



MCCAP
BELIZE MARINE CONSERVATION
& CLIMATE ADAPTATION PROJECT

Ocean Economy & Trade:

**Investing in protection
measures to improve the
ecological health of
natural ecosystems, the
Belize Barrier Reef System**

**Sandra Grant
Project Coordinator, MCCAP**

Summary of the Project

Project Title	Belize Marine Conservation and Climate Adaptation Project
Multilateral Implementing Entity (MIE)	World Bank
Project effectiveness date	July 15, 2015
Original closing date	March 31, 2020
Executing Entity	Ministry of Agriculture, Fisheries, Forestry, the Environment, and Sustainable Development and Protected Area Conservation Trust (PACT)
Other partners	Fisheries Department Coastal Zone Management Authority and Institute Forest Department
Objective	To implement priority ecosystem-based marine conservation and climate adaptation measures to strengthen the climate resilience of the Belize Barrier Reef System
Components	<ol style="list-style-type: none">1. Improve the protection regime of marine and coastal ecosystems2. Promote viable Alternative Livelihoods3. Raise awareness about climate change4. Project management and coordination

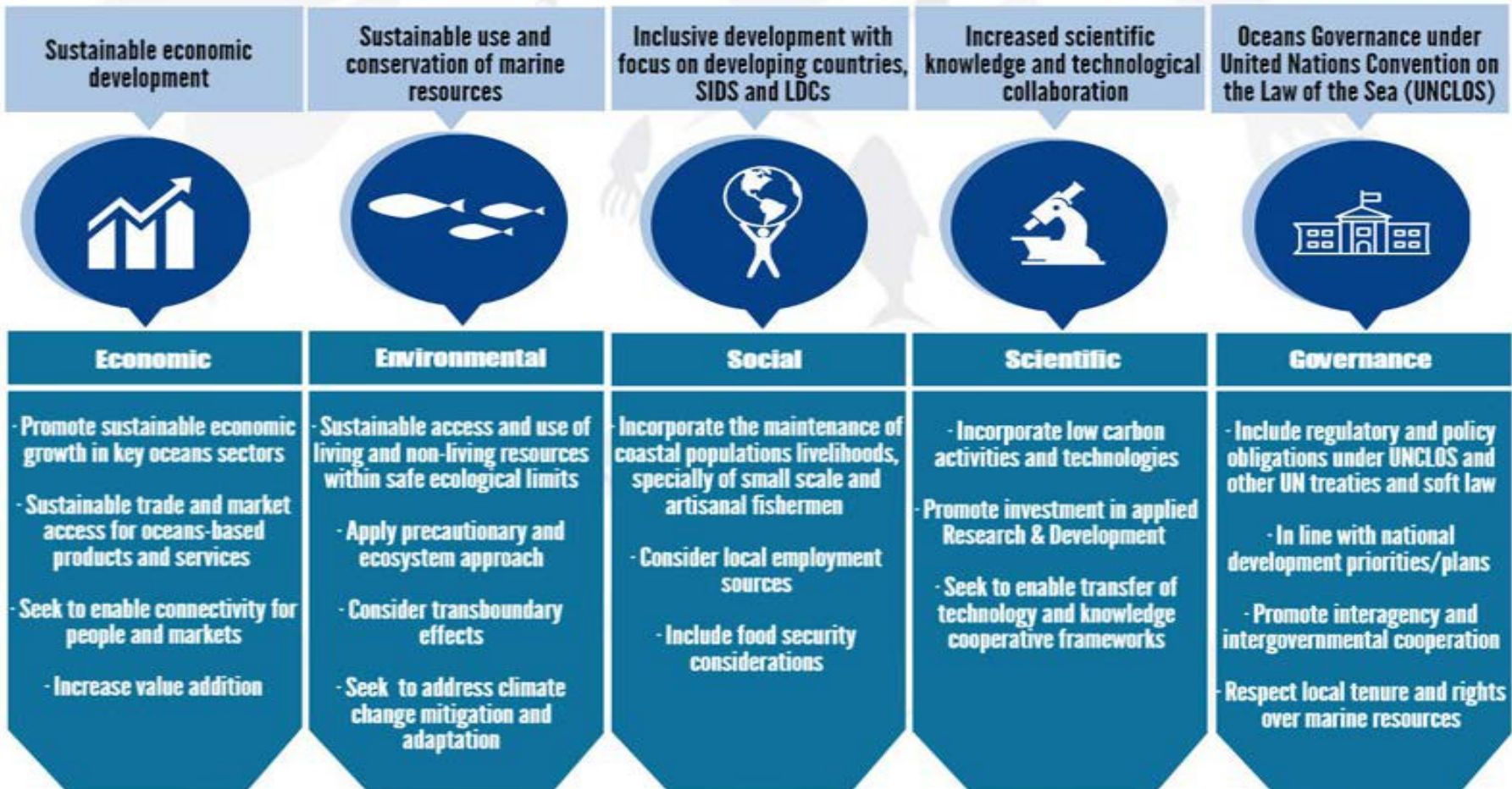


OETS – Evidence Based links

- Economic benefits from the sustainable use of marine resources
- Promote sustainable trade of products and services
- Sustainable management of the oceans
- Support the implementation of the SDG 14 – greener and more sustainable economic development



