technical details of its components, and the logistics for its implementation.
B. Baseline or environmental and social diagnosis of the site where the project will be carried out, including the delimitation of the areas of direct and indirect influence.
C. Environmental and social assessment.
D. Identification of the potential impacts and risks of the project.
E. Implementation of the measures that will be proposed to prevent, control, mitigate or compensate for possible socio-environmental impacts (Item 3)

Each of the steps is described below:

A. Preliminary socio-environmental analysis

Under the IDB's Environmental and Social Policy Framework and compliance with the ESPS in the IDB's Pre-Assessment and Classification stages, all operations must be pre-assessed and classified according to their level of potential impact to be defined. Likewise, the preliminary analysis will determine the necessary environmental and social studies to comply with national regulations and the IDB's ESPS. The first step after defining the project to be carried out within the framework of the Program is to carry out its pre-evaluation and socio-environmental categorization. Below are some support tools:

1) Preliminary analysis by type

- **Screening**

Considering that not all projects are in an initial development phase, it is necessary to analyze the execution stage of the different projects. The preliminary analysis requirement will determine the necessary environmental and social studies to comply with the national regulations for reviewing these studies and the IDB's socio-environmental safeguards. Below are the categories of projects according to the stage of development in which they can be found:

T-1: Corresponds to new projects that had not been previously developed and that, based on the purposes of the Program, define their objectives, goals, activities, times, and budgets, taking into account technical, economic, administrative, and socio-environmental aspects for its planning and execution.

T-2: Corresponds to projects already underway and require adaptation in some of their activities with particular support to meet the goals proposed by the Program. These projects follow the purposes of the Program. They have defined their objectives, goals, activities, times, and budgets, considering technical, economic, administrative, and socio-environmental aspects for planning and execution.

Determining the typology of projects described above will make it possible to identify the form of socio-environmental intervention since, for Type-1 projects, it is possible to establish a diagnosis and a future socio-environmental scenario. In contrast, for Type-2 projects, it will be necessary to initially review compliance of the existing Project concerning national regulations and IDB ESPS to start with the stages of analysis and future environmental scenarios.

2) Analysis by category

After identifying the type of Project and considering the national environmental regulations of Belize of the DOE, the type of Project is qualified. Table 28 shows the categories established by the DOE.

Table 28 Category Eligibility

	Projects without EIA	**C-1a**	Applicable to subprojects, works, or new activities that, according to the list in Annex 1, according to Belize regulations, do not require an Environmental Impact Assessment (EIA) study. An environmental authorization request is needed to develop a subproject, work, or activity.	The environmental authorization is issued based on an Environmental Compliance Plan (ECP), which describes the specific terms and conditions for the ecological approval.
	Projects without EIA with visit	**C-1b**	Applicable to subprojects, works, or activities that do not require Environmental Impact Assessment (EIA) studies according to the list in Annex 1. But they do require an on-site inspection. An environmental authorization request is needed to develop a subproject, work, or activity. The environmental authorization is issued based on an Environmental Compliance Plan (ECP), which describes the specific terms and conditions for the ecological approval.	An in-situ visit is required where the subproject, work, or activity will be carried out.
	Projects with EIA with inspection	**C-2a**	Applicable to subprojects, works, or activities that require an Environmental Impact Assessment study or Low-Level Environmental Study (EIA/LLES). An environmental authorization request is needed to develop a subproject, work, or activity. The environmental authorization is issued based on an Environmental Compliance Plan (ECP), which describes the specific terms and conditions for the ecological approval.	A site survey (TOR) and an Environmental Compliance Plan (ECP) are required.
	Projects with EIA with public consultation	**C-2b**	Applicable to Projects preparing an Environmental Impact Assessment (EIA) study. An environmental authorization request is required to develop a subproject, work, or activity. The environmental authorization is issued based on an Environmental Compliance Plan (ECP), which describes the specific terms and conditions for the ecological approval.	It requires an Environmental Impact Assessment study; it also has a public Consultation, an inspection of the NEAC site, a Meeting between the parties (NEAC), an Environmental Compliance Plan (ECP), and monitoring.

Source: Own elaboration with information DOE 2022

➢ Scoping

1) Determination of potential socio-environmental impact

The potential socio-environmental impact of the projects eligible for the Program is based on the Environmental Impact Study Category established by the DOE. Table 29 shows the matrix under which the socio-environmental risk level.

Table 29 Determination of socio-environmental risk

Category Eligibility		Environmental Sensitivity Eligibility		
		SM-A	SM-B	SM-B
Designation	Name	Mid-high sensitivity	Medium medium sensitivity	Low Mid Sensitivity
C-1a	Projects without EIA	N2	N3	N3
C-1b	Projects without EIA with visit	N2	N3	N3
C-2a	Projects with EIA with inspection	N2	N2	N2
C-2b	Projects with EIA with public consultation	N1	N1	N1

N1=high level
N2= medium level
N3= low level

Source: Own elaboration-based information DOE, 2022

Considering that the projects to be carried out by the Program will be oriented toward environmental sustainability, it is expected that all the projects, when evaluated for sensitivity, will have a risk classification of N2 (Medium potential impact level) or N3 (Low possible impact level).

2) Eligibility Criteria

The eligibility criteria in the socio-environmental context that must be applied in the project call stage are:

- ☞ The Program will finance projects aligned with the objectives of the Program and located in the intervention areas defined according to their characteristics.
- ☞ Projects to be financed T-1 and T-2 at levels N2 and N3 of potential socio-environmental impact are eligible.
- ☞ The program will finance projects for the fishing sector or small-scale blue economy aimed at sustainable adaptive management and encourage the adoption of sustainable and climate-friendly technologies and practices.

3) Exclusion criteria[250]

The exclusion criteria determine the ineligibility of the projects financed by the Program. They are related to socio-environmental sensitivity, the functionality of the areas to be intervened, the self-recovery capacity of the means to be affected, and the nature of the areas with special regimes. At the IDB ESPS level, "ineligible projects" generate significant adverse environmental impacts and associated social effects with profound implications affecting natural resources. Below is the list of projects not socio-environmentally eligible for the Program.

- ➢ Projects with potential impacts or socio-environmental risks in Category A of the IDB. This category corresponds to projects that can potentially cause significant adverse environmental or social impacts or have profound implications affecting natural resources and cannot be mitigated by planned intervention.

[250] IDB, 2021. Environmental and Social Policy Framework. Annex I-IDB environmental and social exclusion list.

- Projects are located in areas with high exposure to recurring critical environmental risk situations that are difficult and expensive to mitigate.

- Projects that compromise critical habitats, highly threatened and unique ecosystems, areas associated with vital evolutionary processes, and areas of high biodiversity value legally protected or internationally recognized endemic or endangered species.

- Projects that violate international and regional treaties on protecting and conserving natural resources.

- Projects that negatively affect vulnerable groups such as women, youth, Afro-descendants, and people belonging to indigenous peoples.

- Projects that may directly affect sites and structures of historical, archaeological, religious, or cultural value.

- Projects that generate involuntary physical or economic displacement of the population; or projects that cause significant adverse effects related to effects on the livelihoods or economic activities of the populations.

- Projects that generate significant adverse impacts or risks on tangible or intangible socio-cultural assets.

- Driftnet fishing projects in the marine environment use nets longer than 2.5 km.

- Projects that are on the IDB exclusion list.

IDB environmental and social exclusion list

The information established in Annex I of the IDB Environmental and Social Policy Framework is transcribed below. The IDB will not knowingly finance, directly or indirectly through FIs, projects involved in the production, trade, or use of the products, substances, or activities listed below. Additional exclusions may apply in the context of a specific operation.

Prohibited Activities

a. Activities that are illegal under the host country's laws, regulations, or ratified international conventions and agreements, or subject to international phase or bans, such as:

- Polychlorinated biphenyl compounds (PCBs).
- Pharmaceuticals, pesticides/herbicides, and other hazardous substances are subject to international phaseouts or bans.[251]

[251] Reference documents are: Council Regulation (EEC) No 2455/92 of 23 July 1992 Concerning the Export and Import of Certain Dangerous Chemicals, as amended from time to time; United Nations Consolidated List of Products whose Consumption and/or Sale have been Banned, Withdrawn, Severely Restricted or Not Approved by Governments; Convention on the Prior Informed Consent Procedures for Certain Hazardous Chemicals and Pesticides in International Trade (Rotterdam Convention); Stockholm Convention on Persistent Organic Pollutants; World Health Organization Recommended Classification of Pesticides by Hazard, World Health Organization Pharmaceuticals: Restrictions in Use and Availability.

- Persistent Organic Pollutants (POPs).[252]
- Ozone-depleting substances are subject to international phase-out.[253]
- Wildlife or wildlife products regulated under the Convention on International Trade in Endangered Species of Wild Fauna and Flora.[254]
- Transboundary trade in waste or waste products, [255] except for nonhazardous waste destined for recycling.
- Lead paint or coatings in the construction of structures and roads.[256]

b. illegal activities under host country laws, regulations, or ratified international conventions and agreements relating to protecting biodiversity resources or cultural heritage.

Other Activities

a. Activities that, although consistent with a country's legal and regulatory framework, may generate particularly significant adverse impacts on people and the environment, such as:

- Weapons, ammunition, and other military goods/technology.
- Tobacco. [257]
- Gambling, casinos, and equivalent enterprises.[258]
- Radioactive materials.[259]
- Unbonded asbestos fibers or asbestos-containing products.
- Drift net fishing in the marine environment using nets above 2.5 km. in length.

b. Activities that are inconsistent with the IDB's commitments to address the challenges of climate change and promote environmental and social sustainability, such as:

- Thermal coal mining or coal-fired power generation and associated facilities.[260]
- Upstream oil exploration and development projects.[261]
- Upstream gas exploration and development projects.[262]

Under exceptional circumstances and on a case-by-case basis, consideration will be given to Financing upstream gas infrastructure where there is a clear benefit in terms of energy access for

252 Stockholm Convention on Persistent Organic Pollutants as amended in 2009.
253 Ozone-depleting substances (ODSs) are chemical compounds that react with and deplete stratospheric ozone, resulting in the widely publicized 'ozone holes.'The Montreal Protocol lists ODSs and their target reduction and phase-out dates. The chemical compounds regulated by the Montreal Protocol include aerosols, refrigerants, foam-blowing agents, solvents, and fire protection agents. (https://ozone.unep.org/treaties/montre-al-protocol).
254 *www.cites.org*
255 As defined by the Basel Convention (www.basel.int).
256 Paints or coatings with a total lead concentration great than 90 ppm or the concentration limit set by the host country, whichever is lower.
257 This does not apply to projects whose primary objective is not related to the production, trade, or use of tobacco
258 This does not apply to projects whose primary objective is not related to the construction and operation of gambling, casinos, and equivalent enterprises.
259 This does not apply to the purchase of medical equipment, quality control (measurement) equipment, or any equipment where it can be demonstrated that the radioactive source is trivial and/or adequately shielded.
260 This applies only to associated facilities whose primary objective is related to the production, trade, or use of coal for power generation or to the transmission of energy generated by a coal-fired power plant (e.g., a dedicated transmission line).
261 Upstream oil and gas exploration and development refer to all the steps involved from the preliminary exploration through the extraction of the resource.
262 Idem

people with low incomes and where GHG emissions are minimized, projects are consistent with national goals on climate change, and risks of stranded assets are adequately analyzed.

B. Environmental and Social Baseline

All the projects of the Program belonging to the lines of action of Exploration and Research, Support to the value chain, and Support to individual or collective Fishermen must have a socio-environmental baseline corresponding to the dimension and activities to be carried out in each project. The objective of the baseline is to identify the initial state of the project before carrying out any activity to follow up on the project's development and monitor both the progress and the different impacts or changes in the socio-environmental environment of the project that can happen.

Preparing the baseline at the secondary data level and collecting primary data will be the responsibility of the socio-environmental professionals of the PEU, who will prepare technical reports with maps and critical data that will serve as a starting point for each project. The report must include a description of the project, including the technical details of its components, the processes of its execution, the areas of direct and indirect influence, the diagnosis of the abiotic, biotic, social, and economic elements, and their susceptibility to possible impacts of the project.

C. Environmental and social assessment [263]

The environmental and social assessment shall include participation and consultation with affected people and other interested parties, especially in the early stages of projects, to ensure that all environmental risks and impacts are identified and addressed. The identification and socio-environmental evaluation vary according to each project, so the borrower must consult with the IDB on the process to be used, considering the scope, the participation of the interested parties, and the potential environmental and social problems. As methods and tools used by the Borrower to carry out the environmental and social assessment and document its results, including mitigation measures, the following may be used individually or in combination with some of them:

- Environmental and social impact assessment
- Environmental and social audit
- Risk or threat assessment.
- Cumulative Impact Assessment.
- Social and conflict analysis.
- An environmental and Social Management Plan (ESMP).
- Environmental and Social Management Framework.
- Regional environmental and social impact assessment.
- Strategic environmental and social assessment.

As a suggested method and instrument to carry out the environmental and social evaluation of the Program's projects, an Environmental and Social Impact Study (ESIA) is proposed according to the categorization that the DOE grants to each project. This assessment identifies and assesses

[263] Online: https://documents1.worldbank.org/curated/en/762551548346041687/ESFGuidance-Note-1-Assessment-and-Management-of-Environmental-and-Social-Risks-and-Impacts-Spanish.pdf [July 27, 2022]

potential environmental and social risks and impacts of a proposed project, evaluates alternatives, and designs appropriate mitigation, management, and follow-up measures.

According to the Strategic Environmental and Social Assessment (SESA) carried out, the main critical socio-environmental factors used to identify the interactions were:

- Natural resources strategic: soil, water, air, aquatic ecosystems.
- Economic dynamics and livelihoods: Economic activity, Productive systems, Livelihoods, Employment
- Quality of life and inclusion: Associativity dynamics, Health, Population Inclusion
- Management: Capacity

D. Identification of the potential impacts and risks

The projects financed by the program will be subject to the framework of the lead project's prevention and mitigation instruments and mechanisms, remaining in category B. None of the Program projects are expected to generate new risks and socio-environmental impacts. If generated, an evaluation process must be followed and corrective plans applied for its implementation.

Below are the socio-environmental impacts identified in the SESA, previously selected due to their potential occurrence. It is essential to highlight that implementing the Program's projects may generate new or different socio-environmental impacts than those described below. That is why the new impacts must be evaluated and included in the Environmental and Social Management Plan for proper management.

➢ Positive impacts

Execution stage

- Institutional strengthening.
- Improvement of sustainable economic activities.
- Increased partnership dynamics
- Sustainable management of living resources

Operation/close stages

- Institutional strengthening.
- Improvement in the production chain.
- Participation of vulnerable groups.
- It is strengthening the dynamics of associativity.

➢ Negative potential impacts

- **Execution Stage**
- Solid waste generation.
- Generation of oily liquid waste.
- Wastewater generation.
- Discharge of setine liquids.
- Gas emissions.

- Noise pollution.
- Bycatch.
- Overexploitation of fishing resources
- Disruption of spawning time, migration, and peak abundance of fish
- Fish processing waste
- Temporary loss of access and use of the fishing zone
- Temporary affectation on maritime traffic

Operation/close stages

- Solid waste generation.
- Wastewater generation.

➢ Potential Risks

- Discarding fishing gear
- Underwater noise emissions.
- Risk of mechanical damage to the reef by deployment and anchor recovery.
- Risk of generation of ozone-depleting substances (ODS).
- Displacement of economic activities.
- Low participation of women
- Work accidents.
- Delay in the start and execution of Program projects:
- Social conflicts due to unequal accessibility to areas.
- Change in the social environment due to expectations for matching grants
- Low participation of vulnerable groups
- Disturbing national monuments and marine reserves
- Spill into the Ocean by the ship.
- Collision Accidents.
- Risk of sinking and grounding of the ship.
- Fire on the ship.
- Increase in energy consumption.
- Risk of Natural disasters and Climate Change.

2.2. National Environmental requirements for projects

➢ The Department of Environmental (DOE)

Belize establishes that all persons, institutions, and organizations, whether public or private, must request the Department of the Environment if the undertaking, Project, or activity to be developed will require an Environmental Impact Study. For this purpose, the Law in Chapter 328S Revised Edition of 2000 establishes the procedure and requirements for Environmental Studies. If it is necessary to do the Environmental Impact Assessment, the assessment process is carried out in three phases:

1. A project analysis phase (screening of the Project)
2. Review by the National Environmental Evaluation Committee following paragraph 25 of the regulation.A grade for the design and implementation of a monitoring program.
3. The Environmental Impact Assessment must be included as minimum requirements:

a) Description of all the activities to be carried out,
b) The project must describe the people affected by its activities, including specific information identifying the impacts and effects of the proposed activities.
c) Evaluation of the Project involves identifying potential environmental impacts, including the direct and indirect, cumulative, short and long-term effects that the project activities could cause.
d) Other authorizations are necessary for the Project. In the development of the Project, the following permissions will be required: Authorization for water extraction, Area Map; Permission to extract water from the owner of the land if the applicant does not own the owner of the land; If a wastewater discharge occurs, a letter of authorization or an effluent license from the Department of the Environment is required.

➢ Belize Fisheries Department (BFD)

At the level of permits, the BFD requests:

☞ Fisherfolk and Vessel Licenses[264]

1. Vessel Requirements
a) The owner or master of the vessel must have a valid commercial fisher folk license.
b) The vessel must have a valid seaworthiness certificate issued by the Belize Port Authority.

2. Fisherfolk Requirements
a) Must be at least 18 years old **AND**
b) Present a valid Social Security card **OR**
c) Present a valid Voters card and Birth Certificate **OR**
d) Present a valid Belizean passport

All Applicants must present Both:
- Proof of Residency
  a) Recent utility bill showing address (electricity, water, or telephone) OR
  b) Three (3) months rental receipt and an affidavit or letter from the landlord stating that the applicant has been residing at their residence for the last three (3) months (a justice of the peace must sign this).
- Proof of Sale in Belize
  a) Receipt of sale of fishery products from fishermen cooperatives, restaurants, hotels, etc

☞ Permits[265]

The Fisheries Department of Belize processes special permits for taking some species, exportation, and marine research or filming.

[264] BFD, 2023. https://fisheries.gov.bz/licenses/
[265] BFD, 2023. https://fisheries.gov.bz/licenses/

- **Seafood Export**

a) Individual or Company
b) Fisheries Product
c) Species
d) Annual Renewal

- **Filming Permit**

Required for any aquatic filming project
a) Filming activities and rationale must be submitted for approval
b) Provide a list of equipment and crew
c) Submit digital copies collected

- **Research**

a) Required for any aquatic research
b) The scientific research proposal must be submitted for approval
c) $200 Prescribed fee applicable outside Protected Areas
d) $500 Prescribed fee applicable inside Protected Areas
e) Mandatory guidelines issued in the permit
f) Permits expire on December 31st

- **Researchers are obligated to submit the following**

a) Application for a Scientific Research Permit
b) Letter of Commitment
c) Scientific Report Writing Format
d) Application for a Scientific Research Permit
e) Scientific researcher's permit -administrative requirements

➢ CITES permits

A research/collecting permit is required for most biological and research collections. This permission applies to all agencies. If the organism is included in the CITES list, an additional CITES permit must be filed with the CITES administrative authority in Belize. (Ministry of Sustainable Development, Climate Change, and Disaster Risk Management).

