

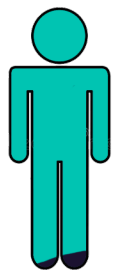
Blue Ocean Credits Program: A Nature-Positive Economy Approach



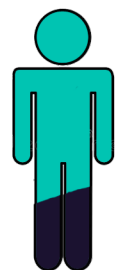
Human population by 2050



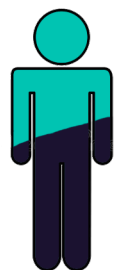
3 billion
1960



5 billion
1987



6 billion
1999



8 billion
2023



9.7 billion
2050

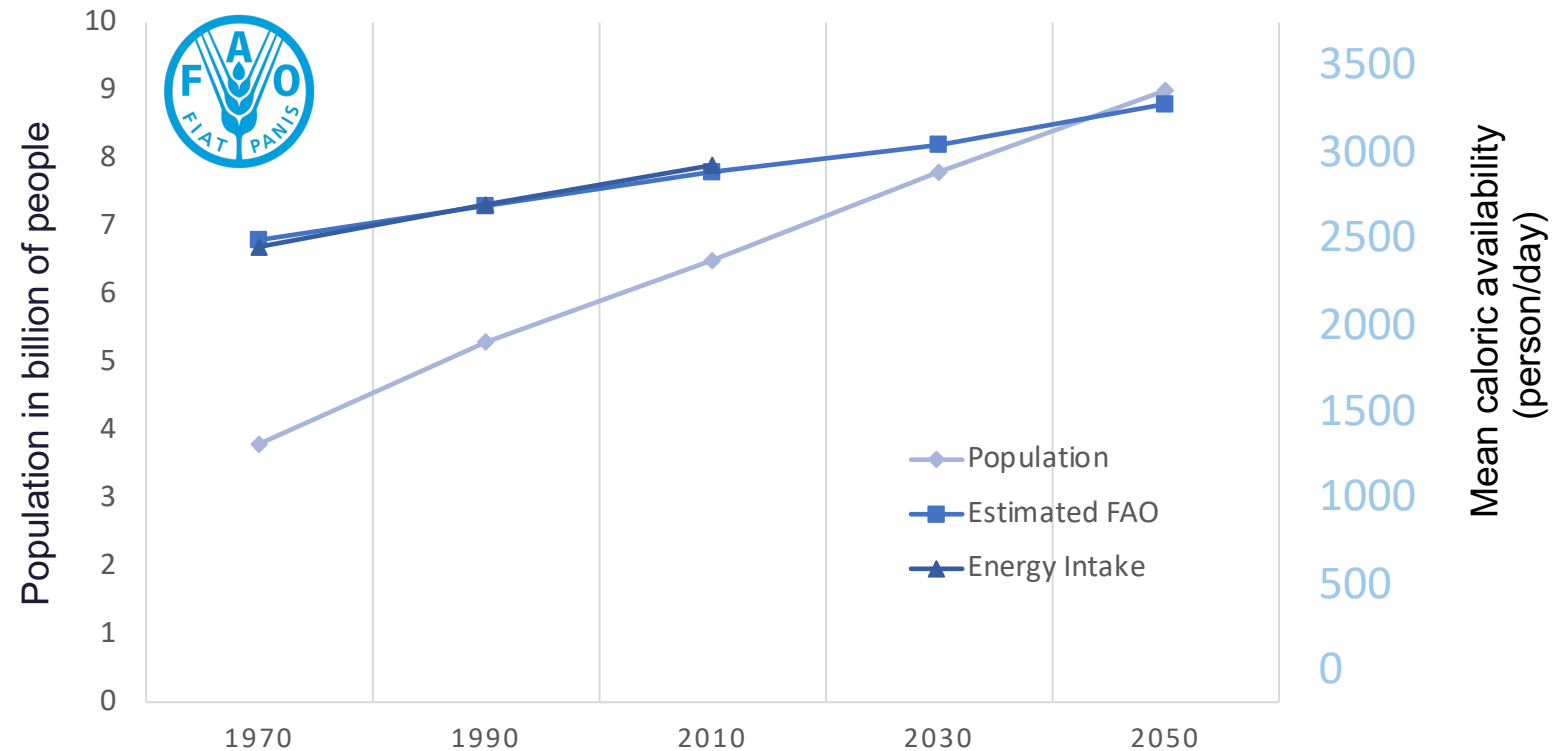


World population and food security by 2050



Our future food security will depend on safeguarding our land, soil, and water resources