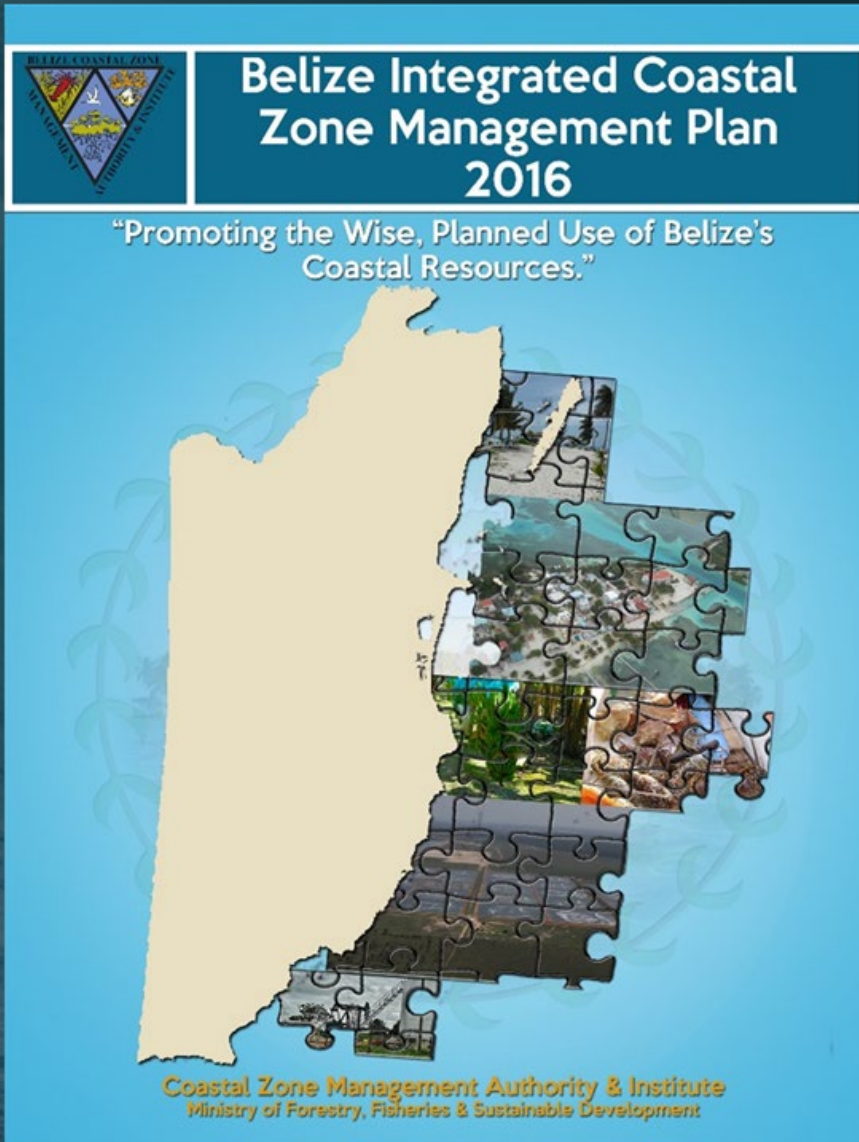
UNCTAD's OCEANS ECONOMY PILLARS



Belize Ocean Economy

- Belize's coastal zone has complex and dynamic marine ecosystems that supports ecological processes and a vast array of marine life and habitats.
- 30% of the country's GDP is directly linked to commercial activities that take place within the coastal zone.
- 40% of the population resides on the coast and in offshore areas.

1. Integrated Ocean Governance



- Implementation of the Integrated Coastal Zone Management Plan (ICZMP)
- The goal of the Belize ICZMP is to **“support the allocation, sustainable use and planned development of Belize’s coastal resources through increased knowledge and building alliances, for the benefit of all Belizeans and the global community.”**
- Value of Services provided by our coastal ecosystems from fisheries, tourism, and shoreline protection services
- Indirect contribution to economic activities and environment



The ICZM plan addresses all aspects of the ocean economy

- Biodiversity conservation
- Coastal habitat and species conservation
- Fisheries management and production
- Aquaculture and mariculture
- Coastal agriculture
- Mineral extraction and Energy development
- Climate change and disaster risk management
- Coastal area planning and development
- Beach and shoreline management
- Marine transport and traffic
- Pollution control
- Tourism and recreation
- Marine dredging
- Cultural heritage conservation

Promotes ...

- **Inter-Governmental Cooperation:**

- CZMAI
- Fisheries Department
- Forest Department
- Department of the Environment
- Natural Resources (Lands)
- Port Authority
- Tourism
- Climate Change Office
- Finance
- Economic Development
- Protected Area Secretariat
- Trade
- Sustainable Development
- Foreign Affairs



- **Inter-agency Collaboration:**

- Co-management arrangements (TASA, BAS, SACD, TIDE, SEA)
- community-based management innovations (fishers, fishermen association, cooperatives, Managed Access committee, women group,
- NGOs (WCS, TNC, FoH, Oceana,
- Public - Private partnerships

Legislative framework

- Update/Strengthen the following:
 - Modernized and robust Fisheries Regulatory Framework;
 - Protected Areas Regulatory Framework;
 - Mangrove Regulations
 - Update ICZ Act and Regulations
 - Drafting a National fisheries policy and strategy

Forests

BELIZE:

**FORESTS (PROTECTION OF MANGROVES) REGULATIONS,
2018**

ARRANGEMENT OF REGULATIONS

PART I

Preliminary

1. Citation.
2. Interpretation.

PART II

*Protection of Mangroves from Alteration or selective Trimming
Unless by Permit*

3. Prohibition on alteration of Mangroves without a permit.
4. Procedure on receipt of application.
5. Notice of application.
6. Considerations for the grant of a permit.
7. Grant and conditions of permit.
8. Permit for selective trimming of mangroves.
9. Requirements for selective trimming permit of mangroves.
10. Duty of permit holder.
11. Assessment report.
12. Publication of decision.
13. Cancellation of permit.
14. Circumstances where permit shall not be issued.