➢ Boat registration, license Belize Port Authority

a) To register a boat: Certificate, a bill of sale, or a receipt for a locally built boat. Without these documents, you must provide a signed declaration form describing the boat, length, width, etc. If it is built abroad, you must provide a customs declaration form.
b) To obtain the license: Submit a building certificate. Inspect the vessel to ensure it has the appropriate equipment for life jackets, fire extinguishers, communication equipment, etc.
c) A captain's license.

2.3. Gaps between national requirements and ESPF

Below are the main gaps between Belize's national legislation and regulations and the IDB's socio-environmental standards.

Below are the main gaps between Belize's national legislation and regulations and the IDB's socio-environmental standards.

- **Environmental evaluation:** Impact Assessment Regulations S.I. Cap. 328 Section 21

The Department of the Environment (DOE) establishes the Environmental Assessment as an instrument of environmental policy where any public or private project must be analyzed for its categorization. Based on the sensitivity of the environment and the activities to be carried out, the DOE will determine whether the projects to be implemented require an impact assessment or a limited environmental study.

During an environmental impact assessment, the developer will provide the opportunity for meetings between the developer and interested members of the public, especially within or immediately adjacent to the geographical area of the proposed company, to (a) provide information about the proposal's commitment to people whose environment can be affected by the commitment; Y (b) record the concerns of the local community on the environmental impact of the proposal company[266].

Gap 1: Although public consultation is a requirement for the execution of projects categorized in Annex II of the DOE, Belize's national regulations do not require the preparation of a stakeholder participation plan, nor does it establish the incorporation of vulnerable groups as required by the ESPS 10 of the IDB. The program can address this gap by implementing the ESMP Stakeholder Engagement Plan (SEP).

Gap 2: According to the DOE regulation, "During an environmental impact assessment, the developer will provide the opportunity for meetings between the developer and the local community to record the community's concerns about the environmental impact of the proposal." However, continued stakeholder engagement and implementation of a complaint mechanism are not anticipated. The program can overcome these gaps by implementing the ESMP Stakeholder Engagement Plan (SEP), which promotes public consultation at different stages of the Program cycle and includes the complaints mechanism.

- **Belize Spiny lobster (Panulirus argus) Fishery Management Plan and Belize Queen Conch (Strombus gigas) Management Plan**

The Belize Fisheries Department (BFD) 2014 prepared spiny lobster and queen conch management plans to guide technical actions and manage these resources according to the guidelines of the Central American Fisheries and Aquaculture Organization (OSPESCA).

[266] DOE, Chapter 328.

Gap: The Spiny Lobster and Queen Conch management plan update must comply with the ESPS 6 of the IDB. This standard recognizes that the protection and conservation of biodiversity, the maintenance of ecosystem services, and the life-sustaining management of natural resources are essential for sustainable development. This standard establishes the relationship of ecosystem services as (i) provisioning services, which are the products that people obtain from ecosystems; (ii) regulating services, which are the benefits people obtain from regulating ecosystem processes; (iii) cultural services, which are the immaterial benefits that people obtain from ecosystems, and (iv) support services, which are the natural processes that maintain the other services.

The plans for Spiny Lobster and Queen Conch should be oriented to comply with the objectives of the standard concerning: a) The protection and conservation of coastal, marine, and water courses and reserves biodiversity sweet; b) Maintaining ecosystem functions to ensure the benefits derived from ecosystem services; c) Promote the sustainable management of living natural resources through the adoption of practices that integrate conservation needs with development priorities.

- **Pollution Regulations (S.I. 56/1996) and Amendment - 2009**

The Pollution Regulations address air, water, and soil pollution, including noise pollution. Likewise, this regulation deals with the emission of pollutants into the air where no person should cause, allow or allow the contaminants to be emitted or downloaded directly or indirectly into the air from any source. In 2009, the regulation included aspects related to the commitments of the Montreal Protocol on substances that deplete the ozone layer.

Gap: Although national regulations cover various aspects of pollution prevention, it is necessary to complement national legislation with the World Bank Group guidelines on environment, health, and safety. established in ESPS 3 of the IDB**.** Therefore, in the ESMP, all Program projects analyzed with limited potential for contamination and impact on resources considered low/moderate risk must follow IDB ESPS 3, which covers national regulations.

- **Land Acquisition (Public Purposes)** Act Chapter 184 - Revised Edition 2000

The Land Acquisition Law regulates aspects related to questions and claims regarding the payment of compensation, which are evaluated by the Evaluation Board, which will be composed of (i) the Chief Minister of Justice or a Supreme Court judge who will be the Chairman of the board; (ii) a member (other than a public official) appointed by the minister responsible for land; and (iii) a member appointed by the owner (IV); Provisions governing the assessment of compensation, etc. (V); Miscellaneous (VI); Voluntary Assignment of Lands to the Crown (VII); Inscription (VIII).

Gap: The Land Acquisition Law in Belize does not contemplate actions related to users' rights when there is some restriction of access to seasonal natural resources, as is the case of fishermen who derive their livelihood from fishing areas. To address this gap, the ESMP will consider, following ESPS 5, implementing socio-environmental measures according to hierarchy to prevent, mitigate and, ultimately, compensate for the possible impact due to restricted access to the group of fishermen who use zone 9 as a livelihood.

- **Labour Act Chapter 297 -** Revised Edition 2011 and Amendment Act 2020

This standard is intended to protect the worker's labor and working conditions. It includes Occupational Health safety and protection of workers' rights and addresses the issues of forced labor and employment of women and children.

There is no evidence of any gap between national legislation, international agreements, and the ESPS 2 of the IDB. It is essential to highlight that all the projects of the Program must comply with the provisions of ESPS 2 in aspects such as Labor and working conditions, including the possibility that workers have the right to present their complaints and claims without reprisals for their requests.

- **Protection against Sexual Harassment** Act Chapter 107 Revised Edition 2000

This Law contemplates the topics of Forms of Sexual Harassment, Responsibilities of employers and employees, Hearing of Complaints, Infractions, and sanctions.

Gap: Despite significant progress, significant gender gaps persist, from physical violence and deprivation to unequal work or political opportunities. Women in Belize lag behind men in positions of power and political leadership. Women in Belize face barriers to economic empowerment and are the primary victims of GBV[267]. In this sense, the projects of the Program must be oriented under the ESPS 9: Gender Equity, and the ESMP will include the formulation of the Gender Plan.

- **Indigenous People**

According to Hulze IDB 2022, “Belize does not have specific legislation for the protection or any other treatment of indigenous people. The preamble to the Belize Constitution, however, makes mention of indigenous peoples by requiring that “State policies protect the identity, dignity, and cultural values of Belizeans, including the indigenous peoples of Belize.” In addition to this, the indigenous peoples of Belize do not enjoy traditional fundamental rights and freedoms of the individual (section 3) and protection against discrimination (article 16) based on race, place of origin, political opinion, color, creed, or sex, that every Belizean enjoys.”

Gap: The national legal framework of Belize related to indigenous peoples does not contemplate some aspects required by IDB ESPS 7, especially those related to (i) ensuring the development of projects with full respect for the human rights of indigenous peoples, as well as to their collective rights, dignity, aspirations, culture, and livelihoods dependent on natural resources and (ii) Ensure the free, prior and informed consent of the communities of indigenous peoples affected by the project. The Program must guide its actions under ESPS7: Indigenous Peoples and prepare the Plan for indigenous peoples that will be part of the ESMP to overcome this gap.

[267] IDB, FAO, 2022. Promoting Growth in Sustainable Blue Economy Program (BL-L1042). Diagnostic of the Fisheries Sector and Identification of Portfolio Diversification and Improvement Opportunities.

- **Rights of Cultural Expression of the Indigenous Garifuna People in Belize**

In 1990, Belize ratified the World Heritage Convention. Belize ratified the International Covenant on Civil and Political Rights in 1996. In 2007, Belize ratified the Convention for the Safeguarding of the Intangible Cultural Heritage, of which the "Proclamation of Masterpieces of the Oral and Intangible Heritage of Humanity" is a part. The Garífuna people were one of the recipients of this proclamation because of their language, dance, and music. In addition, on March 24, 2015, Belize acceded to the Convention on the Protection and Promotion of the Diversity of Cultural Expressions[268].

Gap: According to Article 3(b) of the Belize Constitution, "While all persons in Belize are entitled to the fundamental rights and freedoms of the individual, that is, the right, regardless of race, national origin, political opinion, color, creed, or sex, but without prejudice to respect for the rights and freedoms of others and the public interest, any of the following, viz. . . freedom of conscience, expression and assembly and association". Under the above, Belize maintains that all citizens are treated equally and therefore does not provide additional measures to protect the Garífuna people[269]. To eliminate this gap, the Program must implement the projects under ESPS 8, which recognizes the importance of cultural heritage for current and future generations. People from the Garifuna and indigenous groups will participate in the public consultation processes with sessions culturally appropriate to their language.

ELEMENT 3. Management Programs

3.1. Environmental and Social Management Plan

The Environmental and Social Management Plan (ESMP) aims to guarantee control and compliance with current socio-environmental regulations at the national level and with the IDB's ESPSs in the projects financed by the Program. The ESMP will include the prevention, control, and mitigation measures identified for the projects and will be made up of different programs that will be developed according to the stages of the project cycle.

The ESMP will include the mitigation measures identified for the project. It will consist of a series of programs and subprograms for each stage, including, but not limited to, those detailed in Table 30. It is essential to highlight that corrective plans are prepared when impacts occur during execution.

[268] The University of Oklahoma College of Law International Human Rights Clinic the United States of America. Report on Belize to the 31st Session of the Universal Periodic Review, Human Rights Council, October – November 2018
[269] The University of Oklahoma College of Law International Human Rights Clinic the United States of America. Report on Belize to the 31st Session of the Universal Periodic Review, Human Rights Council, October – November 2018

Table 30 Environmental and Social Management Programs

#	Program	Objectives	ID	Measures
P1	Waste management and air pollution control	The Program seeks to prevent the handling of hazardous and non-hazardous waste and accidental spills and to prevent possible ODS leak emissions that exploratory fishing campaigns and the commissioning of the refrigeration system may generate.	P1-1	Solid and hazardous waste management
			P1-2	Hazardous Materials Management and Accidental Spill Prevention Measures
			P1-3	Setina wastewater and liquid management plan
			P1-4	Management of atmospheric emissions
P2	Sustainable management of living resources	This program seeks to establish actions to prevent and control the possible effects that may occur on protected areas and marine fauna through activities such as exploratory fishing campaigns.	P2-1	Protection of living resources
			P2-2	Prevention of affectation of protected areas
			P2-3	Control to prevent the introduction of alien species.
P3	Alternatives to avoid the impact of economic displacement during fisheries research activities	This program seeks to establish actions to prevent and control the possible effects that may occur on protected areas and marine fauna through activities such as exploratory fishing campaigns.	P3-1	Substitution of fishing areas
			P3-2	Design an access plan for zone 9
			P3-3	Consultation workshops on accessibility to zone 9
P4	Occupational Health	This aims to guide mitigation actions on the health, safety, and well-being of the people who work in fishing research, artisanal fishing, and retrofitting of the refrigeration system.	P4-1	Management of occupational accidents and risks
P5	Participation of vulnerable groups	This program aims to improve the responsiveness of projects for the inclusion of vulnerable groups in individual and group plan projects.	P5-1	Strategy for Linking vulnerable groups
			P5-2	Plan for Indigenous Peoples
			P5-3	Plan of Action on Gender and Diversity.
P6	Disaster risk prevention	This Program aims to prevent the appearance of new disaster risks and reduce existing ones that may affect the development of the operation's projects.	P6-1	Natural disaster risk management plan

Below are the socio-environmental measures according to each program.

Program 1: Waste management and air pollution control

P1-1 Common Solid Waste Management Plan

1. Objectives

This plan will aim to establish measures to prevent and control the generation, handling, transport, and final disposal of common waste generated on ships during the realization of exploration campaigns.

2. Responsibility

The adequate control, management, and follow-up of the activities that the project will develop will be the responsibility of the Project Executing Unit in coordination with the BFD and MBECA. Implementing the Plan will be the responsibility of the person in charge of the vessel.

3. Activities

#	Description
The plan shall apply the procedures established by national laws and regulations and those established in the international MARPOL standards, specifically in Annex V: Standards, to prevent pollution by garbage on ships. At a general level, it is necessary that the plan contemplates the following activities:	
A1	Define the types and categories of ordinary non-hazardous wastes.
A2	Identify areas where common waste can be discharged
A3	Establish and implement common onboard waste management procedures
A4	Promote and disseminate the different instructions through signs, signs, or other means that allow information on handling common waste.
A5	Install appropriate, visible solid waste containers identified and strategically located on the boat with their respective identification.
A6	Take into account the formats required by the rules for the collection of information and referral of evacuation reports of common disorders.

5. Goal

100% of the fishing exploration campaigns will implement solid waste management plans.

6.Indicators

#	Name	Description	Data	Formula	Measure	Dimension
PR1M1A6	% of revisions made to exploratory fishing campaigns on the management and control of solid waste	Establishes the percentage of the revisions carried out in the exploratory fishing campaigns	Arc = number of revisions made in the exploratory fishing season ATC = total number of scheduled reviews in the exploratory fishing season	(∑ Arc * 100) / ∑ Atc	Percentage	Compliance

7. Means of verification

#	Name	Description	Middle
V-1	Report	List of revisions made	Written or digital document
V-2	Report	Garbage registration	Written or digital document

8. Schedule

#	Activity	Design	Operation	Closing
A.1	Fishing campaigns		X	X
A.2	Cooling system		X	X

9. Estimated Costs

Item	Description	Unit	Quantity	Unit Value	Total Value
1	PEU Environmental Professional	Global			
Note: The costs to develop this activity are included in the estimated costs for the implementation of the PEU					

Program 1: Waste management and air pollution control

P1-2 Hazardous Waste Management Plan

1. Objectives

This plan will establish measures to prevent and control the generation, handling, transport, and final disposal of hazardous waste generated on ships during exploration campaigns.

2. Responsibility

The adequate control, management, and follow-up of the activities that the project will develop will be the responsibility of the Project Executing Unit in coordination with the BFD and MBECA. Implementing the Plan will be the responsibility of the person in charge of the vessel.

3. Activities

#	Description
The plan shall apply the procedures established by national laws and regulations and those found in the international MARPOL standards, specifically in Annex V: Standards, to prevent pollution by garbage on ships. At a general level, it is necessary that the plan contemplates the following activities:	
A1	Store the hazardous wastes in sealed and labeled containers within the Waste Area.
A2	Keep records of all hazardous waste generated by type, with cargo manifests to authorized waste managers.
A3	Identify and ensure that hazardous solid wastes are clearly defined by type and category
A4	Maintenance and periodic cleaning of hazardous waste storage sites.
A5	Evacuate Hazardous Waste through an Authorized Manager according to national regulations.

5. Goal

100% of the fishing exploration campaigns will implement solid waste management plans.

6.Indicators

#	Name	Description	Data	Formula	Measure	Dimension
PR1M2A1	# of hazardous waste containers generated.	Establishes the number of containers of hazardous waste generated by the vessel.	Grp = number of hazardous waste containers generated by the vessel per month.	(∑ Grp) / month	Number	Compliance
PR1M2A2	# of hazardous waste records.	Establishes the number of records of hazardous waste generated.	Rrp = number of hazardous waste records generated by the emarcation per month.	(∑ Rrpc) / month	Number	Compliance

7. Means of verification

#	Name	Description	Middle
V-1	Containers	List of hazardous waste containers generated	Written or digital document
V-2	Register	List of hazardous waste records generated	Written or digital document
V-3	Register	List of accidental spill records	Written or digital document

8. Schedule

#	Activity	Design	Operation	Closing
A.1	Hazardous waste container counting		X	X
A.2	Registration of hazardous waste generated.		X	X
A.3	Accidental spill logging		X	X
O.1.	Tracking.		X	X

9. Estimated Costs

Item	Description	Unit	Quantity	Unit Value	Total Value
1	PEU Environmental Professional	Global			
Note: The costs to develop this activity are included in the estimated costs for the implementation of the PEU					

Program 1: Waste management and air pollution control

P1-3 Setina wastewater and liquid management plan

1. Objectives

This plan will aim to establish measures to control the management of wastewater and setine liquids generated in vessels during the exploration campaigns.

2. Responsibility

The adequate control, management, and follow-up of the activities that the project will develop will be the responsibility of the Project Executing Unit in coordination with the BFD and MBECA. Implementing the Plan will be the responsibility of the person in charge of the vessel.

3. Activities

#	Description
The plan must apply the procedures established by national laws and regulations and what is found in the international standards MARPOL specifically in IV: Prevention of pollution by sewage and the best practices established by Environmental, Health & Safety Guidelines of WB. At a general level, it is necessary that the plan contemplates the following activities:	
A1	The vessel will have a wastewater storage tank and a treatment plant installed with the capacity to treat wastewater from the bathrooms. According to MARPOL Regulation 8 of Annex IV: The vessel shall discharge the sewage through a treatment plant approved and certified by an international sewage pollution prevention certificate, which ensures that the results of the sound tests are recorded in the credentials, the effluents do not produce visible floating solids and do not cause discoloration in the surroundings.
A2	The vessel shall have approved oily water separators/filters to separate bilge water from the machinery spaces. If these devices are not in condition, Oily water will be retained on board to be discharged at appropriate facilities on land.

5. Goal

The fishing exploration campaigns will implement 100% of the activities of the wastewater and setina management plan.

6.Indicators

#	Name	Description	Data	Formula	Measure	Dimension
PR1M2A1	# of Number of discharge and bilge water records	Sets the number of wastewater and setine discharge records	Grp = number of records per vessel per month.	(∑ Grp) / month	Number	Compliance

7. Means of verification

#	Name	Description	Middle
V-1	Registration	List of generated download logs	Written or digital document

8. Schedule

#	Activity	Design	Operation	Closing
A.1	Sewage discharge record and place it in the respective book.		X	X
O.1.	Tracking.		X	X

9. Estimated Costs

Item	Description	Unit	Quantity	Unit Value	Total Value
1	PEU Environmental Professional	Global			

Note: The costs to develop this activity are included in the estimated costs for the implementation of the PEU

Program 1: Waste management and air pollution control

P1-4 Air Emissions Prevention Plan

1. Objectives

This plan aims to establish measures to prevent and control the generation of atmospheric emissions of greenhouse gases produced by the operation of the refrigeration system under the implementation of good refrigeration practices.

2. Responsibility

The adequate control, management, and monitoring of the activities that the project will develop will be in charge of the Project Executing Unit in coordination with the BFD and MBECA. La execution of the activities will be in the order of the person in the invoice of the contractor of the refrigeration system.

3. Activities

#	Description
	The plan shall apply the procedures of national laws and regulations, the IFC World Bank Group's environmental, health, and safety guidelines, and the Montreal Protocol. At a general level, it is necessary that the plan contemplates the following activities:
A1	Ensure the acquisition of refrigeration equipment that complies with international best practices to prevent the leakage of SDGs.
A2	DOE-issued certification from the contractor at the level of compliance of refrigeration system installers
A3	Classification of the maintenance to be carried out
A4	Identification of possible problems to be solved
A5	Description of reasonable refrigeration practice procedures.
	1. Preliminary proceedings
	2. Sweeping and cleaning procedures
	3. Supplementary procedures
A6	Identification of risks
A7	Prevention measures in case of leaks
A8	Occupational Health and Safety Manual

5. Goal

100% of the activities of the refrigeration system will have adequate management of atmospheric emissions.