(2021) Qu Dongyu,
General Director FAO



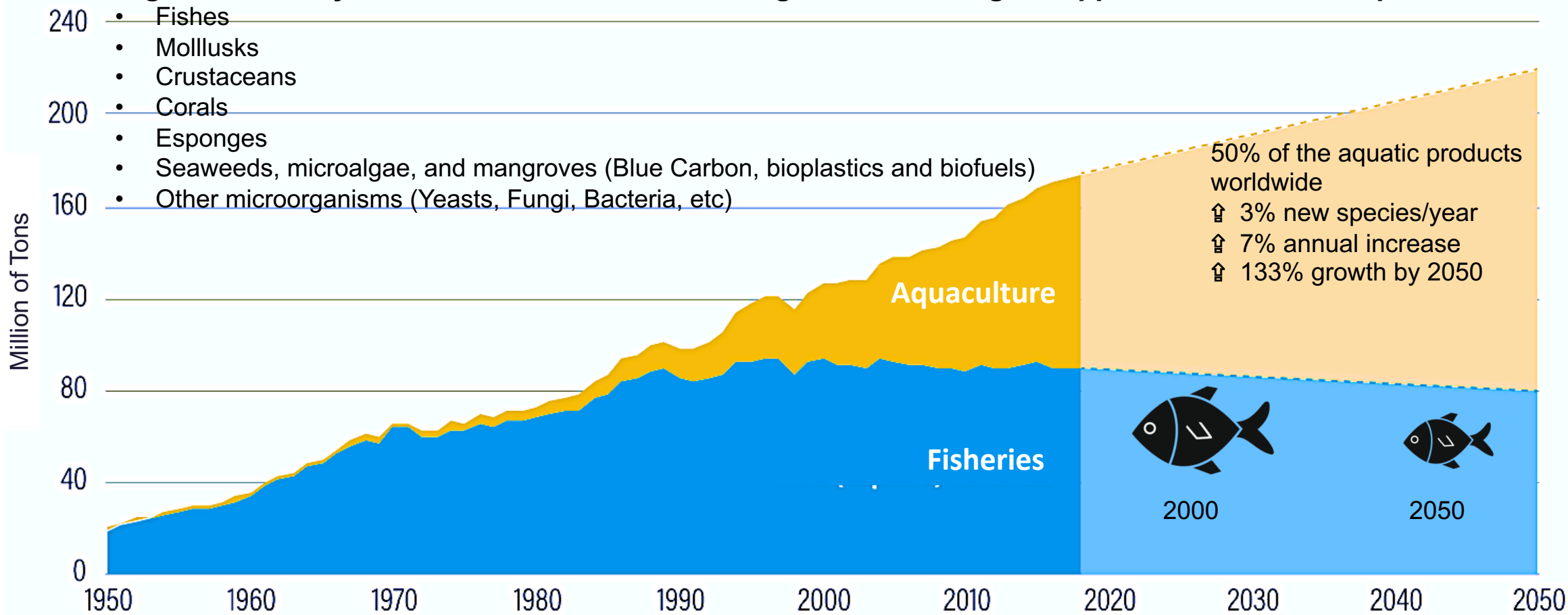
3.1 billion people rely on aquatic foods as the main protein source