2. Marine Ecosystem Health

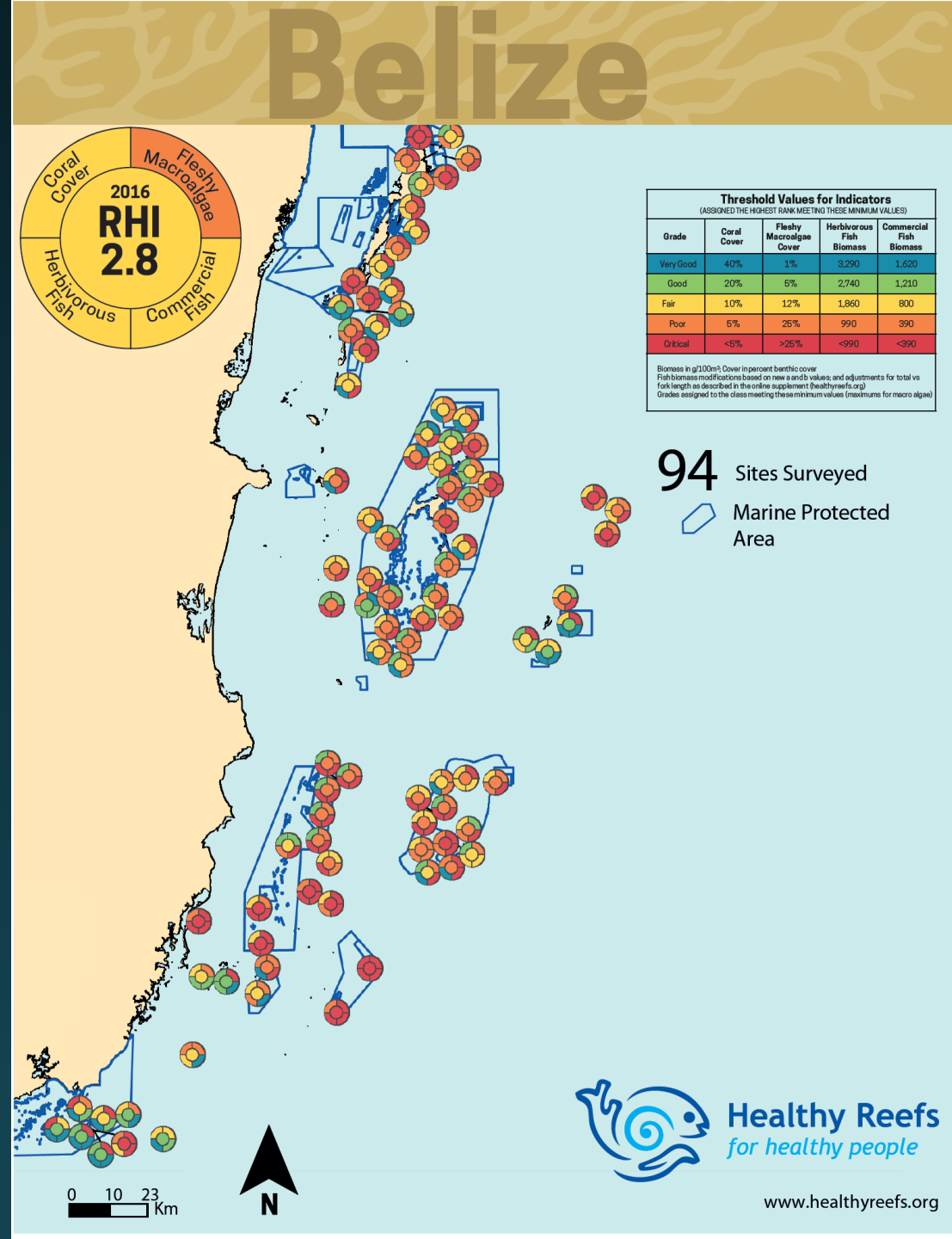
- Aligned to the SDG 14 to benefit people, alleviate poverty, and protect the ocean
- Address challenges such as high unemployment, low growth, food security and poverty.
- Improved fisheries management
- Improved resilience of marine ecosystems



Reef Ecosystem monitoring

Healthy Reef Report Card, 2016 & 2018

- Overall reef health is “FAIR” condition with Reef Health Index (RHI) score at **2.8**
- The **fleshy macroalgal** cover is still “POOR”, Glovers Reef, Turneffe, and Central Barrier reef with the highest macroalgal cover – 24%. Fleshy macroalgal cover increased about 60% since the last survey (2011)
- **Coral cover** scored “FAIR”.
- **Herbivorous biomass** is ‘FAIR’ (>1,920 g/100 m²) and has been increasing since the 2009 protection of parrotfish. However, herbivore biomass in the Central Barrier Complex is scored as ‘poor’.
- The biomass of **commercial fish** species improved to ‘FAIR’ over previous years. The Northern Barrier reef scored ‘good’ for commercial species and has the highest percent of its reef area under full protection, with good long-term enforcement.