6.Indicators

#	Name	Description	Data	Formula	Measure	Dimension
PR1$_{M3A1}$	# of maintenance logs performed	Sets the number of maintenance performed on the system	Mrp = number of maintenance performed on the system	(∑ Mrp) / year	Number	Compliance
PR1$_{M3A2}$	# of air emissions records	Establishes the number of records made of atmospheric emissions.	Erp = number of air emission records per year.	(∑ Erpc) / year	Number	Compliance

7. Means of verification

#	Name	Description	Middle
V-1	Records	List of maintenance records	Written or digital document
V-2	Records	List of air emissions records	Written or digital document

8. Schedule

#	Activity	Design	Operation	Closing
A.1	System maintenance log		X	X
A.2	Register of atmospheric emissions		X	X
O.1.	Tracking		X	X

9. Estimated Costs

Item	Description	Unit	Quantity	Unit Value	Total Value
1	Profesional Ambiental de la PEU	Global			

Note: The costs to develop this activity are included in the estimated costs for the implementation of the PEU

Program 2: Protection of biodiversity and sustainable management of living resources P2-1 Protection of living resources						
1. Objectives						
Protect biodiversity in the areas selected for exploratory fishing campaigns and sustainable living resource management in these areas.						
2. Responsibility						
The adequate control, management, and monitoring of the activities that the project will develop will be in charge of the Project Executing Unit in coordination with the BFD and MBECA. The execution of the activities will be in the order of the person in charge of the exploratory campaigns and the vessel.						
3. Activities						
#	**Description**					
A1	Define the access, season, and catch limit in the areas for the exploratory fishing campaigns.					
A2	To reduce the incidental capture of Seabirds in Longline Fishing, technical note 003-2010 of Belize High Seas Fishing in aspects related to: Night setting with minimum deck lighting Bird-scaring lines (tori-lines) Weighted branch lines Blue-dyed squid bait Management of offal discharge					
A3	Other options to minimize bycatch are: Option 1: Since longline fishing for fish can have high rates of bycatch, it is advisable to use large circle hooks to avoid incidental capture or bycatch of sea turtles and NOT TO USE SQUID as bait. It is recommended to use monofilament and not rope, polyamide, or other material with positive buoyancy because it increases the risk of entanglement. Using circle hooks will increase the capture of some sharks, so it is better not to use steel lead, rope in the information, or fish at night. With gillnets, there is a high risk of capturing turtles, dolphins, and whales. For fish of sizes that are not allowed, it is better to use a large mesh size, preferably 7 inches or larger, periodically check the mesh, or use short clothes no larger than 100 or 200 meters. Option 2: Use an echosounder which will allow a better resolution of habitat and biomass. Its use requires a period of learning the software, but it is an effort that minimizes bycatch. Option 3: In some cases, options 1 and 2 can be combined depending on the development of the activity					
A4	Prevent the affectation of marine fauna by recording sightings and turning off engines in case of a sighting.					
A5	Minimize anchoring, use anchor buoys or drift fishing so as not to affect the anchors on the coral					
A6	Keep records of biological data, capture, and effort according to the research to be carried out in the exploratory fishing campaign.					
5. Goal						
100% of the project activities will have sustainable management of living resources and protection of biodiversity.						
6.Indicators						
#	**Name**	**Description**	**Data**	**Formula**	**Measure**	**Dimension**
PR2$_{M4A1}$	# of records of exploratory fishing campaigns	Establishes the registry of intervention areas with access data, season and catch limit	Lrc = number of records of exploratory fishing campaigns per month	(∑ Lrc) / mes	Number	Compliance

PR2M4A2	Bycatch log #	Establishes the number of bycatch records in the exploratory fishing campaign	IRC = number of incidental catch records in the exploratory fishing season per month	(∑ Irc) / mes	Number	Compliance
PR2M4A3	# of biological data recordings, capture and effort in exploratory campaigns	It establishes the number of records of biological data, catch and effort of exploratory fishing campaigns.	Drc = number of records of biological data, catch and effort of the exploratory fishing campaign per month	(∑ Drc) / mes	Number	Compliance

7. Means of verification

#	Name	Description	Middle
V-1	Records	List of records of exploratory fishing campaigns	Written or digital document
V-2	Records	List of bycatch records	Written or digital document
V-3	Records	List of biological data record, capture and effort	Written or digital document

8. Schedule

#	Activity	Design	Operation	Closing
A.1	Registration of exploratory fishing campaigns		X	X
A.2	Bycatch records		X	X
A.3	Biological data logging, capture and effort		X	X
O.1.	Tracking		X	X

9. Estimated Costs

Item	Description	Unit	Quantity	Unit Value	Total Value
1	Observers				
2	Supervisors				
3	PEU Environmental Professional				

Note: The costs to develop this activity are included in the estimated costs for the implementation of the PEU

Program 2: Protection of biodiversity and sustainable management of living resources P2-2 Prevention of affectation of protected areas	
1. Objectives	
Protect biodiversity and sustainable management of protected areas to avoid adverse impacts on living resources in these same areas.	
2. Responsibility	
The adequate control, management, and monitoring of the activities that the project will develop will be in charge of the Project Executing Unit in coordination with the BFD and MBECA. The execution of the activities will be in the order of the person in charge of the exploratory campaigns and the vessel.	
3. Activities	
#	**Description**
A1	Comply with the provisions of the management plans of Protected Areas on issues related to:
	Conservation Targets: Coral Reefs, Mangrove, Seagrass, Littoral Forest / Sandy Beaches, Deep Sea Ecosystems, Commercial Species, Sharks and Rays, Sport Fish Species, and Charismatic Megafauna
	Management Programs and Objectives: i) Natural Resource Management and Protection B; ii) Research and Monitoring; iii) Community Development and Outreach; iv)Tourism and Recreation; v) Management and Administration; vi) Infrastructure, Operations, and Maintenance.
A2	Establish an investigation strategy to prevent impacts on Protected Areas, taking into account the following:
	i) Fisheries Regulations
	ii) Regulations of the Management Zones of the Protected Areas where zones are defined as General Use Zone, Seasonal Closed Zone, Conservation Zone, and Wilderness Zone.
	iii) Proposed Replenishment Zone Expansion of protected areas
	iv) Managed access in Protected Areas
	v) BBRRS-World Heritage Site Strategies
	vi) Development Guidelines for each Protected Area
	vii) IUCN Green List Standards.
A3	Before starting the exploratory campaigns, review the "sensitive" navigation areas due to their depth about the draft of the vessels.
A4	Establish a buffer zone of approximately 1000 feet around vessels near the Keys where there are known sensitive habitats to protect these areas.
A5	Restrict vessels from traveling in water less than one foot (0.3 m) above the vessel's draft to prevent grounding and damage to sensitive coral reefs.
A6	Keep records of activities threatening the environment, natural resources, or protected areas.
5. Goal	
100% of the project activities will follow the guidelines and restrictions established for protected areas.	

6.Indicators

#	Name	Description	Data	Formula	Measure	Dimension
PR2$_{M5A3}$	# of records of occurrence of activities that threaten areas of protection	Establishes the registry of activities that threaten protected areas	Orc = number of records of activities that threaten protected areas per month	(∑ Orc) / month	Number	Compliance

7. Means of verification			
#	Name	Description	Middle
V-1	Record	List of records of activities that threaten protected areas	Written or digital document

8. Schedule				
#	Activity	Design	Operation	Closing
A.1	Registration of activities that threaten protected areas		X	X
O.1.	Tracking		X	X

9. Estimated Costs					
Item	Description	Unit	Quantity	Unit Value	Total Value
1	Observers				
2	Supervisors				
3	PEU Environmental Professional				

Note: The costs to develop this activity are included in the estimated costs for the implementation of the PEU

Program 2: Protection of biodiversity and sustainable management of living resources

P2-3 Control to prevent the introduction of alien species

1. Objectives

Establish the necessary actions to avoid introducing and proliferating exotic species that threaten the environment, natural resources, and living beings.

2. Responsibility

The adequate control, management, and monitoring of the activities that the project will develop will be in charge of the Project Executing Unit in coordination with the BFD and MBECA. The execution of the activities will be in the order of the person in charge of the exploratory campaigns and the vessel.

3. Activities

#	Description
A1	Application of MARPOL legislation and national legislation related to bilge water management.
A2	Have a specific tank (tank) to store the water mixed with hydrocarbon residues that accumulate in the bilge of the boat
A3	If what is indicated in the previous paragraph is not possible, a hydrocarbon filtering and separating plant or equipment must be implemented, with the capacity appropriate to the type of operation carried out by the vessel and whose discharges must be below the maximum permissible limits at national and international level.
A4	Keep a record of the operation and discharges carried out by the hydrocarbon filter and/or separator plant or equipment
A5	The final disposal of the residual sludge that accumulates in the receiving tanks of the plant or filtering equipment and / or separator of hydrocarbons, must be carried out on land

5. Goal

100% of the project activities will have sustainable management of living resources and protection of biodiversity.

6.Indicators

#	Name	Description	Data	Formula	Measure	Dimension
PR2$_{M6A3}$	# of laboratory records	Sets the number of lab records	Ere = number of laboratory records	(∑ Ere) / year	Number	Compliance

7. Means of verification

#	Name	Description	Middle
V-1	Record	Carry out at least twice a year (with a period of six months of difference between both) the laboratory analyses that certify compliance with the maximum permissible limits to the parameters. Established	Written or digital document

8. Schedule

#	Activity	Design	Operation	Closing
A.1	Laboratory registration		X	X
O.1.	Tracking		X	X

9. Estimated Costs

Item	Description	Unit	Quantity	Unit Value	Total Value
1	Laboratory records	Global			
3	PEU Environmental Professional				

Note: The costs to develop this activity are included in the estimated costs for the implementation of the PEU

Program 3. Alternatives to avoid the impact of economic displacement during fisheries research activities

P3-1 Substitution of fishing areas

1. Objectives

Generate a fishing alternative for the group of fishermen who use zone 9 during the period that the exploratory fishing campaigns will be carried out.

2. Responsibility

The adequate control, management, and monitoring of the activities that the project will develop will be in charge of the Project Executing Unit in coordination with the BFD and MBECA.

3. Activities

#	Description
A1	Identify in the BFD database the fishermen who are registered in Zone 9
A2	According to the previous identification, verify that another fishing zone has access
A3	Provide the license so that these fishermen have access to another area different from Zone 9

5. Goal

100% of the project activities will have the planning and coordination for the replacement of fishing areas.

6.Indicators

#	Name	Description	Data	Formula	Measure	Dimension
PR3M10A1	# of fishermen identified with licenses from up to two fishing areas.	It establishes the number of licensed fishermen from up to two fishing areas affected by the project.	PPE = number of fishermen with fishing licences for one or two fishing areas	(∑ Ppc)	Number	Compliance
PR3M10A3	# of temporary licences issued for the replacement of fishing areas	It establishes the number of licences issued for the replacement of fishing areas.	LPC = number of licences issued for the replacement of fishing areas	(∑ Lpc)	Number	Compliance

7. Means of verification

#	Name	Description	Middle
V-1	Record	Identification list of fishermen affected by the project	Written or digital document
V-2	Record	Registration list of temporary licenses issued	Written or digital document

8. Schedule

#	Activity	Design	Operation	Closing
A.1	Identification of fishermen affected by the project		X	
A.2	Registration of temporary licences issued		X	
O.1.	Tracking		X	

9. Estimated Costs

Item	Description	Unit	Quantity	Unit Value	Total Value
1	PEU Social Professional	Global			
2	PEU Environmental Professional	Global			

Note: The costs to develop this activity are included in the estimated costs for the implementation of the PEU

Program 3. Alternatives to avoid the impact of economic displacement during fisheries research activities

P3-2 Design an access plan for zone 9

1. Objectives

The purpose of the zone 9 access plan is to have a tool that allows organizing the different activities to be carried out in the zone in order to make the schedule compatible between the exploratory campaigns, the closed seasons and the activities of the fishermen.

2. Responsibility

The adequate control, management, and monitoring of the activities that the project will develop will be in charge of the Project Executing Unit in coordination with the BFD and MBECA.

3. Activities

#	Description
	Coordination meetings between MBECA, BFD, PEU and those in charge of implementing exploratory fishing campaigns to:
A1	Identify the needs, routes, strategy and schedule of exploratory campaigns
A2	Identify on a map the internal areas within zone 9 that will be affected by the routes of the exploratory campaigns.
A3	Evaluate alternatives within zone 9 to open and close areas according to the routes previously established to allow compatibility between the activities of the fishermen and the exploratory campaigns.
A4	Establish a communication strategy to (i) inform potentially affected people about the zone 9 access plan during the period of the fishing campaigns; (ii) Inform local authorities, port authorities, fishermen, and other vessels about the implementation of exploratory fishing campaigns to avoid risks and impacts related to maritime traffic accidents.

5. Goal

100% of the activities will be carried out with the participation of the executing agency, PEU and representatives of the executors of the exploratory campaigns.

6.Indicators

#	Name	Description	Data	Formula	Measure	Dimension
PR3$_{M9A1}$	# of alternative programming for fishing	Establishes the number of alternative	Pae = programming number of alternatives for fishing	(∑ Pae) / month	Number	Compliance
PR3$_{M9A2}$	# of communications designed and published	Establishes the number of fishing schedule releases per month	Cpc = number of communications designed and published	(∑ Cpc) / month	Number	Compliance

7. Means of verification

#	Name	Description	Middle
V-1	Programming	Alternative programming for fishing	Written or digital document
V-2	Communication	Alternative programming releases for fishing	Written or digital document

8. Schedule

#	Activity	Design	Operation	Closing
A.1	Alternative programming for fishing		X	
A.2	Alternative programming releases for fishing		X	
O.1.	Tracking		X	

9. Estimated Costs

Item	Description	Unit	Quantity	Unit Value	Total Value
1	PEU Social Professional	Global			
2	Alternative programming releases for fishing	Global			
3	Environmental Professional	Global			

Note: The costs to develop this activity are included in the estimated costs for the implementation of the PEU

Program 3. Alternatives to avoid the impact of economic displacement during fisheries research activities

P3-3 Consultation workshops on accessibility to zone 9

1. Objectives

Carry out consultation workshops with stakeholders to reach a consensus in determining alternatives to the temporary closure of Zone 9 for the realization of exploratory campaigns.

2. Responsibility

The adequate control, management, and monitoring of the activities that the project will develop will be in charge of the Project Executing Unit in coordination with the BFD and MBECA.

3. Activities

#	Description
A1	Coordinate actions to implement the BFD participation strategy focused on the group of fishermen possibly affected
A2	Prepare a Mapping of actors at the level of groups, institutions or people who can be summoned and establish the invitation mechanisms
A3	Present the alternatives proposed in Subprogram 8 to the stakeholder group
A4	Listen to the points of view, recommendations and options raised by the stakeholders regarding the proposals presented
A5	Incorporate the points of view of the stakeholders in the design of the alternatives for the management of Zone 9
A6	Implement, with the support of the BFD communication strategy, an information campaign for the promotion and dissemination of the selected alternative

5. Goal

100% of the fishermen possibly affected are informed of the proposed alternatives to prevent economic displacement.

6.Indicators

#	Name	Description	Data	Formula	Measure	Dimension
PR3M7A1	% of people who participated in the consultation workshops	Establishes the percentage of people summoned who participated in the consultation	Dec = number of people attending the consultation workshops Dte = number of people invited to the consultation workshops	(∑ Dec * 100) / ∑ Dte	Percentage	Compliance
PR3M7A2	% of people who participated in the consultation workshops	Establishes the percentage of people who participated in the consultation workshops	Rcc = number of records of interventions in consultation workshops Dec = number of people attending the consultation workshops	(∑ Rcc * 100) / ∑ Dec	Percentage	Compliance
PR3M7A3	Dec = number of people attending the consultation workshops	Establishes the number of agreed alternatives	Acc = number of concerted altenatives	(∑ Acc)	Number	Compliance

7. Means of verification

#	Name	Description	Middle
V-1	Records	Registration list of people who attended the workshops	Written or digital document
V-2	Records	List of records of interventions in the workshops	Written or digital document
V-3	Alternatives	List of alternatives to avoid economic displacement	Written or digital document

8. Schedule

#	Activity	Design	Operation	Closing
A.1	Registration list of people who attended the workshops	X		
A.2	Registration of interventions in the workshops	X		
A.3	Alternatives to avoid economic displacement	X		
O.1.	Tracking	X		

9. Estimated Costs

Item	Description	Unit	Quantity	Unit Value	Total Value
1	Consultation workshops	Global			
2	Registration of interventions				
Note: The costs to develop this activity are included in the estimated costs for the implementation of the PEU					

Program 4. Occupational Health P4-1 Management of occupational accidents and risks						
1. Objectives						
Carry out prevention, control and mitigation actions against potential accidents and occupational risks related to the occupational health of people working in fish exploration campaign activities such as retrofitting of the refrigeration system.						
2. Responsibility						
The adequate control, management and monitoring of the activities that the project will develop will be in charge of the Project Executing Unit in coordination with the BFD and MBECA.						
3. Activities						
#	**Description**					
A1	Formulate a training plan in occupational health, equipment management, industrial safety, and occupational risks considering appropriate PPE, JHA, and record-keeping of accidents/incidents and grievance/complaints mechanism training.					
A2	Evaluate the management capacity of the project in the face of occupational risks.					
A3	Identify the critical points of occurrence of occupational accidents in the different projects- Among the projects that require special attention are the exploratory campaigns for fish, where one of the techniques to be carried out in SCUBA diving at great depths. These actions need special equipment and trained people with quick and easy access to a hyperbaric chamber and a specialized clinic in an emergency.					
A4	Training in safety and occupational risks.					
A5	Implementation of the system of labor complaints and claims					
5. Goal						
100% of the project activities will have a management of possible work accidents						
6.Indicators						
#	**Name**	**Description**	**Data**	**Formula**	**Measure**	**Dimension**
PR4M10A4	% People trained in safety and occupational risks.	It establishes the percentage of people who were trained in occupational safety and risks.	Li = number of people who attended occupational safety and hazard training. Lg = total number of people invited to be trained in occupational safety and risks.	(∑ Li * 100) / ∑ Lg	Percentage	Compliance
PR4M10A4	% People trained in handling equipment and machinery.	It establishes the percentage of people who were trained in handling equipment and machinery.	Cei = number of people who attended the training on the handling of equipment and machinery. Ceg = total number of people invited to the equipment and machinery management training.	(∑ Cei * 100) / ∑ Ceg	Percentage	Compliance
PR4M5	% of complaints and claims attended	Establishes the percentage of complaints and claims addressed through the complaints and claims mechanism implemented	Dec = number of complaints resolved Dte = number of complaints received in a period of time	(∑ Dec * 100) / ∑ Dte	Percentage	Compliance
#	**Name**	**Description**			**Middle**	
V-1	Minutes	Act of attendance at training on safety and occupational risks.			Written or digital document	
V-2	Minutes	Act of attendance at training on handling equipment and machinery.			Written or digital document	
V-3	Plan	Training plan in occupational health, equipment management, safety and occupational risks.			Written or digital document	
8. Schedule						
#	**Activity**			**Design**	**Operation**	**Closing**
A.1	Formulate an occupational health training plan,			X		
A.2	Evaluate the management capacity of the project in the face of occupational risks.			X		
A.3	Identify the critical points of occurrence of occupational accidents.			X		
A.4	Training in safety and occupational risks.			X		
O.1.	Tracking				X	
9. Estimated Costs						
Item	**Description**		**Unit**	**Quantity**	**Unit Value**	**Total Value**
1	PEU Social Professional		Global			
Note: The costs to develop this activity are included in the estimated costs for the implementation of the PEU						

Program 5. Participation of vulnerable groups

P5-1 Strategy for Linking vulnerable groups

1. Objectives

Formulate a strategy that allows the linking of vulnerable groups to the different activities of the projects of the Programme.