Sustainable aquaculture by 2050



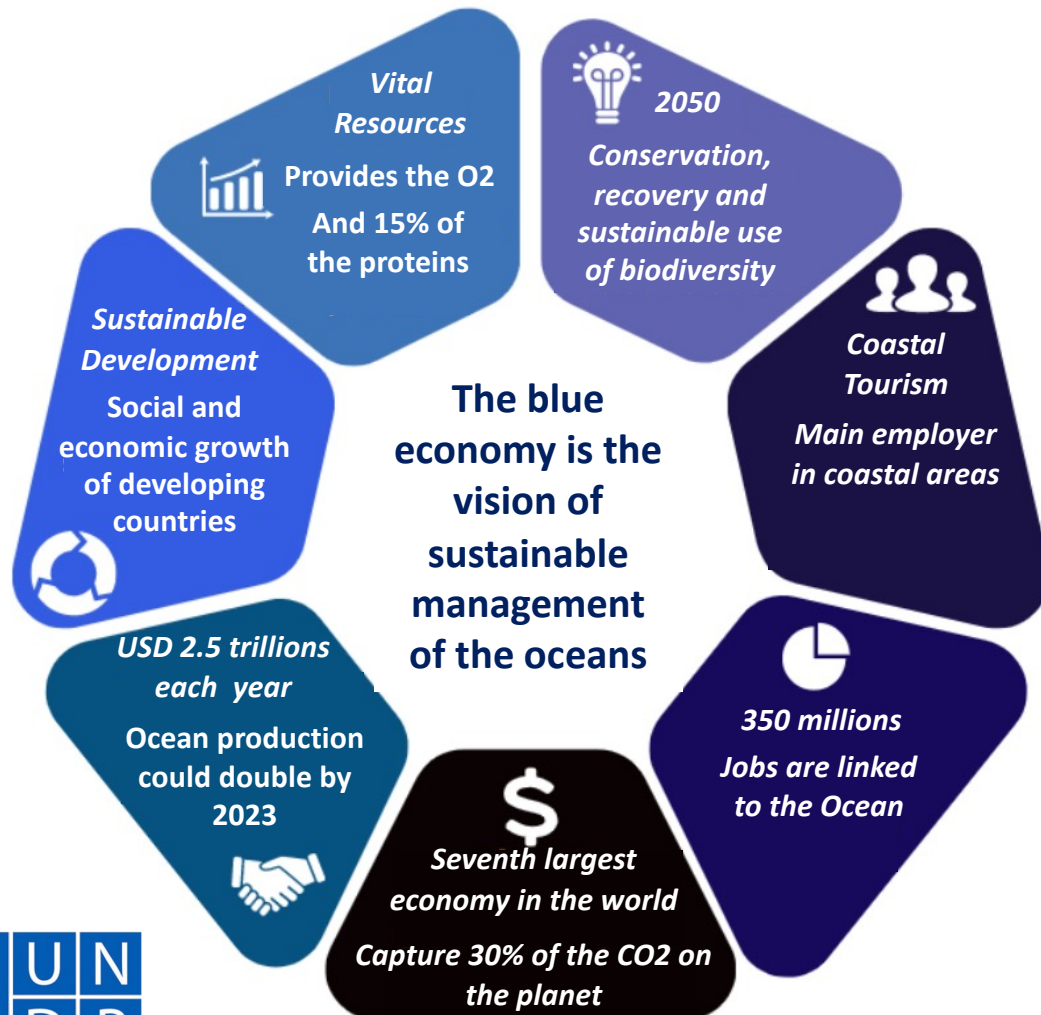
High biodiversity for conservation, climate change, biotechnological applications, and food production:

- Fishes
- Mollusks
- Crustaceans
- Corals
- Sponges
- Seaweeds, microalgae, and mangroves (Blue Carbon, bioplastics and biofuels)
- Other microorganisms (Yeasts, Fungi, Bacteria, etc)







WORLD
RESOURCES
INSTITUTE

Blue economy model 2050



Value of the Ocean: **USD 24 trillion**
 Dependent people: **~3.5 billion**

The Ocean:

-  Absorbs 90% of the heat produced on the planet
-  Is where 90% of commercial products are transported
-  Produces 30% of oil and gas
-  Provides environmental, social, and economic well-being for coastal communities

Blue Carbon Ecosystems (BCEs)