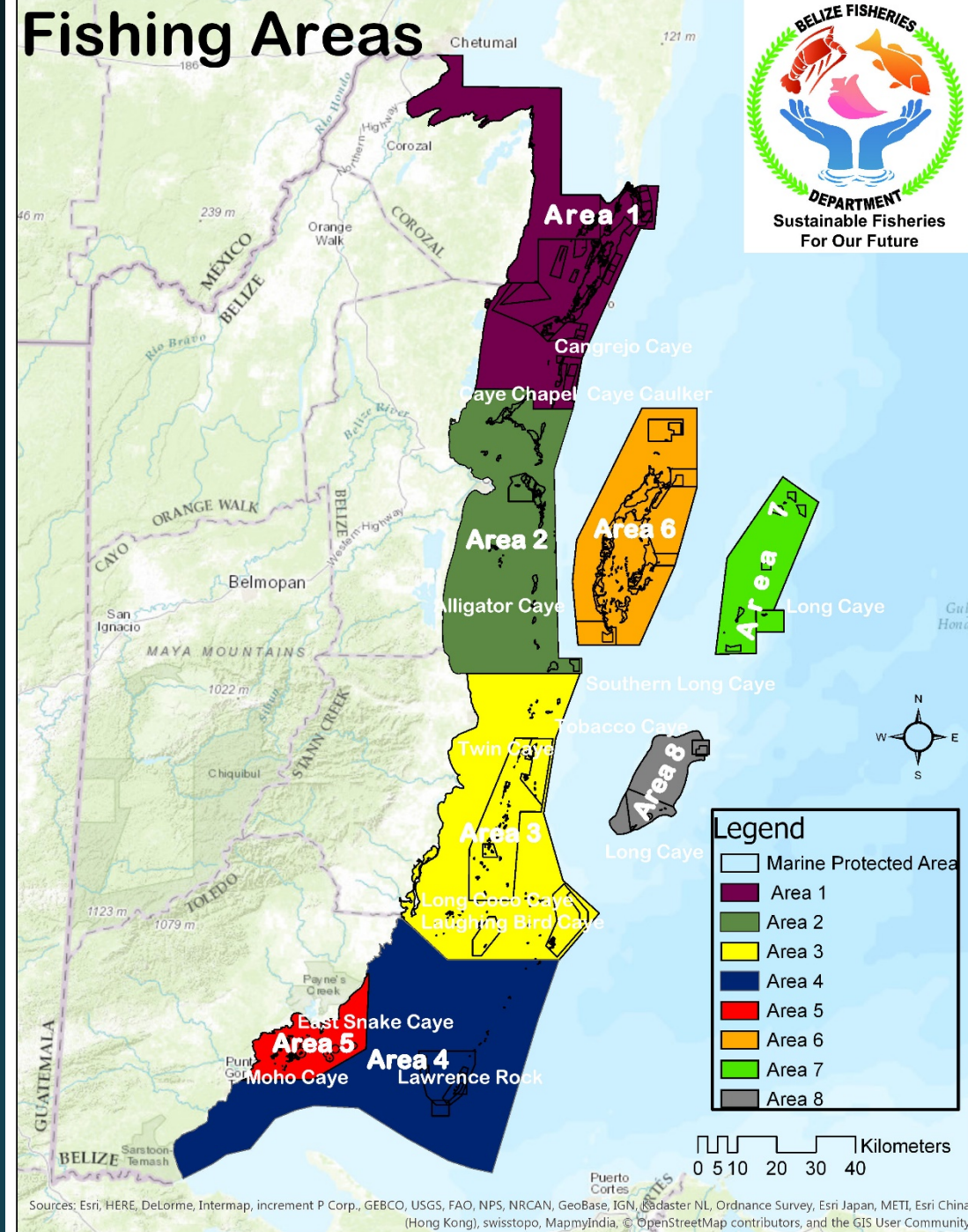
Sustainable harvest strategies informed by an Adaptive Management Framework

- Data collection and analysis
- Closed season for lobster, conch, etc.
- Ban on fishing grazers and the use of destructive gears
- Regulated gear
- Catch quota for conch
- No take spawning aggregation
- Size limits
- Catch shares, restricted access, controlled effort
- Enforce fishing and no-take zones
- Traceability system

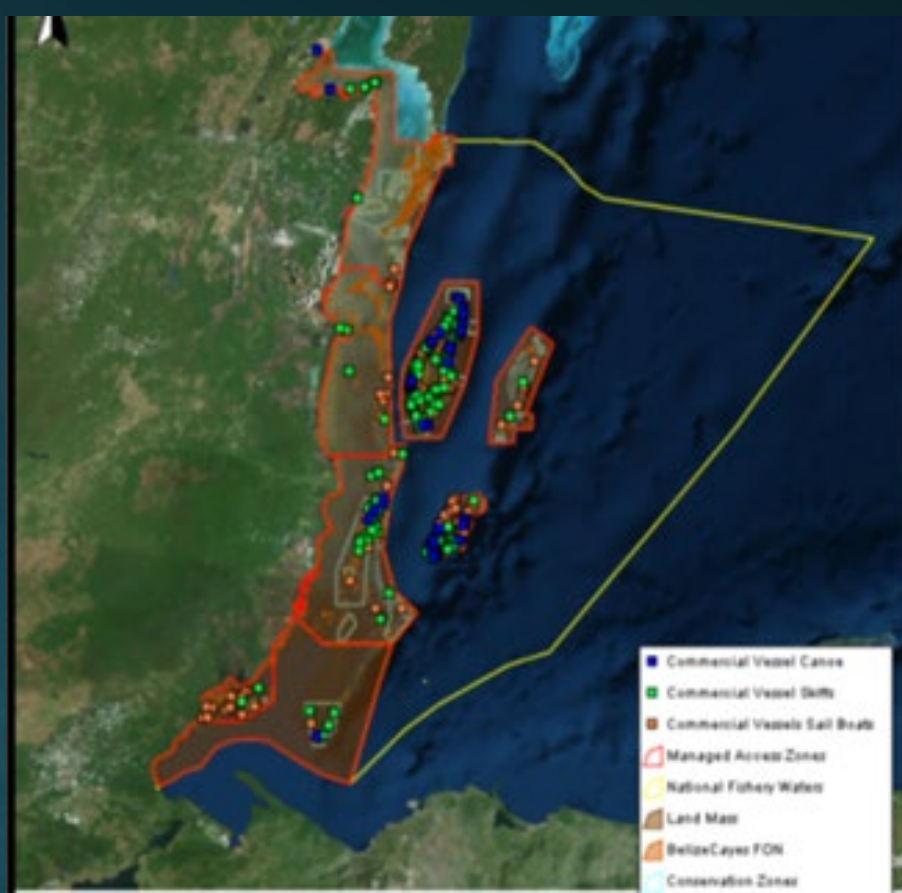


MPAs/Managed Access

- 9 MPAs
- Manage Access (9 fishing zones)
- Expand MPAs from 13% to 22% of territorial waters
- Expand Replenishment Zones from 2% - 3%
- Ban on offshore oil/gas exploration
- Declaration of Ray Sanctuary