2. Responsibility

The adequate control, management, and monitoring of the activities that the project will develop will be in charge of the Project Executing Unit in coordination with the BFD and MBECA.

3. Activities

#	Description
A1	Carry out a participatory diagnosis with vulnerable groups in which it is identified: i) Main limitations or problems that vulnerable groups have to participate in the projects of the Program; (ii) Possible alternatives to address constraints
A2	Formulation of strategy for the linkage of vulnerable groups.
A3	Implementation of actions for strategy development.

5. Goal

Procedure for linking the group of women, indigenous people, Afro-descendants, migrants and young people to the project.

6.Indicators

#	Name	Description	Data	Formula	Measure	Dimension
PR5M11A3	% Actions carried out to link vulnerable groups	It establishes the percentage of actions carried out according to the strategy for linking people from vulnerable groups.	VPA = last action taken in the strategy for linking vulnerable groups. Vpg = total number of actions to be carried out in the strategy of linking vulnerable groups.	(∑ Vpa * 100) / ∑ Vpg	Percentage	Compliance

7. Means of verification

#	Name	Description	Middle
V-1	Strategy	Strategy for linking vulnerable groups.	Written or digital document

8. Schedule

#	Activity	Design	Operation	Closing
A.1	Carrying out participatory diagnosis	X		
A.2	Strategy design.	X		
A.3	Procedural Disclosure.	X		
A.4	Implementation schedule.	X		
A.5	Strategy implementation.		X	
O.1.	Tracking	X	X	X

9. Estimated Costs

Item	Description	Unit	Quantity	Unit Value	Total Value
1	PEU Social Professional	Global			

Note: The costs to develop this activity are included in the estimated costs for the implementation of the PEU

Program 6: Prevention of risks to natural disasters P6-1 Natural Disaster Risk Management Plan						
1. Objectives						
This Plan aims to establish guidelines to incorporate risk management into exploration campaign activities, such as retrofitting the refrigeration system projects to reduce existing risks and prevent the emergence of new threats.						
2. Responsibility						
The adequate control, management, and follow-up of the activities that the project will develop will be the responsibility of the Project Executing Unit in coordination with the BFD and MBECA. The execution of the Plan will be the responsibility of the person in charge of the vessel and the contractor of the refrigeration system.						
3. Activities						
#	**Description**					
The formulation of the Plan shall incorporate at least the following aspects						
A1	Identification of risks, threats and vulnerabilities					
A2	Risk reduction actions					
A3	Actions for preparedness for natural disasters					
A4	Financing strategies					
A5	Actions for resilient recovery					
A6	Follow-up and monitoring actions					
5. Goal						
100% of the activities of the Risk Management Plan are implemented in the fishing exploration campaigns and the refrigeration system						
6.Indicators						
#	**Name**	**Description**	**Data**	**Formula**	**Measure**	**Dimension**
PR6M1A6	% of actions carried out in the risk management plan	Establishes the percentage of actions carried out in the Risk Management Plan	Arc = number of actions carried out of the Plan ATC = total number of actions programmed to carry out the Plan	(∑ Arc * 100) / ∑ Atc	Percentage	Compliance
7. Means of verification						
#	**Name**	**Description**			**Middle**	
V-1	Report	Progress reports			Written or digital document	
8. Schedule						
#	**Activity**			**Design**	**Operation**	**Closing**
A.1	Meetings with work teams			X		
A.2	Task assignment			X		
A.3	Analysis workshops			X		
A.4	Consolidation of outcome document					
9. Estimated Costs						
Item	**Description**		**Unit**	**Quantity**	**Unit Value**	**Total Value**
1	PEU Environmental Professional		Global			
1	PEU Social Professional		Global			
Note: The costs to develop this activity are included in the estimated costs for the implementation of the PEU						

As part of the socio-environmental measures, Table 31 presents the main lines of action regarding gender and diversity interventions throughout the value chain and within the scope of the loan according to the Social and Gender Diagnosis carried out for the Program.

Table 31. Risks and measures according to gender study[270]

Issue	Discussion and Recommendation
Men dominate the supply chain. Women's work remains invisible and undervalued. Women are most visible in the processing nodes, earning minimal wages and undetermined working conditions.	• Gender mainstreaming must remain at the forefront in developing or revising policies and programs. • Traditional practices and perceptions that are discriminatory to women must be challenged to gain gender equality and equity in the sector. • Workshops targeting women, highlighting the rights afforded to women in Belize, and sessions to change their views of women's roles are needed. • Affirmative actions must be taken to ensure that women and youth are represented in national, community, and group decision-making spaces. • Project planning and implementation must take an intersectional approach regarding women's involvement in the sector. Factors such as age, ethnicity, geographic regions, or the gender power dynamic that impede their participation must be factored in. • Further research/analysis (from the labor side) is needed to determine the situation of work conditions and labor rights of women in the processing node. • Activities like the Women in Fisheries Forum can be scaled up and diversified. More forums are needed so that women (both duty and suitable bearers) can come together more frequently to discuss the issues that affect them. Adding a separate forum for men would allow for comparisons of concerns and a better understanding of the issues on the ground for both men and women. • A clear definition of who is recognized as "Women in Fisheries" within the Belizean context would help identify participants and measure project impacts.
Women are more comfortable at the post-harvesting node,	• Many women are not too enthusiastic about being part of the harvesting node. The labor-intensive

[270] IDB-FAO, 2022. BL-L1042, 2022. Social & Gender Assessment

which lacks sex-disaggregated data.	nature of the work, distance from home, the vulnerabilities they can face at sea or during harvesting activities, and the harsh exposure to elements for prolonged periods are deterrents. To shift this thinking, support and capacity building could be provided to help them recognize their work beyond complementary or support roles and increase their knowledge of market access. • The post-harvesting node traverses greatly with the tertiary sector (wholesale, coastal tourism, restaurant industry, etc.); therefore, finding ways in which projects can allow women to provide products and services directly to these sectors is recommended (such as Pesca Tours in Sartaneja, Sarteneja Homestays, Food tours, etc.). • Further research is required at the post-harvesting node to understand better the roles of women, men, and youths within the sector.
Low savings behavior and high worry about lack of income impact fisherfolk families.	• Financial transactions occur in many ways and in many different contexts. Men and women are involved in sales of catch, whether at the open market, through a middle salesperson, cooperative or exclusive buyers. Men and women fishers and spouses would benefit from financial literacy programs especially considering that most do not have safety nets.
Safety out at sea concerns	• Concerns for personal safety and dangers at sea (piracy, gang violence, etc.) are real threats in the Belizean context. Therefore, clear guidelines regarding safety systems and reporting mechanisms could be established. For example, women need to know what supports are available if they experience sexual violence (reporting mechanism, mental health support, etc.). • Intermediary support and conflict resolution training are required to minimize gun violence experienced at sea, especially by men. Increased patrols by regulating agencies may also deter violence experienced out at sea.

Women and youth have little access to decision-making spaces such as advisory committees, leaders in cooperatives, and community groups.	• There is a need to increase women and youth participation in the sector. • More proactive measures can be taken to encourage the inclusion of women in key decision-making spaces such as fishing cooperatives, community groups, managed access committees, coastal planning committees, public meetings, etc. For example, 50-50 representation in leadership positions would reduce gender disparity and be more representative of the men and women using the resources. • Youths could participate in internships, be youth representatives on boards and councils, project steering committees, project planning committees, etc. • Public consultation meetings can be gender-responsive and provide support to increase the participation of women and youths in these spaces.
Lack of interest in women joining organized fishing groups. Weak associations and threatened fishing cooperatives	• Women are underrepresented in organized fishing groups such as fishing associations, cooperatives, etc. Actions to educate and motivate women to organize themselves to increase their voice within the sector are recommended. • Established groups, such as fishing associations, also need to be strengthened for men and women fishers to have more agency within the sector. • There is a need to empower fishing cooperatives to ensure their viability, thereby protecting the livelihoods of those working in the sector and increasing benefits to its members.

ELEMENT 4. Organizational Capacity and Competency

4.1. Program Executing Unit (PEU)

To guarantee the timely and effective implementation of the environmental and social measures of the Program and the different Plans and Programs of the ESMP, the Program for the Promotion of Growth in the Sustainable Blue Economy will have the Program Executing Unit (UEP) established for its operation BL-L1041.

The PEU will have socio-environmental responsibility with the MBECA and the BFD. For this reason, it is vital to highlight the need for adequate supervision and compliance with the ESPS, current environmental regulations and regulations for implementing environmental measures described in the ESMP.

- **The staff of the Socio-environmental management group**

Although the PEU has professionals to carry out the different activities related to compliance with socio-environmental activities, some critical professional profiles are presented below in case the PEU professionals require support:

• **One (1) Socio-environmental Coordinator** who is a professional with more than five years of experience in socio-environmental management of projects. This coordinator can be part of the MAFSE or the Ministry of Tourism and will coordinate the support team.

• **One (1) Professional in environmental sciences** who must have a profile of more than three years of experience in socio-environmental management. This professional will support the socio-environmental coordination for the implementation of the subprojects and will be hired full-time for the duration of the program.

• **One (1) Professional in Social Sciences** (sociology or social work) with a minimum of three (3) years of experience in socio-environmental work. This professional will support the participatory processes required for the implementation of socio-environmental measures and will be hired full-time for the duration of the Program.

- **Functions of the socio-environmental team**

The UEP has three professionals in charge of the following functions:

☞ **Socio-environmental Coordinator**

- Direct and implement compliance with the environmental measures contemplated in these Socio-environmental Management Plan programs.
- Coordinate the meetings and attend the environmental committees scheduled by the PEU.
- Coordinate the implementation of the socio-environmental actions required during the different stages of the projects.

- Approve a timely response (within no more than five days) to complaints of a socio-environmental nature presented by the community or the competent entities.
- Keep the PEU informed of all the socio-environmental management activities carried out in the different projects to guarantee compliance with the environmental obligations in the Environmental Management Plan.
- Design and implement preventive measures regarding possible socio-environmental incidents and accidents not contemplated in the action plans that can be present during the project phases.

☞ **Professional in environmental sciences**

- Support the Coordinator in the environmental aspects of the different projects.
- Support the implementation of the Action Plans in the environmental components.
- Collect and organize all the socio-environmental information necessary for the Reports requested by the IDB, the DOE, and other national entities that require it.
- Carry out essential visits to the projects to implement and monitor the environmental actions in the different stages of the project cycle.
- Inform the coordination about potential risks not included in the Management Plan and requiring attention.
- Monitor each environmental activity carried out in each project in coordination with the social and engineering professionals.
- Receive, classify, and respond to the Complaints and Claims System notifications in coordination with the social professional.
- The Socio-environmental Coordinator must review all responses before being sent to the applicants.

☞ **Professional in Social sciences**

- Support the PEU in the planning and execution of social actions aimed at the social sustainability of projects during the planning, execution, operation, and closure stages.
- Receive, classify, and respond to the different notifications of the Complaints and Claims System in coordination with the environmental professional and close them in the terms provided in the PMA. The Socio-environmental Coordinator must review all answers before being sent to the applicants.
- Socialize the actions that require the implementation of work activities that alter the daily life of the communities in the area of influence of the project.
- Prepare the social reports required for the IDB, the DOE, or any other institution that needs them.
- Coordinate with the environmental professional the programming of detailed activities according to the different projects to carry out the social management required for each project.
- Prepare and implement preventive measures regarding possible social incidents not contemplated in the Socio-environmental Action Plans, which may occur during the project cycle.

- Carry out verification visits to complaints and claims of the required technical personnel in the company.
- Develop and permanently update the databases of the different social actors at the level of people in the community, MSEMs, associations, groups, and institutions in the project's Area of Direct Influence.

- **Training plan**

The borrower must consider the following relevant issues for the execution of training programs:

- ☞ Waste management and air pollution control
- ☞ Sustainable Management of living resources
- ☞ Alternatives to avoid the impact of economic displacement during fisheries research activities.
- ☞ Occupational health
- ☞ Participation of vulnerable groups.

4.2. Environmental and Social Management in the stages of the project

Socio-environmental management is directly related to incorporating environmental, social, and occupational safety aspects in the project cycle. The main elements to be considered for control in the pre-execution and execution phases are described below.

a. Environmental and Social Management in Design Phase or Pre-execution

In this phase, the PEU will be in charge of developing the Executive Project, where the activities that each Project will create will be established, and for this, it must:

- Follow and apply the eligibility criteria of the projects established to carry out environmental and social screening.
- Integrate and promote the participation of vulnerable groups of the Belizean population in the design phase.
- Implement the grievance redress mechanism
- If required, hire external consultants to prepare the environmental studies requested by the DOE and verify compliance with the IDB ESPS.
- Publish environmental studies and meaningful public consultation reports among stakeholders on the PEU website.
- Before starting each project, the PEU will process the environmental authority of application, when applicable, the environmental license and the necessary permits for the implementation of the project.
- The PEU must prepare the Terms of Reference (TdR) for contracting the designs, execution, and monitoring of adaptation works or minor infrastructure improvements. The environmental, social, and occupational safety clauses must be incorporated at the national level and by the IDB.

- In their proposal, the contractors must include in detail the socio-environmental actions to be carried out and the calculation of the cost of the environmental, social, safety, and occupational health mitigation measures required by the projects. Within the minimum content of the ToR, the documents requested for the projects must be included following the DOE classification. In addition, it must consist of an execution schedule and control and monitoring mechanisms.

The PEU must verify all documentation before sending it to the IDB for review before the projects start. The PEU must obtain the following supporting documentation:

- Project information.
- Environmental Impact Study and the Environmental Compliance Program (PCA) according to the standards required by the DOE. The study must be freely accessible on the websites of the Ministries of Agriculture and Tourism.
- Environmental, sanitary, construction and urban permits for the infrastructure works to be carried out.
- Stakeholder consultation report.

b. Environmental and Social Management in the Execution phase

Environmental and social management in the project execution phase includes the following responsibilities:

PEU responsibilities

- Implement in this execution phase the consultation plans with stakeholders.
- Accompany the contractor to execute the MGAS from the environmental, social, and occupational safety point of view, seeking compliance with national regulations, the MPAS, and the IDB ESPSs.
- Control and monitor the implementation of the ESMP through the designated professional, with the national environmental authority for control and monitoring activities.
- Carry out inspection, review, and control visits of the different actions of the contractor in the environmental and social field.
- Monitor compliance with the socio-environmental commitments acquired with the IDB.
- Implement the complaints and claims mechanism.
- Supervise the implementation of the Environmental and Social Management Plans and inform the IDB of any significant breach of socio-environmental commitments.

Contractor Responsibilities:

- Once the DOE has approved the ESMP or the Environmental Compliance Program, the Contractor Company will be responsible for its compliance and implementing the Programs and plans that may apply.

- Prepare and implement the Environmental Management Plan for each project, including the environmental, occupational health, and safety measures required by the national regulatory framework and the IDB's environmental and social performance standards.

- Comply and enforce the operators and subcontractors with all the provisions of the Socio-environmental Management Plan and national legislation and the IDB environmental and social performance standards (ESPS) during all stages of the execution of the projects under their responsibility.

- Prepare monthly reports to the PEU detailing the actions and results of the implementation actions of the Environmental and Social Management Plan.

- Prepare a Final Environmental and Social Report that includes information on implementing the Environmental and Social Management Plan, including the different records obtained during the execution and fulfillment of the other established plans and programs.

IDB responsibilities

- Appoint a professional responsible for supervising the development of the subprojects and will verify the good environmental and social performance of each subproject and compliance with the provisions of the ESPS and the pertinent national regulations.

- Confirm that MBECA and the BFD know the commitments, code of ethics, and socio-environmental requirements applicable to the operation.

- Verify compliance with the consultation processes following the disbursement times of the loan contract.

- Monitor the implementation of the projects and their Environmental Management Plans to consider compliance with the MPAS and the ESPSs.

c. Environmental and Social Management in operation/close phase

Environmental and social management in the operation/closure phase of projects includes the following responsibilities:

PEU responsibilities

- Ensure compliance with socio-environmental measures for the projects to be developed in this stage of the Program.
- Prepare periodic follow-up and monitoring reports on socio-environmental aspects that must be delivered to the IDB.
- Identify non-compliance issues that require remedial or corrective action.
- Implement the Stakeholder's Engagement Plan (SEP) according to the Program stage.
- Coordinate actions to define the schedule and institutional responsibility to address these issues.

Contractors Responsibilities

- Implement compliance with socio-environmental measures for the projects to be developed in the stages of operation and closure of the Program.
- Present the reports corresponding to the completed tasks
- Evaluate at the beginning of each project the necessary procedures for its implementation and the applicable regulations. If some methods correspond to new activities, it is required to develop specific compliance procedures.

IDB responsibilities

- Review the different reports presented by the executing Agency on the socio-environmental issue and incorporate the results of the environmental measures proposed for each project in the respective Environmental Management Program. Develop and integrate environmental follow-up and monitoring for the operation stage.

- Review the monitoring reports of the Program and its form of implementation. This report incorporates the progress of the period, indicating the evolution of the monitoring indicators according to the results framework. It must contain the environmental measures implemented according to the management program of each project.

ELEMENT 5. Preparing for and responding to emergencies

In preparation and response to emergencies that could arise in the development of the Project, the SGAS establishes the procedures for coordination, alert, mobilization, and response to a particular event, having defined scenarios planned for your attention. The SGAS shows a process that lists the tasks to be carried out according to the evaluation and prioritization of the emergency scenarios with the highest probability of occurrence in the Project's areas of influence.

5.1. Emergency contingency plan

A contingency Plan is developed to respond to emergency scenarios through actions applied to prevent, control, protect and evacuate people who are in the place where the emergency is generated. These plans include access plans, signage of evacuation routes, external safe areas, equipment, evacuation procedures, drills, records, and evaluation.

a. Objectives

A contingency plan as a response to defined emergencies seek to:

- ☞ Prevent according to the mapping of emergency scenarios defined according to the study of risks and impacts.

- ☞ Prepare a specific Contingency Action Plan according to the established scenarios.

- ☞ Act following the established contingency plan.
- ☞ Control the events that can responsibly occur in emergencies with the knowledge acquired in the drills and previous evaluations.
- ☞ Protect human life, the community, and the environment in the face of emergencies.

b. Mapping of emergency scenarios

In the development of the Project, according to the risk and impact assessment study, two types of claims could occur:

1. Accidental is a situation whose origin is fortuitous, unplanned, and caused by a particular event.

2. Intentional: a situation whose origin is intentionally caused or planned by an event resulting from an action.

The projects to be financed by the Program may have different potential contingency scenarios, both in their execution and operation stages. These hypothetical scenarios must be corroborated and validated according to the characteristics of each project. Table 32 shows the hypothetical risk scenarios identified according to the line of action of the projects.

Table 32 Mapping of potential Projects emergencies

Lines of action (Projects) / What-if scenarios	Exploration and research	Support to the value chain	Support to fishermen Groups/individual
Oil spill	X		
Collision	X		
Shipwreck	X		
Stranding	X		
Fire	X		
Explosion	X		
Man overboard	X		
Accidents at work	X	X	X
Climate change and natural disasters	X	X	X

Source: Own elaboration 2022

• Climate change and natural disasters

In the SESA, Hurricanes, tropical storms, floods, and droughts regularly affect the country and were identified as natural risks. Climate Change impacts are related to projected increases in sea surface

temperature, salinity, pH, sea level, and the intensity of climate-induced tropical cyclones and storm surges, which will affect coastal ecosystems and economic activities in the coastal zone of Belize.