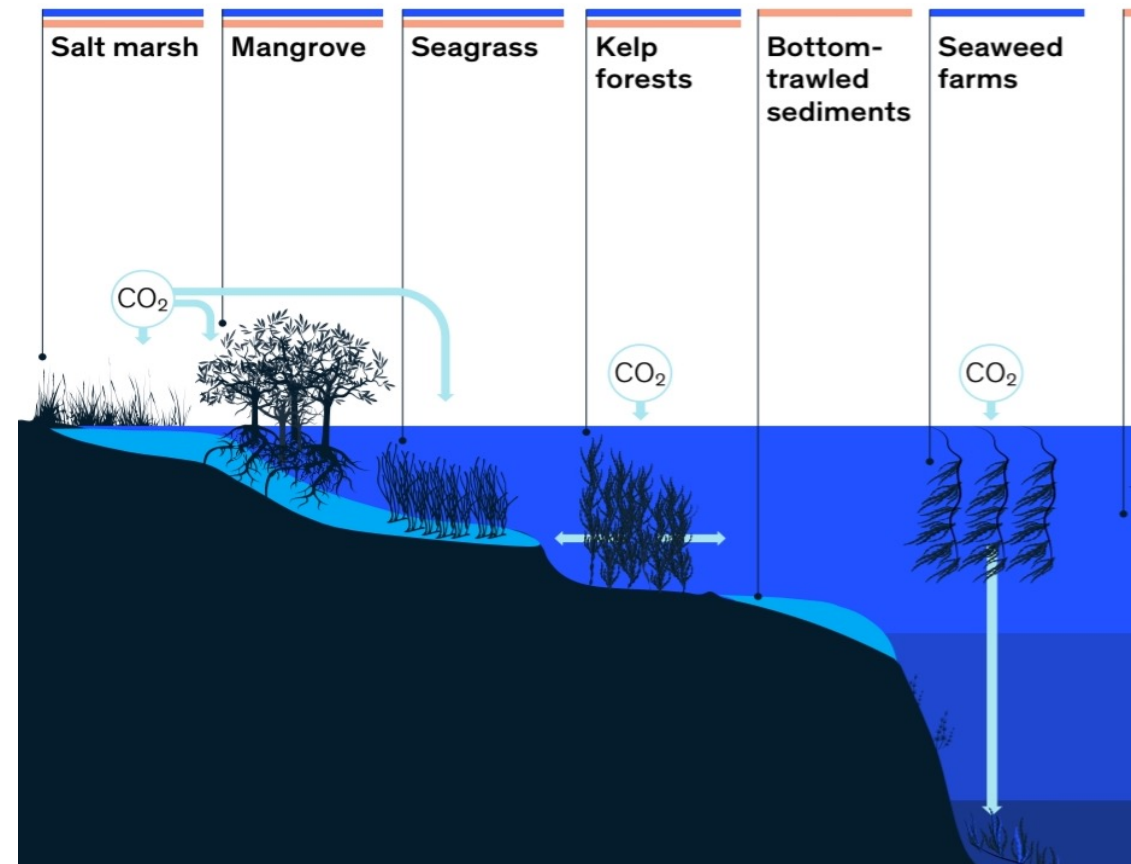
Blue carbon is stored in coastal ecosystems:

- Salt marshes
- Mangroves
- Seagrass meadows
- Seaweed/Kelp forests

Main services provided:

- Food and climate security
- Biodiversity conservation and ecotourism
- Water filtration and disease control
- Coastal protection and ocean acidification buffering

BCEs are responsible for 50% of the carbon stored (75 GtCO₂) in the ocean despite just covering 2% of the ocean's surface



Mangroves services value

Annual Value: ~ **USD 462-798 billion**
 Valor 1 Ha.: ~ **USD 33-57 thousand/year**
 Dependent people: ~**120 million**

Coastal protection:

5 times more profitable and effective than seawalls. Reduce 50 % of storm impacts



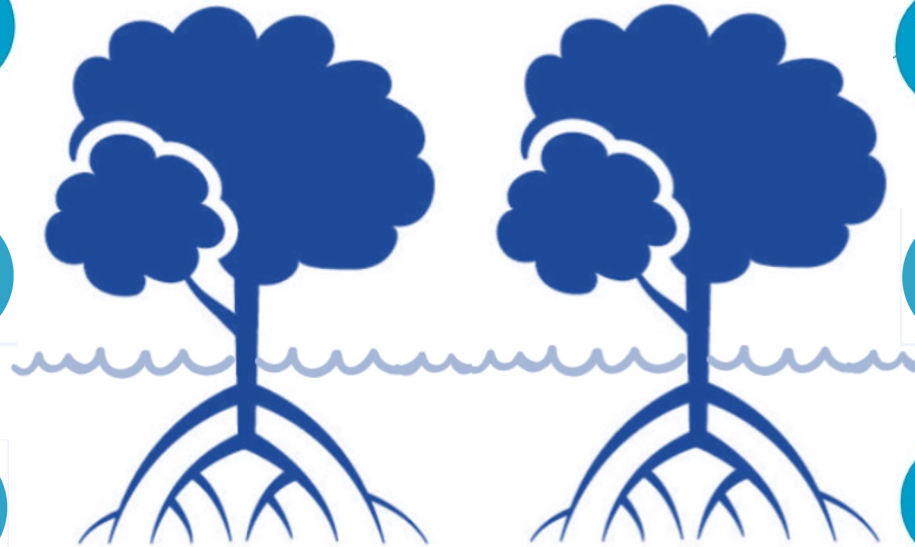
Climate Change:

Covers ~0.1% of the planet, but captures and stores 8-9 tons of CO2/Ha (3-5 times more than forests).



Wood:

For building materials and firewood



Tourism:

Kayaking, fishing, wildlife, tours, etc.
USD 1,079/Ha.



Water filtration:

2-5 hectares can filter 1 hectare of aquaculture farms.



Fisheries and food production:

Habitat for more than 3,000 species and enhance 25% the productivity of coral reefs

Coral reefs services value



Current Value: ~**USD 9.9 trillion**
Annual Value: ~**USD 375 billion**
1 Ha. Value ~**USD 1.25 million/year**
Dependent people: ~**500-1000 million**

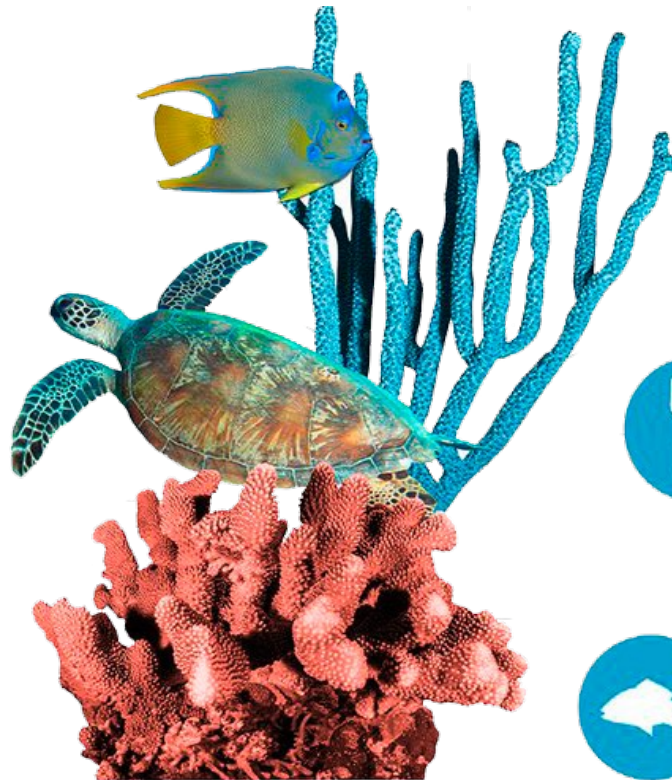
Coastal protection:
Reduce 97% of wave energy.
USD 272 billion/año



Climate Change:
Cover <1% of the planet, but capture and store 70-90 million tons of CO2.
Associated seagrass 8 tons of CO2/Ha



Medicine:
Anticancer and antivirals



Tourism:
70 million trips/year
USD 36 billion



Food Production:
5-10 tons of fish/km²/year.
USD 29.8 billion



Biodiversity:
Habitat of the 25% of marine species

BCEs and coral reefs are threatened



¿2030 - 2050?



 Lost: Coral Reefs **50%**, Tidal Marshes **50%**, Mangroves **35%**, Seagrass meadows **30%**