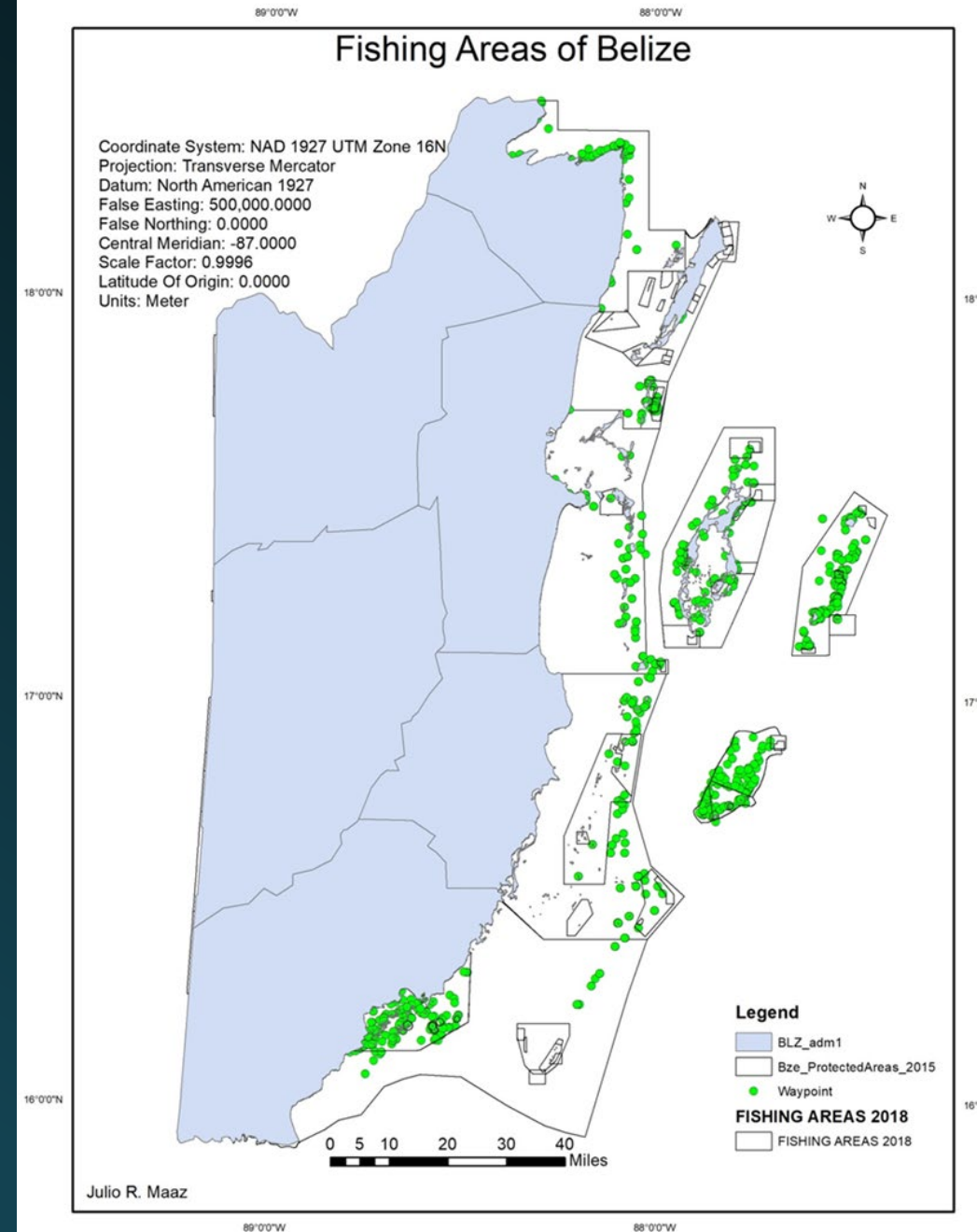


Enforcement



Total Enforcement activities documented using SMART in 2017

STATION	Patrol	Infractions	Observations	Vessels inspections	Fishers inspections
BAS	77	3	861	248	248
MPA	130	2	1,262	1,068	43
SACD	119	5	206	19	30
CCU	74	25	708	279	328
TIDE	104	10	348	127	36
SEA	23	2	70	8	9
Total	527	47	3455	1749	694



Coral Restoration (FOH)

An economic study on these reef ecosystems (WRI 2008) in Belize alone indicated that because of their combined services of shoreline protection, tourism and fisheries, they are worth between an estimated US\$268 million to US\$370 million per year to Belize. This ecosystem has been identified by the IPCC as “at risk” from climate change effects.

Through the efforts of Fragments of Hope, at Laughing Bird Caye, we have seen these results in five years. Coral restoration being replicated in two other areas, within MPAs.



Growing temperature resilient corals in nursery and micro-fragment

- ▶ Enhanced by:
 - ▶ Ban on fishing grazers and the use of destructive gears
 - ▶ Coastal development and reef ecosystems monitoring
 - ▶ MPAs and Replenishment Zones
 - ▶ Passage of a modernized and robust Fisheries Regulatory Framework
 - ▶ Co-management and community-based management innovations