➢ Content of contingency plans

The content that should be included in the preparation of project contingency plans is presented below:

- Goals
- Scope
- Project Identification
- Emergency scenarios
- Alert system
- The organizational structure of the response
- Resources
- Review of the emergency plan

ELEMENT 6. Participation of Stakeholders

6.1. Participation in Stakeholders Plan

The stakeholder engagement process is guided by the IDB's ESPS10, where "Stakeholder engagement provides a vehicle to contribute for the environmental and social assessment of the project, the process of identifying risks and impacts, the design of the project, including the design of environmental and social mitigation measures, and the ongoing management of the project." [271]. The Stakeholders Engagement Plan does present in Annex 2, which includes: i) Introduction; ii) Objectives; iii) Stage 1: Stakeholders identification; iv) Stage 2: Participation Strategy; v) Stage 3: Public Consultation.

6.2. Mechanism for dressing claims and complaints

At the level of the Constitution of Belize in Chapter 118, it is established that: "any person aggrieved by the nuisance may file a complaint under this Act about nuisance or, if the nuisance affects the convenience or safety of the public, or is harmful to the health of any person, by the City, Municipality or Municipal Council of the region in which the building, place or road is located." However, the Promoting Growth in Sustainable Blue Economy Program must-have for its implementation with a grievance mechanism at the operational level of the Program.

In this regard, the IDB under ESPS10 requires the Borrower to promptly respond to questions, concerns, and complaints from affected stakeholders about the project's environmental and social performance while implementing a grievance procedure mechanism to receive and facilitate the resolution of concerns and grievances. The Program's operational-level grievance mechanism

[271] Guide to Environmental and Social Performance Standard 10: Stakeholder Engagement and Information Disclosure, September 2021, online https://idbdocs.iadb.org/, retrieved [June 1, 2022]

provides a means to address and resolve requests for information, questions, comments, references, and suggestions for project improvements as early and expeditiously as possible[272].

a. Key concepts

Below are three critical concepts in the complaint and grievance mechanism:

- ***Request*:** it is the verbal or written communication that aims to ask, pretend or look for something such as:
    a. Request collaboration when the social actors see a possibility to solve problems or get help in the project.
    b. Request for information when petitioners wish to access some project information.
    c. Request for clarification when social actors seek the attention of the project to a specific situation.
- ***The complain***t is a note or notice by which a situation affecting a person or group is highlighted and requested to be solved.
- ***Claim*:** These include communications directly related to the rights that a person or group believes they have and from which they believe they do not obtain the attention or benefit that corresponds to them, or else the quality of what he receives is inferior to what he thinks is his due

b. General objective

The mechanism of attention and management of complaints and claims aims to timely and adequately address the requests, complaints, and claims that are generated as a result of the implementation of the different projects of the Program through an accessible communication system and a reliable and efficient internal management process.

c. Specific objectives

The specific objectives of the complaints and claims system include the following:

- Facilitate the attention of requests, complaints, and claims promptly and efficiently by implementing efficient administrative care systems that respond satisfactorily to the problem raised reasonably.

[272] Guidelines for Environmental and Social Performance Standard 10: Stakeholders engagement and information disclosure, Sept 2021, online: https://idbdocs.iadb.org/, recuperate [July 3 of 2022]

- Raise requests to complaints and claims by the affected and interested population through agile tools.
- Prevent complaints and claims from reaching judicial instances through prompt response in case of information and immediate investigation in case of requiring greater detail for their resolution.
- Have an application and a database that facilitates records and allows monitoring of the internal management carried out from the presentation of requests, complaints, and claims.
- Monitor the system of care to implement corrective actions when applicable.

d. Implementation process

The implementation of the complaints and claims mechanism begins with the design of the system, for which it is necessary to consider the following phases (Figure 34):

Figure 34. General procedure for dealing with complaints and claims

Source: Own elaboration, 2023

☞ **Phase 1: Reception of the request**

Considering that the Program has national coverage, the Executing Agency must implement the procedure for receiving complaints, suggestions, and claims at the following levels:

1. Reception at the Virtual Level: In this case, the MBCA and BFD must take the necessary actions to have a virtual link on its official website, where anyone can present their complaints, suggestions, or claims about the Program, leaving some essential data for a timely response. The virtual link must be according to a database that can be accessed by a professional in charge of this topic and who is part of the Program Execution Unit (PEU).

2. Physical reception: In this case, the Borrower must have mailboxes with the name of the Program both at the central and district facilities of the BFD. In these mailboxes, he must have receipts and pens so that people can write complaints, suggestions, or claims about the Program. These people will deposit these ballots in each mailbox, and a BFD collaborator will

collect them. Once these tickets have been collected, the same BFDE collaborator will digitize them and send them virtually through the Borrower's official website link.

The virtual reception and the physical reception of ballots, which with the help of a BFD and collaborator, makes it virtual, will allow for a **"single data entry window,"** which will facilitate the monitoring of the different requests.

☞ **Phase 2: Classification**
The professional in charge of this issue by the PEU must classify the ballots by considering the following:

1. Determine if it is a complaint, request, or suggestion.
2. Prepare a clear and culturally appropriate response according to the applicant.

☞ **Phase 3: Response to request**
The professional in charge of the PEU will attend to the different requests and issue a response as appropriate. It is important to note that anyone who uses this service deserves respect and expects prompt attention to their request. They are estimated as general response times:

- Information Immediate Response
- Complaint 1 to 3 weeks, depending on the investigation needed
- Claim 1 to 3 months

e. The Independent Consultation and Investigation Mechanism (MICI)[273]

In addition to the project-level grievance redress mechanism, project-affected people and communities can access the IDB's grievance mechanism. The Independent Consultation and Investigation Mechanism (MICI), set up independently of IDB operations and management and which reports directly to the IDB's Executive Board, will consider grievances from individuals and communities affected by projects financed by the IDB Group. MICI manages two mechanisms through which it assesses claims made by claimants: (i) The Consultation Phase, a voluntary and flexible space for dispute resolution under the impartial mediation of the MICI. Through this mechanism, the claimant(s), the Borrower and the executing agency, and the IDB have an opportunity to resolve their differences and reach an agreement that resolves the complaint; (ii) The Compliance Verification Phase, which consists of an investigation of facts by MICI to determine whether the IDB met its obligations with regards to the requirements of its Environmental and Social Policy Framework (ESPF).

ELEMENT 7. Monitoring and follow-up Plan

The follow-up and monitoring seek to analyze the progress, efficiency, and effectiveness of the projects managed by the ESMS. Its implementation must be adjusted to each project considering its context and the different conditions of its development.

[273] Guidelines for Environmental and Social Performance Standard 10: Stakeholders engagement and information disclosure, Sept 2021, online: https://idbdocs.iadb.org/, recuperate [July 12 of 2022]

➢ Objective

The objective of the Monitoring and Follow-up Plan is to carry out an integrated and permanent periodic evaluation of environmental variables to provide for the taking of those related to environmental management during the stages of execution and operation of the different projects that make up the Program.

➢ Indicators

The information collected will vary according to the indicators adopted based on the need for precision and the availability of resources to carry out the monitoring activities. Information sources' availability and the collection method's validation will determine the monitoring frequency.

➢ Environmental management reports

For compliance with environmental management, PEU professionals will prepare monthly reports with updated information on the environmental performance of project actions. Management reports should generally contain at least the following:

- Summary of construction work performed in the month
- Evolution of environmental management indicators
- Control sheet of the planned actions
- Contingencies occurred in the month
- Training provided
- Identification of unforeseen environmental difficulties or problems
- Corrective measures are applied, and preventive measures are to be used.
- Registration of meetings, workshops, or meetings with neighbors
- Reports associated with monitoring

At the end of the execution stage, the project implementers must submit a final environmental report, signed by the Environmental Manager of the PEU, where they synthesize the monthly reports and evaluate the project's environmental management. This report shall include at least the following:

- Identification and resolution of unforeseen environmental difficulties or problems
- Complaints received corresponding to the environmental area
- Communications made to neighbors and institutions
- Monthly evolution of all environmental management indicators
- Results of the Grievance Redress Mechanism for complaints and claims

Annex 1: Code of conduct[274]

SAMPLE - SEA and SH individual code of conduct (*to be adapted by project context)*

a. Introduction

The company is committed to ensuring a work environment that minimizes negative impacts on the local environment, communities, and its workers. The company also firmly commits to creating and maintaining an environment in which Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH) have no place and where they will not be tolerated by any employee, sub-contractor, supplier, associate, or representative of the company. The purpose of this *Code of Conduct* is to:

1. Create a shared understanding of what constitutes Sexual exploitation and abuse, and sexual harassment
2. Create a shared commitment to standard behaviors and guidelines for company employees to prevent, report, and respond to SEA and SH, and
3. Understand that breaching this code of conduct will result in disciplinary action.

b. Definitions

Sexual Exploitation and Abuse (SEA)[275]

It is defined as any actual or attempted abuse of a position of vulnerability, differential power, or trust for sexual purposes, including, but not limited to, profiting monetarily, socially, or politically from the sexual exploitation of another[276].

- **Sexual Abuse:** "The actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions."

Sexual Harassment: [277]

Unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of sexual nature.

Sexual Harassment versus SEA[278]

SEA occurs against a beneficiary or member of the community. Sexual harassment occurs between personnel/staff of an organization or company and involves any unwelcome sexual advances or unwanted verbal or physical conduct of a sexual nature. The distinction between the two is essential

[274] World Bank, 2020. Good practice notes.
[275] As defined in the UN Secretary's bulletin – Special Measures for protection from sexual exploitation and abuse October 9, 2003, ST/SGB/2003/13
[276] In the context of World Bank Financed operations exploitation occurs when access to or benefit from a World Bank Financed good or service is used to extract sexual gain.
[277] Inter-Agency Standing Committee *Protection against Sexual Exploitation and Abuse (PSEA): Inter-agency cooperation in community-based complaint mechanism. Global Standard Operating Procedures*. May 2016
[278] Ibid

so that agency policies and staff training can include specific instructions on the procedures to report each.

Consent is the choice behind a person's voluntary decision to do something. Consent for any sexual activity must be freely given, ok to withdraw, made with as much knowledge as possible, and specific to the situation. It does not consent if an agreement is obtained using threats, lies, coercion, or exploitation of power imbalance. **Under this Code of Conduct,[279] consent cannot be given by anyone under 18**, **regardless of the age of majority or the age of consent locally. Mistaken belief regarding the age of the child is not a defense**.

There is no consent when the agreement is obtained through:
• the use of threats, force, or other forms of coercion, abduction, fraud, manipulation, deception, or misrepresentation
• the use of a threat to withhold a benefit to which the person is already entitled, or
• a promise is made to the person to provide a benefit.

While all forms of violence against a community resident or a co-worker are forbidden, this code of conduct is mainly concerned with the prevention and reporting of sexual exploitation and abuse (SEA) and sexual harassment, which constitute gross misconduct, is grounds for termination or other consequences related to employment and employment status:

(1) **Examples of sexual exploitation and abuse** include, but are not limited to:
- A project worker tells women in the community that he can get them jobs related to the work site (cooking and cleaning) in exchange for sex.
- A worker connecting electricity input to households says he can connect women-headed households to the grid in exchange for sex.
- A project worker gets drunk after being paid and rapes a local woman.
- A project worker denies a woman's passage through the site he is working on unless she performs a sexual favor.
- A manager tells a woman applying for a job that he will only hire her if she has sex with him.
- A worker begins a friendship with a 17-year-old girl who walks to and from school on the road where project-related work occurs. He gives her moto rides to school. He tells her that he loves her. They have sex.

(2) **Examples of sexual harassment in a work context** include, but are not limited to:
- Male staff comments on female staff's appearances (both positive and negative) and sexual desirability.
- When a female staff member complains about male staff's comments about her appearance, they say she is "asking for it" because of how she dresses.
- A male manager touches a female staff member's buttocks when he passes her.
- A male staff member tells a female staff member he will get her a raise if she sends him naked photographs of herself.

[279] In accordance with the United Nations Convention on the Rights of the Child.

Individually signed commitment:

I, _____, acknowledge that sexual exploitation and abuse (SEA) and sexual harassment are prohibited. As an *(employee/contractor)* of *(contracted agency / sub-contracted agency)* in (*country)*, I acknowledge that SEA and SH activities on the work site, the work site surroundings, at workers' camps, or the surrounding community constitute a violation of this *Code of Conduct*. I understand SEA and SH activities are grounds for sanctions, penalties, or potential termination of employment. Prosecution of those who commit SEA and SH may be pursued if appropriate.

I agree that while working on the project, I will:

- Treat all persons, including children (persons under the age of 18), with respect regardless of sex, race, color, language, religion, political or other opinions, national, ethnic or social origin, gender identity, sexual orientation, property, disability, birth or another status.
- Commit to creating an environment that prevents SEA and SH and promotes this code of conduct. In particular, I will seek to support the systems which maintain this environment.
- **Not** participate in SEA and SH as defined by this *Code of Conduct* and as defined under *(country)* law (*and other local law, where applicable).*
- **Not** use language or behavior towards women, children, or men that are inappropriate, harassing, abusive, sexually provocative, demeaning, or culturally inappropriate.
- **Not** participate in sexual contact or activity with anyone under 18. Mistaken belief regarding the age of a child is not a defense. Consent from the child is also not a defense. I will not participate in actions intended to build a relationship with a minor that will lead to sexual activity.
- **Not** solicit**/**engage in sexual favors in exchange for anything as described above.
- Unless there is full consent by all parties involved, recognizing that a child cannot give consent and a child is anyone under 18, I will not have sexual interactions with members of the surrounding communities. This includes relationships involving the withholding or promise of actual provision of a benefit (monetary or non-monetary) to community members in exchange for sex—such sexual activity is considered "non-consensual" under this Code.

I commit to:

- Adhere to this code of conduct's provisions on and off the project site.
- Attend and actively partake in training courses related to preventing SEA and SH, as requested by my employer.

Suppose I am aware of or suspect SEA and SH at the project site or surrounding community. In that case, I understand I am encouraged to report it to the Grievance Reporting Mechanism (GRM) or my manager. The safety, consent, and consequences for the person who has suffered the abuse will be part of my consideration when reporting. I understand that I will be expected to maintain confidentiality on any related incident-related matters to protect the privacy and security of all those involved.

Sanctions: I understand that if I breach this Individual Code of Conduct, my employer will take disciplinary action, which could include:

- Informal warning or formal warning
- Additional training.
- Loss of salary.
- Suspension of employment (with or without payment of salary)
- Termination of employment.
- Report to the police or other authorities as warranted.

I acknowledge that I have read the Individual Code of Conduct, do agree to comply with the standards contained in this document, and understand my roles and responsibilities to prevent and potentially report SEA and SH issues. I understand that I must adhere to this code of conduct. I will avoid actions or behaviors construed as SEA and SH. Any such actions will breach this Individual Code of Conduct. I understand that any action inconsistent with this Individual Code of Conduct or failure to act mandated by this Individual Code of Conduct may result in disciplinary action and may affect my ongoing employment.

Signature: _____

Printed Name:_____

Title: _____

Date: _____

Annex 2: Stakeholders Engagement Plan

1. Introduction

With the final purpose of diversifying the country's economy through the growth of the productive sectors and subsectors of the blue economy, the Government of Belize (GoB) requested the support of the Inter-American Development Bank (IDB) to promote investments and improve productivity toward sustainable growth. The operation identified as the " Promoting sustainable growth in the blue economy" Program as BL-L1042 is prepared by the Ministry of Blue Economy and Civil Aviation (MBECA) and the Belize Fisheries Department (BFD).

The main objective of this Program is to contribute to the sustainable growth of the country's blue economy by improving the income of fishermen and exports within the framework of the country's Maritime Economy Plan (MEP). The objective is to develop the enabling environment and implement select small-scale investments (hard and soft) across the fisheries value chain for an export-strengthened and improved finfish-oriented fisheries sector and maritime economy investment. The Project will comprise Component I. Fisheries' sustainable diversification research agenda (IDB Estimated US$2,500,000) and Component II. Institutional strengthening for MBECA, sustainable development of fishing, and sectoral investments. (IDB Estimated US$4,000,000) [280].

2. Regulations and Requirements

The Environmental Protection Law, Chapter 328 of the Substantive Laws of Belize Revised Edition 2000, expresses the following:

During an environmental impact assessment, the developer shall provide an opportunity for meetings between the developer and interested members of the public, especially within or immediately adjacent to the geographical area of the proposed undertaking, in order:

(a) to provide information concerning the proposed undertaking to the people whose environment may be affected by the undertaking; and

(b) to record the local community's concerns regarding the proposed undertaking's environmental impact.

Considering the Law, the public Consultation requested must be carried out in the environmental evaluation phases of the projects. However, the IDB, under the application of the Environmental and Social Policy Framework (ESPF) and the Environmental and Social Performers Standards (ESPS), raises the need to incorporate the consultation process with stakeholders in all phases of

[280] IDB, Project Profile (BL-L1042), 2022. Promoting Sustainable Growth in the Blue Economy Program.

project development which include the steps of i) design, ii) evaluation, iii) execution, iv) maintenance, and v) closure.

This Stakeholder Participation Plan (SEP) is carried out to guide the consultation process. The SEP is integral to the Environmental and Social Management System (SGAS) of the Program for Promoting Sustainable Growth in the Blue Economy in Belize. The implementation of the Plan is a process of continuous dialogue with the stakeholders that takes place throughout the different stages of the project cycle.

This SEP compliance is based on the IDB's Socio-Environmental Policy Framework and the Environmental and Social Performance Standard 10, where: "Stakeholder participation is a vehicle for stakeholders to contribute to the environmental and social assessment of the project, the process of identifying risks and impacts, the design of the project, including the design of environmental and social mitigation measures, and the ongoing management of the project."[281]

Likewise, for the implementation of the SEP, it is essential to consider the ESPS applicable to this Program, which is:

- ESPS 1: Assessment and Management of Environmental and Social Risks and Impacts
- ESPS 2: Labor and working conditions.
- ESPS 3: Resource Efficiency and Pollution
- ESPS 4: Community Health and Safety
- ESPS 5: Land Acquisition and Involuntary Resettlement
- ESPS 6: Conservation of Biodiversity and Sustainable Management of Living Natural Resources
- ESPS 7: Indigenous Peoples
- ESPS 8: Cultural Heritage
- ESPS 9: Gender Equality
- ESPS 10: Participation of Stakeholders.

3. Objectives

- **General objective**

The Stakeholder Participation Plan is intended to serve as a planning tool for MBECA and the Belize Department of Fisheries (DBF) to interact with stakeholders, creating solid and synergistic relationships for the development of the Program for the Promotion of Sustainable Growth in the Economy Blue[282]:

[281] IDB, 2021. Environmental and Social Policy Framework. Guidelines for the Environmental and Social Performance Standards.
[282] IDB, 2021. Environmental and Social Policy Framework. Guidelines for the Environmental and Social Performance Standards.