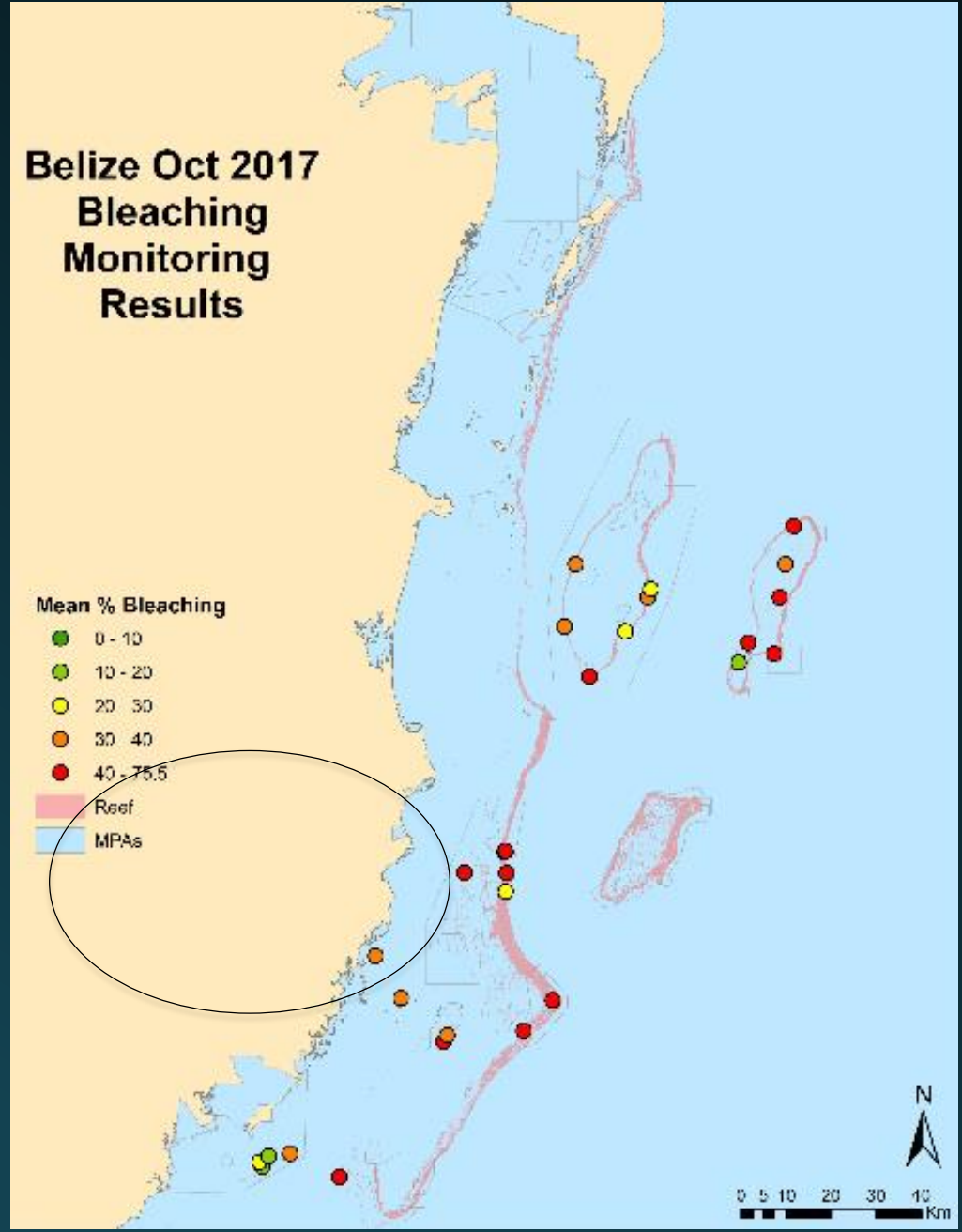
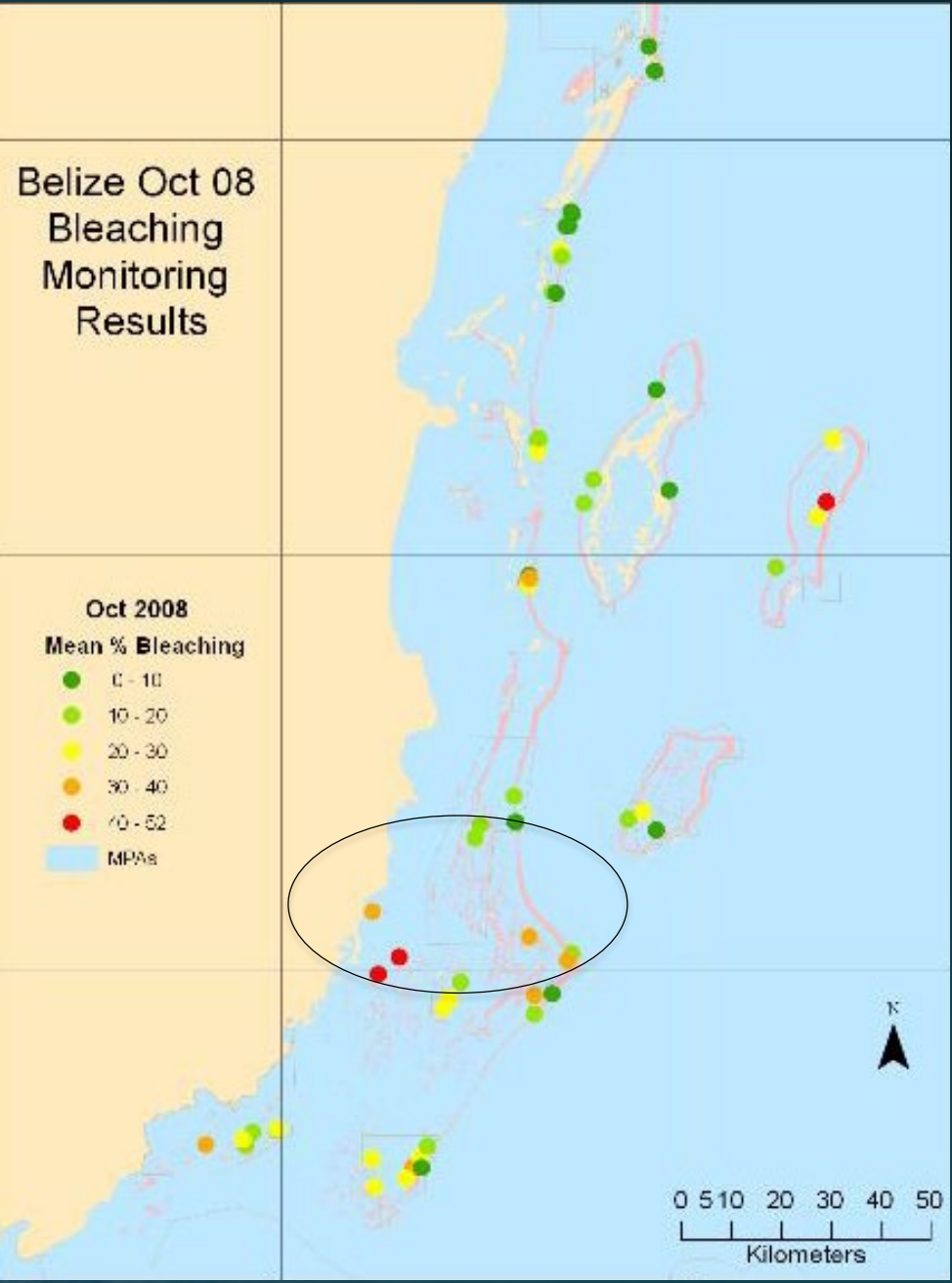
Successful out-planted 6 sites with temperature resilient staghorn corals, South Water Caye Marine Reserve and Turneffe Atoll Marine Reserve

"Belize had the magic combination of basic ecological health, functional no-take areas with lots of fish, a wonderful local involvement in the resource and tourism (tour guide program), and YOU (FOH), and so all that was really missing were the corals.