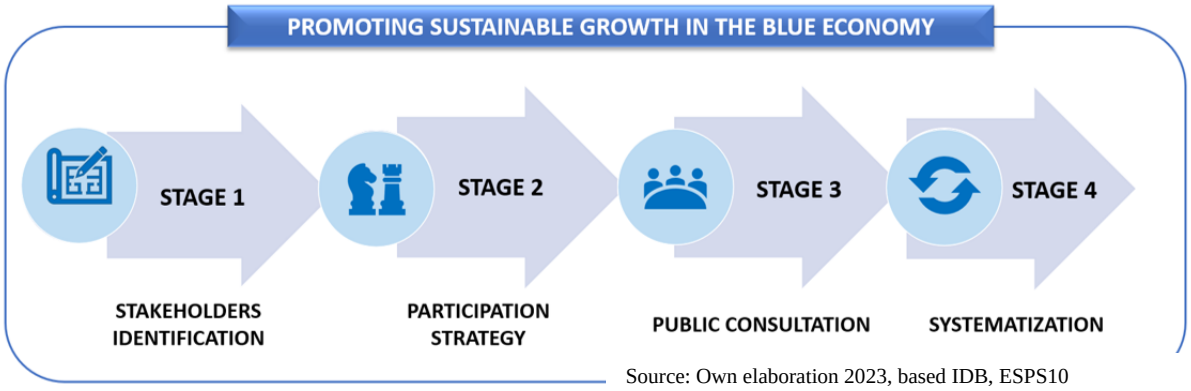
- **Specific objectives**

  - Guide the Borrower in identifying the stakeholders and the need to build and maintain synergistic relationships with the people possibly affected by the execution of the Project.
  - Coordinate formulating and implementing the Stakeholder Consultation Plan with the Belize Fisheries Sector Communication Strategy and Action Plan.
  - Listen to and consider the opinions of stakeholders regarding the design and environmental and social performance of the Project.
  - Assess the level of stakeholder interest and support in the Project to promote and provide the means for effective and inclusive engagement throughout the project life cycle on issues that could affect or benefit them.
  - Provide stakeholders with accessible and inclusive means to raise questions, proposals, concerns, and complaints and create spaces for the Borrower to respond to and adequately manage the queries made.

4. Stages of the Stakeholder Participation process

The SEP is a continuous process to be implemented by the Borrower in the Program's preparation, implementation, and closing stages. Figure 35 presents the stages of the methodological approach, which must be carried out sequentially to achieve the proposed objectives.

Figure 35. Stages of the stakeholder's participation processes.



Source: Own elaboration 2023, based IDB, ESPS10

Below is the explanation of each phase:

STAGE 1: STAKEHOLDERS IDENTIFICATION

4.1. Stage 1: Stakeholder Identification

The identification of people and organizations, as well as the mapping of stakeholders relevant to the Program in the different stages of the project cycle, was carried out through the Mapping of Key Actors (MAC[283]) tool. Below are the steps to be developed for the elaboration of the mapping of actors:

Step 1: Definition

The actors linked to the stakeholder engagement process has divided into two defined groups[284]:

1. People affected by the Project: Includes the people or groups, including communities, organizations, or companies, that are likely to be affected by the Project, potentially positively or negatively.

2. Other stakeholders: interested persons or groups that influence the Project or those affected by the Project. These stakeholders are local, regional, and national authorities, political organizations, companies, groups whose facilities may be used or impacted by a project, the media, NGOs, academics, and any other person or group interested in the Project due to social or historical issues, among other aspects

The coverage of the Promoting Sustainable Growth in the Blue Economy Program is national. For this Program, **"people affected by the project"** will be considered those people or groups direct beneficiaries of the Program. The other actors will be all those who are not part of the group of beneficiaries of the Program.

Step 2: List of actors

The organization of the list consists of tracking the actors from information from the Strategic Environmental and Social Assessment (SESA) baseline and secondary data from the different institutions and NGOs present in the other districts of Belize. Table 1 presents the potential actors identified by IDB-FAO,2022, according to information provided by Belize Fisheries Department.

[283] Social actors can be individuals, groups or organizations interested in a project or program. Key actors are considered as those who can significantly influence (positively or negatively an intervention) or are very important for a situation to manifest itself in a certain way.

[284] Guidelines for Environmental and Social Performance Standard 10: Stakeholders engagement and information disclosure, Sept 2021, online: https://www.iadb.org/en/mpas/guidelines, recuperate [December 12 of 2022]

Paso 3: Key actors

The different social actors focused on according to interest group are detailed below:

- **Group 1: Fishermen**

The actors in this group are considered potential beneficiaries of the Program. This group includes fishermen, and within this group are included vulnerable people such as women, youth, Afro-descendants, and people belonging to indigenous groups.

- **Group 2: Associations, Cooperatives, and other organized groups**

The actors in this group are considered potential beneficiaries of the Program. This group includes the different organized groups that may be interested in the Program's actions. This group included vulnerable people such as women, youth, Afro-descendants, and people belonging to indigenous groups.

- **Group 3: Support Organizations**

The actors in this group are considered drivers of value chains for the fishing sector. The actors in these value chains play an important role in product processing, distribution, trading, and marketing. As part of this group would be the Regional Organizations, Universities, NGOs, the private sector, and representatives of the National Bank.

- **Group 4: Institutional**

This group includes representatives of some of the institutions directly related to the Program at the level of ministries, coastal zone management, port authorities, tourism, and public or private maritime transport.

Table 33 shows the preliminary list of stakeholders, either as beneficiaries or interested in the Project, which is organized according to previously identified groups. MBECA and the Belize Fisheries Department (BFD), as executing agencies of the Program, must review the initial list and prepare the adjustments they deem appropriate under a context of inclusion of the different groups where they must keep the groups G1, G2, G3, and G4.

Table 33. Preliminary list of critical actors

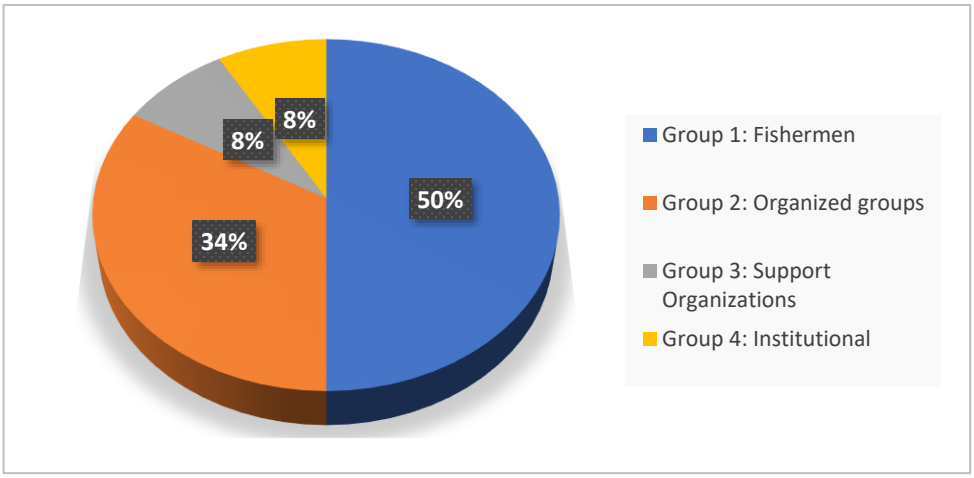
Group				Description*	Estimated number of participants
G1	Fishermen	Representatives of potential beneficiaries for each of the districts. (Women, young, afro descendants and indigenous people)		Representative fishermen of Corozal	10
				Representative fishermen of Belize	10
				Representative fishermen of Stann Creek	10
				Representative fishermen of Cayo	10
				Representative fishermen of Orange Walk	10
				Representative fishermen of Toledo	10
G2	Associations, Cooperatives, and other organized groups	Representatives of potential beneficiaries of organized groups		Northern Fishermen Cooperative Association	4
				Wabafu Fishermen Association	4
				Rio Grande Fishermen Cooperative	4
				National Fisheries Producers Cooperative	4
				Sarteneja Fisherman Association	4
				Belize Women's Seaweed Farming Association	4
				Marigold Women's Coopertative	4
				Toledo Fishermen Association	4
G3	Support Organizations	Representatives of companies, groups, NGOs, academy, and the private sector that are considered drivers of value chains for the fishing sector		Caribbean Regional Fisheries Mechanism (CFRM)	3
				Senator NGO's /OCEANA	3
				Galen University	3
				University of Belize	3
				Central Bank of Belize	3
				Belize Chamber of Commerce	3
G4	National institutions	Institutions	BELTRAIDE	Belize Trade and Investment Development Service	2
				Coastal Zone Management Authority and Institute	2
			BCCI	Belize Chamber of Commerce & Industry	2
				Belize Coast Guard	2
				Ministry of Finance, Economic Development & Investment	2
				Ministry of Tourism & Diaspora Relations	2
				Ministry of Natural Resources, Petroleum & Mining	2
				Belize Port Authority	2
				Belize Tourism Board	2
				Water taxi representatives	2
			INMARBE	International Merchant Marine Register of Belize	2
Total estimaded					**132**

Source: Own data 2022, compiled using Belize Fisheries Department (BFD) information July 2022.

☞ Distribution of stakeholder groups

Following the objectives of the Program, it is estimated that more than 50% of the actors participating in the consultation process are direct beneficiaries of the Program. Figure 36 shows the percentage distribution of the stakeholder groups identified in the preliminary list of stakeholders. It is estimated that the highest percentage of participation corresponds to Group 1 and Group 2 (77%) since these groups are considered direct beneficiaries of the Program.

Figure 36. Percentage distribution of the total estimated stakeholders for the public consultation process



Source: Own data, 2022 based on the preliminary list of stakeholders for the public consultation

☞ Stakeholder Valuation

Following the objectives of the Program, the evaluation of actors considered the following aspects[285]:

Criterion 1: Position of actors

Considering the point of view that stakeholders may have regarding the Program, the following positions:

- ☞ **Indifferent** to the decisions that are made for the Project.
- ☞ **Indecisive** in the decision-making with the proposals of the Project.
- ☞ **Support** the initiatives proposed by the Program by investing time and speaking in favor of the Program.

[285] Adaptation of the instrument "Stakeholder Identification" extracted from Participation and Social Assessment: Tools and Techniques, Jennifer Rietbergen Hotels-McCracken and Deepa Narayan (compilers) for the World Bank (1996) where for this project it is used as a matrix that supports the valuation of actors.

Criterion 2: Level Engagement

The social actors' commitment level has been taken according to the Belize Fisheries Department (BFD) criteria according to the July 2022 database. The social actors' commitment levels can be i) Low-level engagement, ii) Medium level engagement, and iii) High-level engagement.

Criterion 3: Influence of actors

It responds to stakeholders' power to persuade others for or against the formulation of the Project and its implementation. They can have an influence:

- **Low influence:** These actors have few arguments to make others change their position regarding the project proposals.

- **Medium influence:** These actors have arguments but do not influence to change the position of other actors on the project proposals.

- **Strong influence**: These actors have arguments to help or change their position concerning the project proposals.

☞ Stakeholder Valuation Matrix

Once the parameters have been defined, the stakeholder valuation matrix is generated. Which is developed in the following steps:

Step 1. The valuation matrix is elaborated, which has two entries, the first corresponding to the rows where the groups of previously identified actors are located and the second to the columns where the valuation that these actors can have in terms of position, interest, and influence is recorded.

Step 2: Each group of actors was rated using an assessment scale that establishes a rating by relevance ranges and an assigned value. Table 34 displays the scale used.

Table 34. The scale of evaluation of groups of actors

Assessment	
10 and over	Very High
7 to 9	High
4 to 6	Medium
1 to 3	Low

Source: Own data, 2022 based on BM Stakeholders Identification

Step 3. The interaction matrix is worked with the assigned values according to the development of stakeholder participation. Then the sum is made for each of the groups.

Table 35 presents the analysis of the evaluation of actors for the Program.

Table 35. Prioritization of actors by groups

Group	Name	Stakeholders analysis										Total
		Position			Level of engagement*			Influence				
		Indifferent	Undecided	Support	Low	Medium	High	Low	Medium	High	Very High	
		1	2	3	1	2	3	1	2	3	4	
G1	Fishermen			3		2			2		4	11
G2	Associations, Cooperatives, and other organized groups			3		2					4	9
G3	Support Organizations	1				2		1				4
G4	National institutions		2				3	1				6

* Data from Belize Fisheries Department (BFD) July 2022

Source: Own elaboration, 2023

Step 4: Actor mapping

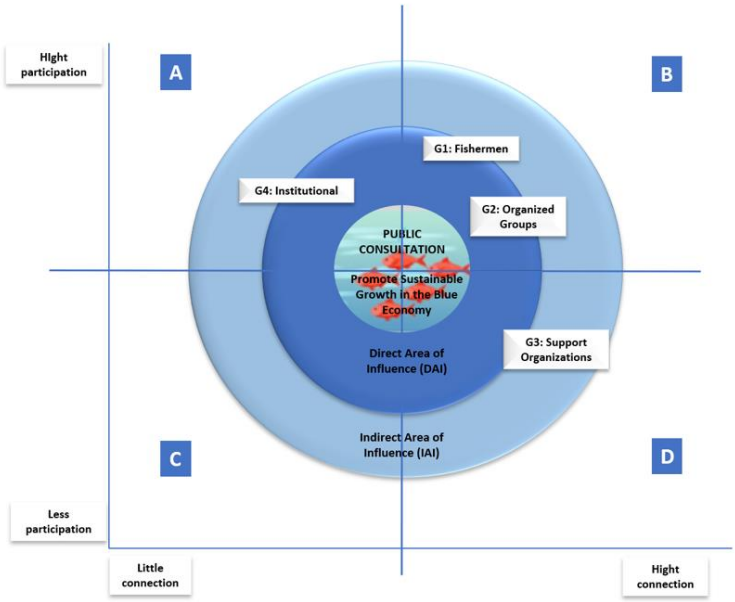
Actor mapping is the graphical representation of the prioritization process, spatially locating each actor within the map[286]. Figure 37 presents the stakeholder map, divided into quadrants considering the result of stakeholder prioritization. The stakeholder mapping quadrants are as follows:

- **Quadrant A**: actors with greater participation and little connection, whose position, level of commitment, and influence have a rating between 4 to 6.
- **Quadrant B:** In this quadrant are the actors with the most significant participation and connection, whose position, level of engagement, and influence score above 7.
- **uadrant C:** Include in this quadrant actors with less participation and little linkage, whose position, level of engagement, and influence. No group of those analyzed is classified in this quadrant.
- **Quadrant D:** actors with less participation and many linkages whose position, level of engagement, and influence have a valuation higher than 1 and 3.

It is essential to highlight that, during the planning phases of the consultation process, the preliminary list on which the stakeholder mapping was carried out may vary, as well as the position, level of commitment, and influence of some identified stakeholders. Therefore, it is necessary to permanently update the information on the characterization and evaluation of the stakeholder groups.

286 Adaptation of the instrument "Stakeholder Identification" extracted from Participation and Social Assessment: Tools and Techniques, Jennifer Rietbergen Hotels-McCracken and Deepa Narayan (compilers) for the World Bank (1996) where for this project it is used as a matrix that supports the valuation of actors.

Figure 37 Mapping of actors identified for the consultation process



Source: Adapted from Straker, D. (w.d), with own modifications 2023

Step 5: Database Development

MBECA and the Department of Fisheries of Belize will prepare a database of the social actors. They will select the people to summon from this base to the public consultation process. The information that the database must have corresponds to i) Group of actors; ii) Name and surname of the actor; iii) Telephone number (What's App); (iv) email; v) Age and Gender, and among other relevant data.

STAGE 2: PARTICIPATION STRATEGY

4.2. Stage 2: Participation Strategy

Participation strategies will depend on the objectives and levels of influence that the participants will have in decision-making. It is essential to consider that the greater the degree of commitment to participate in a continuous process, the more successful the implementation of the Program may be. The main strategies to be developed are:

☞ Strategy 1: Provide information in the design phase of the Program.

This strategy is oriented toward the explanation of the objectives of the Program, benefits, and disclosure of the relevant information of the Program, including the design, the socio-environmental impacts and risks related to the Program, proposed mitigation measures, and action plans. The Program must disclose information that supports understanding of project stakeholders and project-related issues that matter or affect them so that they can interact effectively with the Borrower and make informed comments and decisions during the Consultation[287].

This strategy has been developed under the following tools:

- Informative presentations
- Face-to-face and virtual meetings with different social actors
- Surveys
- Interviews
- Publications on the IDB website.

☞ Strategy 2: Carry out public consultation processes in the different stages of the Program.

This strategy seeks to collect information and request the opinion of social actors on the design of the Program, socio-environmental impacts, and measures proposed for the Program. Considering the stages of the Program, the Consultation Strategy is presented in the following phases:

Phase 1: Before Approval of the Operation

For its development, the Groups: G1, G2, G3, and G4 identified above will be invited to the public consultation events. In this phase, the Public Consultation must be carried out through face-to-face or virtual meetings with the presence of public authorities at the national and regional levels, civil society, organizations, and interest groups. The Borrower must carry out this phase before the operation is approved.

It is essential to highlight that the consultation process in this phase for Groups G1 and G2, corresponding to fishermen and organized groups, must include people from vulnerable groups such as Women, Youth, Afro-descendants, and indigenous people. Likewise, people who belong to indigenous groups must have a public consultation process following the guidelines of ESPS 10, where a culturally appropriate consultation is guaranteed.

[287] Guidelines for Environmental and Social Performance Standard 10: Stakeholders engagement and information disclosure, Sept 2021, online: https://idbdocs.iadb.org/, recuperate [June 1 of 2022]

Phase 2: Before to Implementation of the Program

This phase will be completed before the Program's implementation, where professionals and technicians from the PEU will conduct the consultation process with the selected beneficiaries of the Program. In this public Consultation, the Program to be executed, the execution schedules, those in charge of monitoring and follow-up, the socio-environmental management measures, and the compliance indicators that must be considered for the execution of the projects will be presented. Consultations with indigenous communities must be culturally appropriate to the context and comply with the provisions of ESPS 7.

Phase 3: In the Implementation of the Program

The socioenvironmental evaluation identified in the SESA for this Program includes only the activities described in Chapter 3: Program Description. If the Program requires implementing new actions, conducting a socio-environmental evaluation of the recent actions will be necessary. Consulting with stakeholders is essential if the latest activities may cause adverse impacts different from those identified in the previous SESA. The objective of this public Consultation will be to communicate the new activities of the Program, the changes made, the negative impacts identified, and the socio-environmental measures proposed to manage the new socio-environmental impacts. This Consultation must include Groups 1, 2, 3, and 4 and, in the event(s) to be carried out, incorporate the vulnerable population at the level of women, youth, Afro-descendants, and indigenous peoples.

Phase 4: In the Closure of the Program

The consultation process ends in the Project cycle with the closing stage. At this stage, it is essential to hold a session with Groups 1, 2, 3, and 4 that includes the different social actors accompanying the process to provide feedback on the objectives, goals, and lessons learned.

STAGE 3: PUBLIC CONSULTATION

4.3. Stage 3: Public Consultation

4.3.1. Principles of Public Participation

Stakeholders shall participate in the representative public Consultation under the following guiding principles:[288]

- ✓ **Start in the early phases of the Project:** Stakeholders should be consulted in a continuous and iterative process throughout the project cycle and start as early as possible.

[288] IDB Policy 2017. Meaningful stakeholder consultation

- ✓ **Be Inclusive:** The Consultation should establish that individuals, local groups, institutions, and organizations are part of the process.

- ✓ **Have resources for its execution:** The consultation process must contemplate the resources, budget, personnel, capacity, and will of the project authorities to accept the formality of the opinions of the interested parties and modify the designs and implementation of the Project.

- ✓ **Be Transparent:** The Consultation should include its scope and the ability of stakeholders to influence project decisions so that it is transparent and based on objective information.

- ✓ **Be Fair:** It must be impartial and non-discriminatory and ensure that affected stakeholders have a voice.

- ✓ **Prior information:** Those interested in the representative public Consultation must access previous information on relevant aspects of the Project in a language, format, and mode appropriate for each context.

- ✓ **Be Respectful:** Consultations and other means of engaging with stakeholders should be respectful and free from coercion. Protecting reprisals from interested parties who express their concern or criticism against the Project or the authorities is necessary.

- ✓ **Be Reliable:** The confidentiality of the information and interested parties must be ensured when necessary.

- ✓ **Be Meaningful:** A consultation must have a clear objective and avoid excessive discussions that lead nowhere.

- ✓ **Provide for its systematization:** The consultation process must be systematically documented, and its most relevant aspects must be publicly disclosed.

4.3.2. General objective Public Consultation

Involve the interested groups and the population possibly affected or benefited by the Program so that they actively participate with their opinions by providing communication mechanisms and channels that facilitate their involvement in decision-making and implementing the Program.

4.3.3. Specific objectives Public Consultation

For the fulfillment of the general objective, the following specific purposes are proposed:

- Promote the participation of the different actors in the consultation process.
- Have mechanisms and channels that facilitate communication between the parties.
- Generate spaces for the active listening of the participants that increase the trust and social appropriation of the Program.
- Provide timely, reliable, and relevant information about the Program.
- Validate and verify information related to socio-environmental impacts and measures.
- Prevent manipulation and the emergence of misunderstandings, false expectations, and conflicts that could be generated between the different actors.

4.3.4. Public Consultation phases

The different phases carrying out the consultation process are listed below.

4.3.4.1. Planning phase

The Borrower, in this phase, will carry out the following activities:

a. Appoint the team in charge of executing the public Consultation.

b. Coordinate internal meetings to plan the approach to the process at the level of:

- ☞ Review the preliminary list of actors to participate in the consultation process.
- ☞ Prepare a database of the actors to invite to each meeting.
- ☞ Define the number of sessions and the place where they can be held.
- ☞ Define the number of participants per session, considering the estimated participation percentages by groups that include vulnerable people.
- ☞ Define the date of the query events.
- ☞ Make an estimate of the time for each session.
- ☞ Define the rapporteur and presenter of the technical aspects of the Program.
- ☞ Coordinate the taking of photographs and videos as proof of the events.

c. preparation of the material to be used in the consultation process.

The materials to operationalize the Consultation during the Planning Phase will be prepared to facilitate the process and manage expeditious and effective communication with the stakeholders. As critical materials are:

- **Invitation letter:** This letter will be addressed to each social actor invited to the consultation event(s) and must be signed by the highest authority of MBECA or the Belize Department of Fisheries. This communication aims to make a "formal invitation" to the interested parties to motivate attendees to participate in the different meetings proposed in the public consultation process.

- **Presentation of the relevant aspects of the Program:** The presentation must have information about the Program's components, budget, and estimated execution time. Likewise, information will be included on the level of the main positive and negative impacts of the Program, as well as the socio-environmental measures proposed for its management. This presentation must be according to the level of the participants and be culturally appropriate according to each context.

- **Program information**: On the day of the public consultation event, it is necessary to give each participant a copy of the presentation that will be made so that people can read the information being presented and make their contributions.

- **Registration of participants:** The registration of participants is a sheet that must contain the following information for each column:
  - ✓ First and last name of the participant
  - ✓ Indicate to which Institution or Organization belongs or else place Individual participation.
  - ✓ Telephone number or contact form.
  - ✓ Sex (Male or Female)
  - ✓ Age
  - ✓ Occupation
  - ✓ Signature

4.3.4.2. Execution phase

This phase includes the development of the following activities:

- **Convocation/ Invitation:** This activity must be carried out by sending invitation letters to stakeholders through email and text messaging (via WhatsApp). This communication will explain the process, its phases, objectives, scope, and public consultation date.

- **Face-to-face public meetings:** This activity includes face-to-face public consultation sessions, which are expected to have groups G1, G2, G3, and G4. Given that attending these meetings should not be an economic burden, especially for vulnerable groups, providing transportation for attendees who require it and cannot cover these expenses is necessary.

- **Virtual meetings:** These meetings correspond to virtual sessions using easily accessible platforms. These virtual meetings can be held with the G4 and G5 Groups if necessary.

In general, the implementation phase of the Public Consultation includes the following activities:

a) At the established time and date, the event begins by giving 10 minutes for all participants to arrive or connect if it is virtually and performed and the registration of participants.
b) General welcome by the facilitator
c) Presentation of attendees.
d) Reading the agenda be developed highlighting the schedule and schedule times.
e) Welcome by the MBECA or Department of fisheries of Belize authorities.
f) Description of the Program, socio-environmental impacts, and socio-environmental measures proposed for mitigation.
g) Questions to generate dialogue among the participants.
h) Replies by the representatives of the MBECA or Department of fisheries of Belize.
i) The follow-up to the different concerns during the Consultation
j) Verify time at the level of not exceeding 2 hours maximum for each Consultation.
k) Present the summary of the Consultation's results for approval in the plenary.
l) Take photographs, videos, and attendance lists of the event.
m) Make a synthesis document of the query identifying the following:
    - Number of participants
    - Distribution of participants by gender, group to which they belong, and origin.
    - Report the questions and answers of the event.
    - Copy of participant lists
    - Photographs and videos.

4.3.4.3. Systematization and documentation phase

Once the consultation process is finished, a report will be made where the information corresponding to:

- Record each of the activities carried out during the consultation process.
- Generation of data at the level of:
    - ✓ Some participants by District, focus group, and gender.
    - ✓ Minutes of registration of the information presented, interactions of the Interested Parties, and other elements of interest.
    - ✓ Photographic record.

Once the systematization, the Actors' perceptions, comments, and observations are finished, a final document of Public Consultation must be prepared. This document, along with other analyzes, will be incorporated into the final document of the Socio-environmental Strategy of the Program for the Promotion of Sustainable Growth in the Blue Economy, which in turn will be published on the IDB website, where the different actors will be able to consult the information.

5. The mechanism for concerns, grievances, and claims.

As a claim or complaint tool, the Constitution of Belize in Chapter 118 establishes that: "any person aggrieved by the nuisance may present a complaint under this Nuisance Law or, if the nuisance affects the convenience or safety of the public, or is harmful to the health of any person, by the City, Municipality or Municipal Council of the region in which the building, place or road is located," however, the implementation of the Program for the Promotion of Sustainable Growth in the Blue Economy It must have a complaint mechanism at the operational level of the Program. In this regard, the IDB under ESPS10 requires the Borrower to promptly respond to questions, concerns, and complaints from affected stakeholders about the Project's environmental and social performance while implementing a grievance procedure mechanism to receive and facilitate the resolution of concerns and grievances.

The Program's operational-level grievance mechanism provides a means to address and resolve requests for information, questions, comments, concerns, and suggestions for project improvements as early and expeditiously as possible[289].

5.1. Key concepts

Below are three critical concepts in the complaint and grievance mechanism:

- ***Request*:** it is the verbal or written communication that aims to ask, pretend, or look for something such as:
    a. Request collaboration when the social actors see a possibility to solve problems or get help in the Project.
    b. Request for information when petitioners wish to access some project information.
    c. Request for clarification when social actors seek the attention of the Project to a specific situation.

- ***A complain***t is a note or notice by which a situation affecting a person or group is highlighted and requested to be solved.

- ***Claim*:** These include communications directly related to the rights that a person or group believes they have and from which they believe they do not obtain the attention or benefit that corresponds to them, or else the quality of what he receives is inferior to what he thinks is his due

5.2. General objective

The mechanism of attention and management of complaints and claims aims to timely and adequately address the requests, complaints, and claims that are generated as a result of the implementation of the different projects of the Program through an accessible communication system and a reliable and efficient internal management process.

[289] Guidelines for Environmental and Social Performance Standard 10: Stakeholders engagement and information disclosure, Sept 2021, online: https://www.iadb.org/en/mpas/guidelines, recuperate [December 12 of 2022]

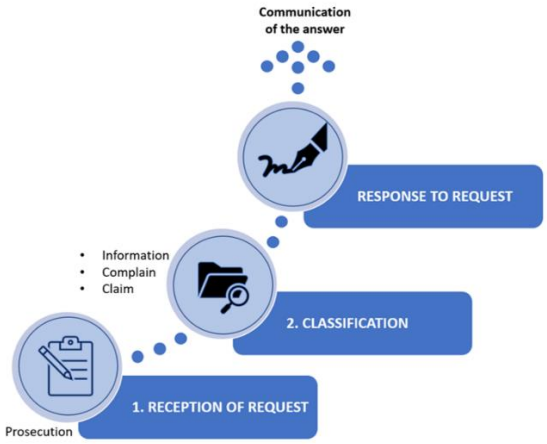
5.3. Specific objectives

- Implement efficient administrative care systems that facilitate the care of requests, complaints, and claims from people possibly affected by Program actions.
- Prevent complaints and claims from reaching judicial instances through prompt response in case of information and immediate investigation in case of requiring greater detail for their resolution.
- Have an application and a database that facilitates records and allows monitoring of the internal management carried out from the presentation of requests, complaints, and claims.
- Monitor the system of care to implement corrective actions when applicable.

5.4. Implementation process

The implementation of the complaints and claims mechanism begins with the design of the system, for which it is necessary to consider the following phases (Figure 38):

Figure 38. General procedure for dealing with complaints and claims.



Source: Own elaboration, 2023

Phase 1: Reception of the request

The Borrower must implement the reception of complaints, suggestions, and claims on two levels:

1. Reception at the Virtual Level: For the receipt of virtual complaints, MBECA and the Belize Fisheries Department will have to take steps to have a virtual link on their official website, where anyone can present their complaints, suggestions, or claims about the Program, leaving some essential information for a timely response. This reception at the virtual link must be linked to a database that can be accessed by a professional in charge of this matter and who is part of the Program Executing Unit (PEU).

2. Reception at the physical level: In this case, the Borrower must have mailboxes with the name of the Program in the central facilities of MBECA and the Department of Fisheries of Belize. In these mailboxes, he must have receipts and pens so that people can write complaints, suggestions, or claims about the Program. People deposit the completed ballots in each mailbox, and an MBECA collaborator will collect them. Once the ballots have been collected, the same MBECA collaborator will digitize them and send them through the link on the Borrower's official website so that a PEU professional can attend them.

The virtual reception and the physical reception of ballots, which with the help of an MBECA collaborator, makes it virtual, will allow for a **"single data entry window,"** which will facilitate the monitoring of the different requests.

Phase 2: Classification
The professional in charge of this issue by the PEU must classify the ballots by considering the following:

1. Determine if it is a complaint, request, or suggestion.

2. Prepare a clear and culturally appropriate response according to the applicant.

Phase 3: Response to request
The professional in charge of the PEU will attend to the different requests and issue a response as appropriate. It is important to note that anyone who uses this service deserves respect and expects prompt attention to their request. Listed below are estimated response times:

- Information Immediate Response
- Complaint 1 to 3 weeks, depending on the investigation needed
- Claim 1 to 3 months.

5.5. The Independent Consultation and Investigation Mechanism (MICI)

In addition to the grievance mechanism at the project level, people and communities affected by the Project can access the IDB grievance mechanism called the Independent Consultation and Investigation Mechanism (MICI[290]).

[290] Guidelines for Environmental and Social Performance Standard 10: Stakeholders engagement and information disclosure, Sept 2021, online: https://www.iadb.org/en/mpas/guidelines, recuperate [December 12 of 2022]

The MICI has been established independently of IDB operations and management and reports directly to the IDB Board of Executive Directors. This mechanism will consider the complaints of the people and communities affected by the projects financed by the IDB Group.

The MICI manages two mechanisms through which it evaluates the claims of the plaintiffs:

(i) The Consultation Phase is a voluntary and flexible space for dispute resolution under the impartial mediation of MICI. Through this mechanism, the claimant(s), the Borrower and the executing agency, and the IDB can resolve their differences and reach an agreement that resolves the claim.

(ii) The Compliance Verification Phase consists of an investigation of the facts by the ICIM to determine if the IDB complied with its obligations concerning the requirements of its Environmental and Social Policy Framework (ESPF).

Annex 3: Deep sea non-target species that may be caught incidentally[291]

Fish Species			Conservation Status	
Common Name	**Local Name**	**Scientific Name**	**IUCN Listing**	**National Status (Fisheries Act)**
Marbled Grouper		*Dermatolepis inermis*	VU, CD	-
Red Grouper		*Epinephelus morio*	NT, CD	-
Warsaw Grouper		*Epinephelus nigritus*	CR, CD	-
Snowy Grouper		*Epinephelus niveatus*	VU CD	-
Cubera Snapper		*Lutjanus cyanopterus*	VU, VU	-
Yellowfin Grouper	Yellow Wing	*Mycteroperca venenosa*	NT, CD	-
Red Porgy		*Pagrus pagrus*	EN, DD	-
Rainbow Parrotfish		*Scarus guacamaia*	VU, VU	-
Bull Shark		*Carcharhinus leucas*	NT, NT	-
Blacktip Shark		*Carcharhinus limbatus*	NT, NT	-
Tiger Shark		*Galeocerdo cuvier*	NT, NT	-
Shortfin Mako		*Isurus oxyrinchus*	NT, NT	-
Lemon Shark		*Negaprion brevirostris*	NT, NT	-
Scalloped Hammerhead		*Sphyrna lewini*	NT, NT	-
Great Hammerhead		*Sphyrna mokarran*	DD, DD	-
Smooth Hammerhead		*Sphyrna zygaena*	NT, NT	-

VULNERABLE (VU) A taxon is Vulnerable when the best available evidence indicates that it meets any of the criteria A to E for Vulnerable (see Section V). It is therefore considered to be facing a high risk of extinction in the wild.
NEAR THREATENED (NT) A taxon is Near Threatened when evaluated against the criteria. Still, it does not qualify as Critically Endangered, Endangered, or Vulnerable. Still, it is close to qualifying for or will likely qualify for a threatened category shortly.
LEAST CONCERN (LC) A taxon is Least Concern when evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable, or Near Threatened. Widespread and abundant taxa are included in this category.
CONSERVATION DEPENDENT (CD). Taxa are the focus of a continuing taxon-specific or habitat-specific conservation program targeted towards the taxon in question, the cessation of which would result in the taxon qualifying for one of the threatened categories above within five years.
DATA DEFICIENT (DD) A taxon is Data Deficient when there is inadequate information to directly or indirectly assess its risk of extinction based on its distribution and population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and distribution are lacking. Data Deficient is, therefore, not a category of threat. Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that threatened classification is appropriate. It is essential to make positive use of whatever data are available. In many cases, great care should be exercised in choosing between DD and a threatened status. If the range of a taxon is suspected to be relatively circumscribed, and a considerable period has elapsed since the last record of the taxon, threatened status may well be justified.

[291] MAACP, 2019. Environmental Management Plan: Exploratory Deepslope Fishing Belize.

Deep sea finfish species[292]

Deep sea finfish species encountered by fishers with some regularity (after Fisheries Department 2018 Deep Slope Exploratory Fishing Survey)

Common Name	Local Name	Scientific Name	IUCN Listing	National Status (Fisheries Act)
Yellow-eye Snapper	Yellow Eye	*Lutjanus vivanus*	-	-
Champagne Snapper	-	*Lutjanus purpureus*	-	-
Queen Silk Snapper	-	*Etelis oculatus*	-	-
Vermillion Snapper	-	*Rhomboplites aurorubens*	-	-
Black-fin Snapper	Black Snapper	*Lutjanus buccanella*	-	-
Dog Snapper	Dog Teeth	*Lutjanus jocu*	-	-
Lane Snapper	Silk Snapper	*Lutjanus synagris*	-	-
Mutton Snapper	-	*Lutjanus analis*	Vulnerable (VU)	-
Red Snapper	Deep Water Silk	*Lutjanus campechanus*	-	-
Cubera Snapper	Black Snapper	*Lutjanus cyanopterus*	Vulnerable (VU)	-
Gray Snapper	Black Snapper	*Lutjanus griseus*	-	-
Yellow-tail Snapper	Yellow Tail	*Ocyurus chrysurus*	-	-
Yellow-fin Grouper	Yellow Wing	*Mycteroperca venenosa*	Conservation Dependent (CD)	-
Yellow-mouth Grouper	-	*Mycteroperca interstitialis*	-	-
Nassau Grouper	-	*Epinephelus striatus*	Conservation Dependent (CD)	Size limit, closed season
Misty Grouper	-	*Hyporthodus mystacinus*	-	-
Red Hind Grouper	Jimmy Hind	*Epinephelus guttatus*	-	-
Black Grouper	Rockfish	*Mycteroperca bonaci*	-	-
Tiger Grouper	Fringy Tail	*Mycteroperca tigris*	-	-
Coney	-	*Epinephelus fulvus*	-	-
Goliath Grouper	Jew Fish	*Epinephelus itijara*	Conservation Dependent (CD)	Fully protected
Greater Amberjack	-	*Seriola dumerili*	-	-
Black Jack	-	*Caranx lugubris*	-	-
Queen Triggerfish	Old Wife	*Balistes vetula*	Vulnerable (VU)	-
Ocean Triggerfish	-	*Canthidermis sufflamen*	-	-
Dolphin Fish	-	*Coryphaena hippurus*	-	-
Barracuda	Barrow	*Sphyraena barracuda*	-	-
White Grunt	Grunt	*Haemulon plumieri*	-	-
Jolt Head Porgy	Porgie	*Calamus bajonado*	-	-
Hog Fish	Hog Snapper	*Lachnolaimus maximus*	Vulnerable (VU)	-

n.b.

CONSERVATION DEPENDENT (CD): Taxa are the focus of a continuing taxon-specific or habitat-specific conservation program targeted towards the taxon in question, the cessation of which would result in the taxon qualifying for one of the threatened categories above within five years.

VULNERABLE (VU): A taxon is Vulnerable when the best available evidence indicates that it meets any of the criteria A to E for Vulnerable (see Section V). It is therefore considered to be facing a high risk of extinction in the wild.

[292] MAACP, 2019. Environmental Management Plan: Exploratory Deepslope Fishing Belize.

Annex 4: Framework plans

Framework of the Environmental and Social Management Plan

a. Objectives

The Environmental and Social Management Plan aims to guarantee the planned implementation of prevention and mitigation measures to minimize adverse environmental and social effects, as well as to enhance the positive environmental and social impact associated with the development of each of the Program projects under compliance with the socio-environmental requirements of the IDB's ESPS.

b. Scope of application

The projects of Component I related to i) Exploratory fishing campaigns, ii) Purchase, installation, and assembly of the refrigeration system, and the projects of Component II related to individual and collective matching donations will require an environmental and social management plan for their execution. Generally, the ESMP will describe the adverse impacts, the selected mitigation measures, those responsible for their execution, and the implementation deadlines.

c. Structure

Table 36 shows the general structure of the plans.