This is why the success has been so good, and this is also why I think the strategy should look to ALL areas with good local management - and add the corals there to reinforce the areas. The foundation of success must be good local management and ecological health, and not an overly top-down or scientific approach. If people are the problem then people are the solution..... LOVE and humility/ respect for the local people is the answer. And you have proven that."

Austin Bowden-Kerby, PhD, Corals for Conservation,
Sustainable Environmental Livelihoods for the Future, Fiji







Oct 2017



Dec 2017



Oct 2018

Are coral Resilient to bleaching ??

- Bleaching severe (>30%) N-S
- UTEN, PPOR, OANN hit hardest
- Bleaching worse in deeper sites
- Bleaching worse in eastern sites
- Acroporids resilient now..?

Source: Fragments of Hope

Climate Change Mitigation and Adaptation

Source: MCCAP

1. Build adaptive capacity

2. Implement adaptation options

- A framework for managing future climate risk, prioritizing and coordinating action.

3. Monitoring for climate change: management indicators

- Identification of climate change threats
- Integrate climate change within MPA and management processes and programmes
- Investment in climate change management
- Equipment for climate change action
- Social awareness and participation on climate change management
- Select climate change parameters in research and monitoring

Identification of Climate threats

Source: SICA, OSPESCA, FD



Climatic threat	Impact	Adaptive capacity	Vulnerability value
Increase in temperature	↑	👎	🐟
Acidification	↑	👎	🐟
Migration patterns	↑	👎	🐟
External events. Hurricanes	↑	👍	🐟
NON-climatic threat			
Juvenile fishing	↑	👎	🐟
Explosives and venom	↑	👎	🐟
Coral damage	↑	👎	🐟

Measurement scales	HIGH	MEDIUM	LOW
Impact	↑	—	↓
Adaptive capacity	👍	👎	👎
vulnerability	🐟	🐟	🐟

Let's do it! Here are some local actions for climate change adaptation to increase the productivity of Caribbean Spiny Lobster.

Facilitate the access of fishers to immediate information on climate variations so that they take active measures.

Establish alternative projects for economic income when there is a shortage of the product.

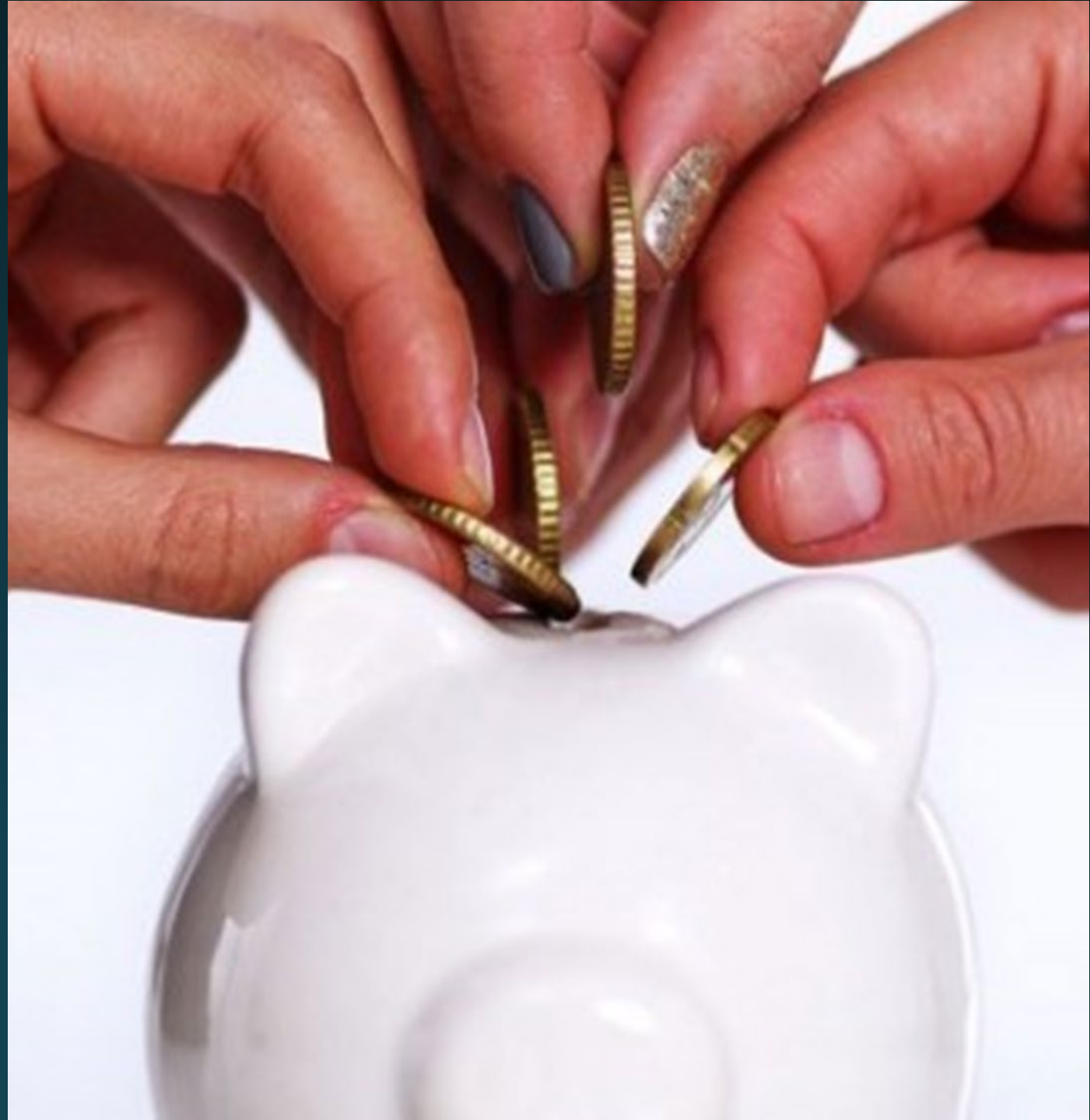
Enforce Fisheries Regulations and establish fishing quotas for lobster.