Table 36. Structure of plans

Environmental and Social Management Plan				
Name of the Plan				
Phase	Planning	Execution	Operation	Closure
Responsibles	Implementation			
	Supervision			
Objectives				
Environmental Impacts				
Mitigation Measures	M1.			
	M2.			
	M3….			
Cost/resources				
Time /Duration				
Success Indicators				

d. Management Plans

The plans to be included in the Socio-environmental Management Plan will depend on the results of the SESA, the impacts to be managed, and the selected measures. Some of the relevant management plans to include would be:

1. Social Management Plan

a. General objective

The Social Management Plan aims to inform the community in a timely and accurate manner about the different activities, impacts, risks, and socio-environmental mitigation measures of the Program and its projects during the planning, execution, operation, and closure stages. The plan must be designed with the participation of PEU, MBECA, and the BFD in coordination with other institutions linked to the Program.

b. Specific objectives

The formulation and implementation of the Social Management Plan have the following objectives:

- Provide clear and timely information to the community and other stakeholders about the Program and its projects throughout its activities.
- Manage possible conflicts of interest due to false expectations and speculation about the construction works and other activities related to the Program.
- Coordinate actions aimed at making viable the execution of the activities of the environmental and social management programs of the Program.

c. Programs

The Social Management Plan programs will depend to a large extent on the impacts identified in the SESA as well as on the proposed social measures. At a general level, the following are presented as programs to be incorporated:

P1. Information Program

The objective of this Program is to develop participation strategies that allow the stakeholders to be linked to the activities, impacts, risks, and measures of the Socio-environmental Management Plan of the project. Specific actions in this Program will be developed:

- Establish a formal and documented communication procedure that facilitates communication between the actors, the PEU, MBECA, and the BFD.

- Hold meetings with interest group representatives to coordinate actions and receive information on queries and suggestions.
- Coordinate actions between the Program and the corresponding entities when it is necessary to carry out interventions that hinder the development of activities. Some of these interventions are related to implementing fishing campaigns and maritime transport.

P2. Program to strengthen the participation of vulnerable groups

The purpose of this Program is to generate actions that allow the participation of vulnerable groups in the different activities of the projects. This program works with indigenous people, afro descendants, women, and youth.

2. Strengthening of the BFD communication strategy

a. General objective

The objective of strengthening the communication strategy of the BFD is to implement internal and external communication tools for the Program throughout the project to maximize the channels of interaction between the interested parties and the project executing agency under compliance with the ESPS. of the IDB.

b. Specific objectives

Specific objectives include:

- Implement External and Internal Communication tools.
- Promote clear, direct, and continuous communication of the project.
- Establish tools that encourage the participation of the beneficiaries of the projects considering the socio-cultural needs of the populations.
- Communicate to stakeholders the progress of the different actions of the Programmer.
- Define the channels that favor transparency and feedback

c. Programs

P1. Online activities

This Program aims to establish online communications where the different aspects of the Program are evidenced at the level of actions in the planning, execution, operation, and closing stages. As tools of this Program are: External communications of the different activities of the Program through the MBECA website, BFD, Videos, webinars, photographs, and interviews, among others.

P2. Offline activities

This Program aims to reach stakeholders who do not have access to virtual media to communicate the different aspects of the Program from its stage of planning, execution, operation, and closing. Some tools are Exhibitions on the Program in public and private events, Presentations in the different districts, brochures design, and informative material on the Program's projects.

P3. Social Media

This Program aims to incorporate information from the Program into the different social networks to have communication spaces with virtual feedback. You have Twitter, Facebook, Instagram, and YouTube as social networks.

P4. Grievance and Grievance Mechanism

The purpose of the complaints and grievances mechanism is to receive and manage complaints, claims, and suggestions following the socio-cultural characteristics of the stakeholder groups. This Mechanism should have an efficient tool for collecting, following up, and verifying complaints and claims.

The process will be documented through i) a record of complaints (in a physical file and a database); ii) the filing of the complaint (verbally or in writing) by the complainant; iii) the record of receipt of the complaint; iv) the written response to the attention and response to the complaint, and v) a closing record that records the resolution of both parties.

The Mechanism will have the following guidelines:

- Proportionality will depend on the risk level and the project's possible negative impacts.
- Culturally appropriate, considering the socio-cultural context where the project is located.
- Accessible so that clearly and simply, it is understandable for all people.
- Anonymous: The complainant may remain anonymous
- Confidential: The project will respect the confidentiality of the complaint.
- Transparent: The process and operation of the Mechanism are transparent, predictable, and readily available for use by the population.

The PEU, MBBECA, and BFD will implement the Mechanism for complaints and claims will be implemented in two lines of action:

Line 1: Reception of complaints, claims, and suggestions from stakeholders.

Line 2: Reception of complaints, claims, and suggestions from the Program workers.
In this case, it is essential to take into account the following:

- ☞ The grievance mechanism should be designed to receive, record, investigate, and manage workplace-level incidents and incidents of sexual and gender-based violence.

- ☞ Workers should be informed of the progress of any complaints filed under the grievance mechanism and the steps taken to address their concerns.

- ☞ The deadlines specified to address these concerns should be as expeditious as possible.

- ☞ Workers should be able to make claims anonymously and without fear of retaliation or any other form of disadvantage arising from filing a claim.

Some other essential programs for the Environmental and Social Management Plan are:

➢ Waste Management and air pollution control Plan (WMP)

1. Objectives

- Present the minimum guidelines that must be considered for waste management and pollution control in the project's development.
- Present a guide to those responsible for the execution of the project to be able to attend possible events of waste management and pollution control.
- Ensure that project activities such as exploratory fishing campaigns, artisanal fishing, and the refurbishment of refrigeration systems comply and operate with waste management and air pollution control.

2. Roles and Responsibilities

The main contractor of each project will be responsible for carrying out the activities following the prevention, control, and mitigation measures foreseen in the Waste management and pollution control, under the supervision of the team of PEU professionals, who will coordinate actions with MBECA and the BFD.

3. Activities

The activities to be developed within the proposed framework can be defined in:

1. Develop prevention, contingency, control, monitoring, mitigation, compensation, and follow-up plans for waste management and air pollution events.
2. Record the activities developed to prevent, control, compensate, monitor, or mitigate waste and air pollution events.
3. Report and respond quickly to events that occur in projects that affect the environment, natural resources, or human health.

4. Indicators

The progress or setbacks of the activities must be recorded through indicators, whose measurement must reflect the reality of the project. These indicators must be designed according to the activities to be measured and quantified.

5. Documentation

All activities must be documented for subsequent review and control. This documentation must be sent to the corresponding management, control, and archiving dependencies.
A monthly report must be submitted, which must contain at least the following:

- Report the exploratory fishing campaign revisions on solid waste management and control.
- Report reports of leaks caused in the reconditioning of refrigeration systems in the management and control of ODS.
- Report of artisanal fishing controls with the control of inputs and product handling.
- Quantification of containers with hazardous waste generated
- Report of hazardous waste records.
- Report of accidental spill records submitted.
- Atmospheric Emissions Records Report

6. Schedule

The proposed framework will be available during the development of the project, whose schedule is presented below:

ACTIVITY SCHEDULE			
Activity	Project Life Cycle		
	Implementation stage	Stage of operation	Closing stage
A.1	X	X	X
A.2	X	X	X
A.3	X	X	X

7. Budget

Each Plan shall submit the budget for developing the proposed framework's activities and make it available to the PEU.

➢ Livelihood restoration Framework

1. Objectives

The objectives that will govern this Livelihoods Framework are:

- Present the minimum guidelines to consider when restoring livelihoods in the project's development.
- Present a guide of the steps to follow in the execution of the project.
- Ensure that project activities such as exploratory fishing campaigns comply and are developed with appropriate management for the affected population so that their livelihoods are unaffected. If necessary, the restitution of these means of livelihood shall be carried out.

2. Roles and Responsibilities

The responsibilities will be in charge of the PEU, coordinating with MBECA, the BFD and the different entities, and the IDB for the project's operations.

3. Activities

The minimum activities to be developed within the proposed Framework (MRCRMV) can be defined as:

1. Develop strategies to prevent economic displacement.
2. Provide project life-cycle information to arrange livelihood alternatives, which can avoid economic displacement.
3. Develop options to avoid economic displacement.

When it is not possible to reach an agreement with the community on the proposed alternatives, the means of subsistence must be restored, and for this, the following content must be developed:

- Introduction
- Project description
- Existing legal framework
- Stakeholder Engagement
  - Creation of committees representing fishermen, borrowers, and other interested parties.
  - Significant queries
  - Disclosure of compensation package eligibility and rights
- Census to identify affected people
- Eligibility criteria for receiving compensation and assistance
- Schedule and start dates and eligibility deadline.
- Livelihood restoration framework
  - Identification of affected people
  - Inventory of affectations
  - Description of the methods applied for the valuation of the assets affected at replacement cost
  - compensation rates
  - Compensation payment schedule and forms of collection.
  - Description of the process and appeal of the parties.
- Presentation of information synthesis for public disclosure
- Economic displacement plan

4. Indicators

The Plan should record the economic resettlement process through indicators, the measurement of which should reflect the reality of the project. These indicators must be designed according to the activities to be measured and quantified. At a minimum, they should include the following indicators:

- Rate of compensation made
- Rate of inquiries and complaints
- Rate of affectation
- Claim rate in the development of the project

5. Documentation

For the Plan, all activities must be documented within the proposed framework for subsequent review and control. This documentation must be sent to the corresponding dependencies for management, control, and archiving.

6. Schedule

The proposed livelihood restitution framework will be available during the development of the project, whose timeline is presented below:

ACTIVITY SCHEDULE				
Activity	Project Life Cycle			
	Planning	Implementation stage	Stage of operation	Closing stage
A.1	X	X		
A.2	X	X		
A.3	X	X		
A.4.	X			
A.5.	X			
A.6.	X			

7. Budget

The budget for developing the proposed framework's activities must be presented in each plan. It will be available to the executing unit of the project.

➢ Occupational health and Safety framework

1. Objectives

The provisions of existing occupational health and safety legislation and national regulations shall govern the objectives governing this Occupational Health and SafetyFramework. Applicable to all participants, developers, and executors of the project.

The specific objectives to be contained are:

- Prevent accidents, risks, and occurrences of events in work and occupational activities developed by the project.
- Evaluate and control the risks to occupational health and safety that may arise in the activities to be developed by the project.
- Reduce the occurrence of events that put workers, the environment, natural resources, or human health at risk.

- Control compliance with all legal and regulatory provisions on safety at work and established environmental measures.
- Provide assistance and support to workers in the event of an accident.
- Perform monitoring of compliance with safety provisions at work.
- Inform the competent authorities in case of emergencies.

2. Roles and Responsibilities

The responsibility will be the charge of the contractor. The project's development has been delegated to a PEU in coordination with MBECA and the BFD, which will be responsible for monitoring and inspection to comply with all measures and regulations in occupational health and safety.

3. Activities

The activities to be developed within the proposed framework can be defined in:

1. Comply with national occupational health and safety regulations and legislation.
2. Inform all workers of safety measures at work.
3. Establish responsibilities in the hierarchy of the work performed.
4. Develop training programs on occupational health and safety at work.
5. Implementation of the complaints and claims system.

4. Indicators

The proposed framework should record the events that occurred during the development of the project activities in a documented and reliable manner.
At least the following indicators shall be taken into account:

- Number of accidents reported on the job
- Number of accidents that required leave
- Number of accidents that did not require leave
- Number of accidents attended

5. Documentation

For the proposed occupational health framework, occupational health and safety reports on events occurring in the development of project activities should be submitted periodically to the Project management unit. Its content, periodicity, and detail of this must be defined.

6. Schedule

The proposed framework will be available during the development of the project, whose schedule is presented below:

ACTIVITY SCHEDULE			
Activity	Project Life Cycle		
	Implementation stage	Stage of operation	Closing stage
A.1	X	X	X
A.2	X	X	X
A.3	X	X	X
A.4.	X	X	X
A.5.	X	X	X

7. Budget

The budget for the development of the proposed framework activities must be available to the executing unit of the project.

➢ Training Plan Framework

1. Objectives

The objectives governing this Framework of the Training Plan are the minimum guidelines that will guide developing programs to strengthen the weaknesses of knowledge and skills in developing project activities.

Training plans should include at least the following objectives:

- Train the target population in good fishing practices.
- Training in SCUBA dives at high depths
- Strengthen knowledge about new fishing techniques.
- Train in new job skills for fishing.

2. Roles and responsibilities

The execution of the project will be under IDB guidelines and will meet all necessary training requirements. The responsibility will be in charge of PEU, which will coordinate between the different entities and before the IDB to carry out the training activities.

3. Activities

The activities to be developed within the proposed framework can be defined in:

1. Determine the weaknesses and training needs required by the target population.
2. Job training for people who access project grants.
3. Develop training programs on occupational health and safety at work.

4. Indicators

The proposed framework should record the data of the people who participated in the training activities that the project will offer.

At least the following indicators shall be taken into account:

- Number of participants in the training
- Number of people placed in other tasks as a result of the training

5. Documentation

Progress reports should be submitted periodically to the Project management unit for the proposed framework. Its content, periodicity, and detail of this must be defined.

6. Schedule

The proposed framework will be available during the development of the project, whose schedule is presented below:

SCHEDULE OF ACTIVITIES			
Activity	Project Life Cycle		
	Implementation stage	Stage of operation	Closing stage
A.1		X	
A.2		X	
A.3		X	

7. Budget

The budget for the development of the proposed framework activities must be available to the executing unit of the project.

➢ **Indigenous peoples framework**

1. Objectives

The objectives that will govern this Indigenous Peoples' Framework will follow the legal provisions established in Belize and will address the needs of this population in the development of the project activities.

Within the Plans with indigenous peoples, at least the following objectives must be contemplated:

- Integrate the indigenous population in conditions of equality and respect.
- Consult the community about their effects on developing project activities.
- Consult and coordinate decision-making

2. Roles and responsibilities

The execution of the project will comply with all the requirements of equality and free, informed consent for the actions to be carried out. The responsibility will be in charge of the PEU, which will coordinate between the different entities, including MBECA and the BFD.

3. Activities

Activities to be carried out within the framework shall include at least the following:

1. Develop a consultation plan with indigenous peoples when project activities require free, prior, and informed knowledge by indigenous peoples.
2. Agree with the community on alternative actions that could affect their livelihood and traditions in the project's development.
3. Carry out a process of consultation and negotiation if required.

4. Indicators

The proposed framework should record the participation of indigenous persons in project activities. At least the following indicators shall be taken into account:

- Number of persons belonging to indigenous peoples participating in the consultation
- Number of people who carried out negotiation processes

5. Documentation

The proposed framework should be presented reports of the consultations and agreements resulting in the development of the activities.

6. Schedule

The proposed framework will be available during the development of the project, whose schedule is presented below:

ACTIVITY SCHEDULE			
Activity	Project Life Cycle		
	Implementation stage	Stage of operation	Closing stage
A.1		X	
A.2		X	
A.3		X	

7. Budget

The budget for developing the proposed framework's activities must be prepared by those responsible.

➢ Framework for gender equality

1. Objectives

The objectives that will govern this Framework for Gender Equality will follow the legal provisions established in Belize and will address the needs of this population in the development of the project activities.

The minimum objectives that the Plan must contain are the following:

- Integrate the population taking into account gender equality in recruitment and training.
- Establish gender equality in economic resettlement processes.

2. Roles and responsibilities

The execution of the project will follow the guidelines of the IDB and will comply with all the gender equity requirements established in the ESPSs. The responsibility will be in charge of PEU will be responsible for enforcing gender equality in the different projects of the Program.

3. Activities

Activities to be carried out within the framework shall include at least the following:

1. Participation in gender equality in the activities developed by the project.
2. Review of working conditions to comply with gender equality legislation.
3. Assess gender equality risks.
4. Ensure that economic resettlement addresses the issue of gender equality.

4. Indicators

The proposed framework should record the participation of gender equality in project activities. At least the following indicators shall be taken into account:

- Number of women recruited
- Number of sexual minorities hired
- Number of complaints or petitions related to gender equality

5. Documentation

The proposed framework should be presented with reports on gender equality resulting from the development of activities. Information that is issued to the Project management unit.

6. Schedule

The proposed framework will be available during the development of the project, whose schedule is presented below:

ACTIVITIES SCHEDULE			
Activity	Project Life Cycle		
	Implementation stage	Stage of operation	Closing stage
A.1		X	
A.2		X	
A.3		X	
A.4		X	

7. Budget

The budget for developing the proposed framework's activities must be prepared by those responsible.

➢ Natural disaster management and emergency response framework

1. Objectives

The Natural Disaster Management and Emergency Response framework describes the procedures and actions that must be taken during a natural event or emergency in the project's development.

The plans for attention to natural disasters and emergency response will have the following objectives:

- Establish the protocols and administrative actions that must be taken quickly and effectively in the face of natural events and accidents involving emergencies.
- Develop protocols for dealing with unforeseen situations, such as pollutant spillage threatening the environment, natural resources, and the community.

2. Roles and responsibilities

The responsibility will be in charge of PEU, which will coordinate with MBECA and the BFD and between the different entities for the attention and rapid response to natural disasters and operational emergencies.

3. Activities

The proposed framework should include plans containing at least the following activities:

1. Protocol for emergency care and attention to natural disasters.
2. Hierarchy of responsibilities and prompt communication in the face of unexpected events.
3. Have assumed scenarios to understand the development of the actions to be taken in case of any of them.
4. Having the material means attending first aid.
5. Establish measures for control, correction, and recovery of accidents.

4. Indicators

The proposed framework should include within the Plan the recording of emergencies that occurred in the development of the project and unexpected events.
They shall take into account at least the following indicators:

- Many emergencies occurred, and controlled
- Number of workers trained to respond to emergencies

5. Documentation

The report must contain the emergencies in the project's development and unforeseen events, and the contractor must inform the PEU professional.

6. Schedule

The proposed framework will be available during the development of the project, whose schedule is presented below:

SCHEDULE OF ACTIVITIES			
Activity	Project Life Cycle		
	Implementation stage	Stage of operation	Closing stage
A.1	X	X	X
A.2	X		
A.3	X		
A.4	X		
A.5	x		

7. Budget

The budget for developing the proposed framework's activities must be prepared by those responsible.

➢ Cultural protocol

1. Objectives

The Framework of the Cultural Protocol describes the procedures and actions that must be taken into account in developing the project to respect the traditions and sociocultural heritage of indigenous and Afro-descendant peoples.

The proposed framework will have at least the following objectives:

- Respect traditions and cultural knowledge
- Building new knowledge through the dialogue of knowledge
- Agree with the community on the changes required to include in their tasks measures friendly to the environment and natural resources.
- Report on environmental sustainability.
- Provide technical assistance.

2. Roles and responsibilities

The responsibility will be in charge of the PEU in coordination with MECA and the BFD, which will coordinate between the different entities to develop the cultural protocol.

3. Activities

The proposed framework shall include at least the following activities:

1. Knowledge dialogue workshop with the Community
2. Training in resource-friendly environmental measures
3. Propose alternatives for improving working conditions

4. Indicators

The proposed framework should include quantifying the actions to be carried out.
They shall take into account at least the following indicators:

- Number of people participating in the Knowledge Dialogue Workshop
- Number of people in training on environmental issues

5. Documentation

The proposed framework should report on the development of its activities. These will be reported to the Project Management Unit.

6. Schedule

The proposed framework will be available during the development of the project, whose schedule is presented below:

SCHEDULE OF ACTIVITIES			
Activity	Project Life Cycle		
	Implementation stage	Stage of operation	Closing stage
A.1		X	
A.2		X	
A.3		X	

7. Budget

The budget for developing the proposed framework's activities must be prepared by those responsible.

Annex 5: Consultation public

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