Establish strict regulations prohibiting the use of unsuitable fishing methods.

3. Sustainable Livelihoods

Source: MCCAP, FD

- Within sector
 - Diversification of patterns of fishing or fish farming
 - Fishing Sector [lobster, conch, finfish (reef, deepslope, small pelagics), crab]
 - Invest in aquaculture/Mari-culture (crab, seaweed)
- Outside sector
 - livelihood diversification (e.g., switching among agriculture, tourism, and fishing in response to seasonal variations in fish availability)
 - Agriculture Sector (climate smart agriculture)
 - Tourism Sector (pesca tourism, excursion, culture experience)
 - Change in post harvest techniques/practices (reduce waste, energy efficiency)



Within fishing

- Sustainable Deep-slope fishing (FD)
- Sustainable Seaweed farms (TNC)
- Marine Tour Guide, Master Captain (BTB, Port Authority)



Outside fishing

SKILLS TRAINING

Electrical installation



Computer Service and Repairs



Food preparation, hospitality, bartending



Cosmetology



Auto-mechanic & Out-board engine Service & Repairs



Tour Guide



Where are our Graduates now? One year later ...

Courses	Employment in field	Employment other	Still fishing	Unemployed
Cosmetology Employed 77%	9	1	0	3 <small>(2 Domestic workers)</small>
Food preparation 50%M; 57%F	8	1	1	6 <small>(6 Domestic workers)</small>
Computer Repairs 56%M; 67%F	3	6	2	4
Electrical 83%M; 0%F	8	2	1	2 <small>(1 Domestic worker)</small>
TOTAL Trainees (57/60)	28	10	4	15

Total employment outside fishing **67%**

Total employment within fishing **7%**
(from 8 to 3 fishers)

Unemployment **26%**

Total Female employment **65%**

Total Male employment **70%**

Outside fishing

AGRICULTURE

(Climate-smart Agriculture)

Pig production and slaughtering

Poultry production and slaughtering

Covered structures



From Fishing to Tourism

Coastal and Marine Tourism



Documents

- National Sustainable Tourism Master Plan (MoT)
- **Corozal Rural Belt Tourism Development Action Plan (MCCAP)**
 - PESCA Tourism
 - Excursion – marine tours, snorkeling, kayaking
 - Water Taxi
- **Southern Tourism Development Action Plan (MCCAP)**
 - Culture tourism
 - Master Captain - Transportation of tourists to cayes

Process ...



Ministry of Tourism and Civil Aviation, Sustainable Tourism Program II aims to increase the contribution of Belize's tourism sector to national sustainable and resilient socioeconomic development.

ACTION 1

Strategic planning development of the Corozal Rural Belt, an annex to the Corozal Town development

ACTION 2

Capacity building, community awareness of the tourism product

ACTION 3

Establish tourism-based grant scheme (support business ventures)



Action 1: Strategic development of the Corozal Rural Belt

- The Corozal Rural Belt Tourism Action Plan (mainly Chunox, Copperbank, Consejo, Progreso and Sarteneja). Consists of the following:
 - Alignment with National Sustainable Tourism Master Plan, the Corozal Tourism Destination Plan and the Sarteneja Tourism Development Plan.
 - An assessment of current tourism products/attractions and support services available in the area (including natural resource based activities, e.g., bird watching)
 - An assessment of potential tourism products/attractions and support services for the area
 - Identification of needs and identification of investments needed in the area to support the development of tourism, including capacity building initiatives
 - Development of action plan based on the assessments and the Corozal Tourism Destination Development Plan
 - Analysis and evaluation of possible impacts of the plan and prioritization of actions
 - Analysis of the community groups' institutional capacity to implement projects

• **Tourism constraint**

- Low volume of tourists
- Lack of knowledge on management and marketing
- Low quality of tourism products & services
- Road access

• **Tourism asset**

- Cerros Mayan ruin
- Corozal Bay
- Progreso Lagoon
- New River
- Eco-tourism
- Little Belize (Mennonite village tour)
- Accommodations (Homestay)
- Restaurants

• **Community tourism ??**



Action 2: Capacity Building

- Seeks to equip local communities with the skills necessary to start and to manage a business in the tourism sector and to be meaningfully employed within the tourism sector.

• **Tourism-related Skills**

- Food preparation
- Bartender
- Tourism and front desk
- Hospitality management
- Quality and standards in the tourism sector
- Entrepreneurship
- Tour guide training





Action 3: Establish a Tourism Based Grant Scheme

- This component will contribute to business development by providing a grant scheme whereby local entrepreneurs can exploit business opportunities in the area.

- **Pesca Tourism** – tours and fishing beach traps
- **Excursion** – marine tours, snorkeling, kayaking

From fishing to tourism (lessons learnt)

- Community understanding of what the tourism product
- Planning and capacity building
- Trained personnel
- Develop community tourism – one product from each community
- Creating new destinations
- Tour corridor (what to do)
- Transportation – vehicle, water taxi, small crafts
- Marketing the product
- Signage
- Tourism goods and services
- Tour operators
- Licenses, permits, insurance
- Certification requirements
- Accommodations (homestay)
- Restaurants

Thank You