 70-90% of these ecosystems are threatened

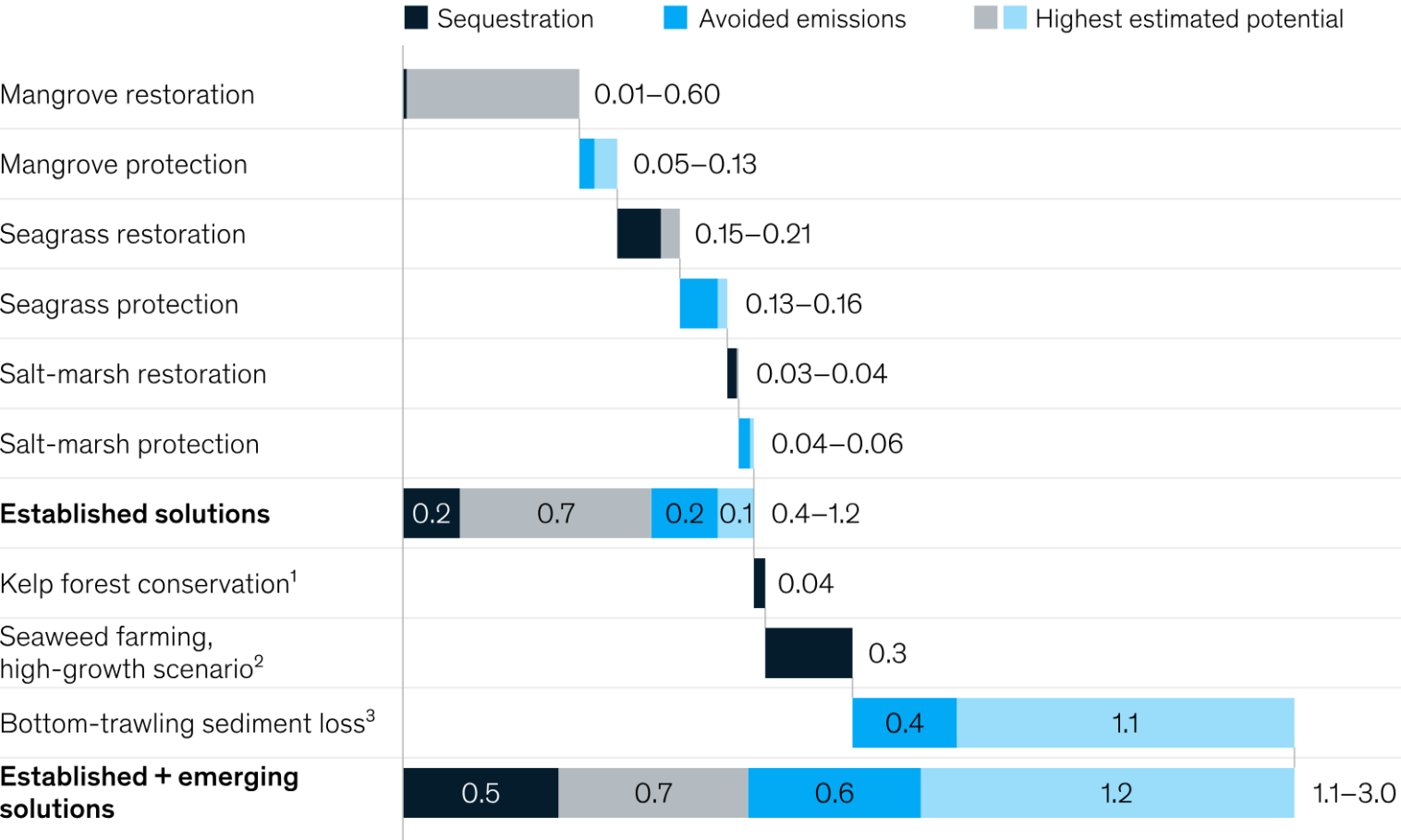
 Destruction of the natural, social, and economic capital (BCEs release 1 GtCO₂)

 They could disappear in the next 3 decades

Blue carbon capture potential of BCEs by 2050



Abatement potential from established and emerging blue-carbon solutions by 2050, GtCO₂ equivalent per year



¿Who we are?



RAC is a registered international NGO headquartered in Mexico and consists of an interdisciplinary team of professionals





RAC implements nature-based solutions and innovative blue carbon initiatives as the Blue Ocean Credits Program




Blue Ocean Credits Program (BOCP)



 RAC through the BOCP develops holistic, resilient, scalable, long-term sustainable strategies to conserve blue carbon ecosystems' high social, environmental, and economic value for the well-being of present and future generations

 Project 2022-2023: Mesoamerican coastal decarbonization efforts: An innovative, integral, and ecosystem approach

 Project 2023-2024: Blue Ocean Credits Program: Accelerating the Coastal Decarbonization Efforts in the Mesoamerican Reef System

 Both projects are funded by the Net Zero Research Fund, Climate Change Center of Excellence of Scotiabank, Canada

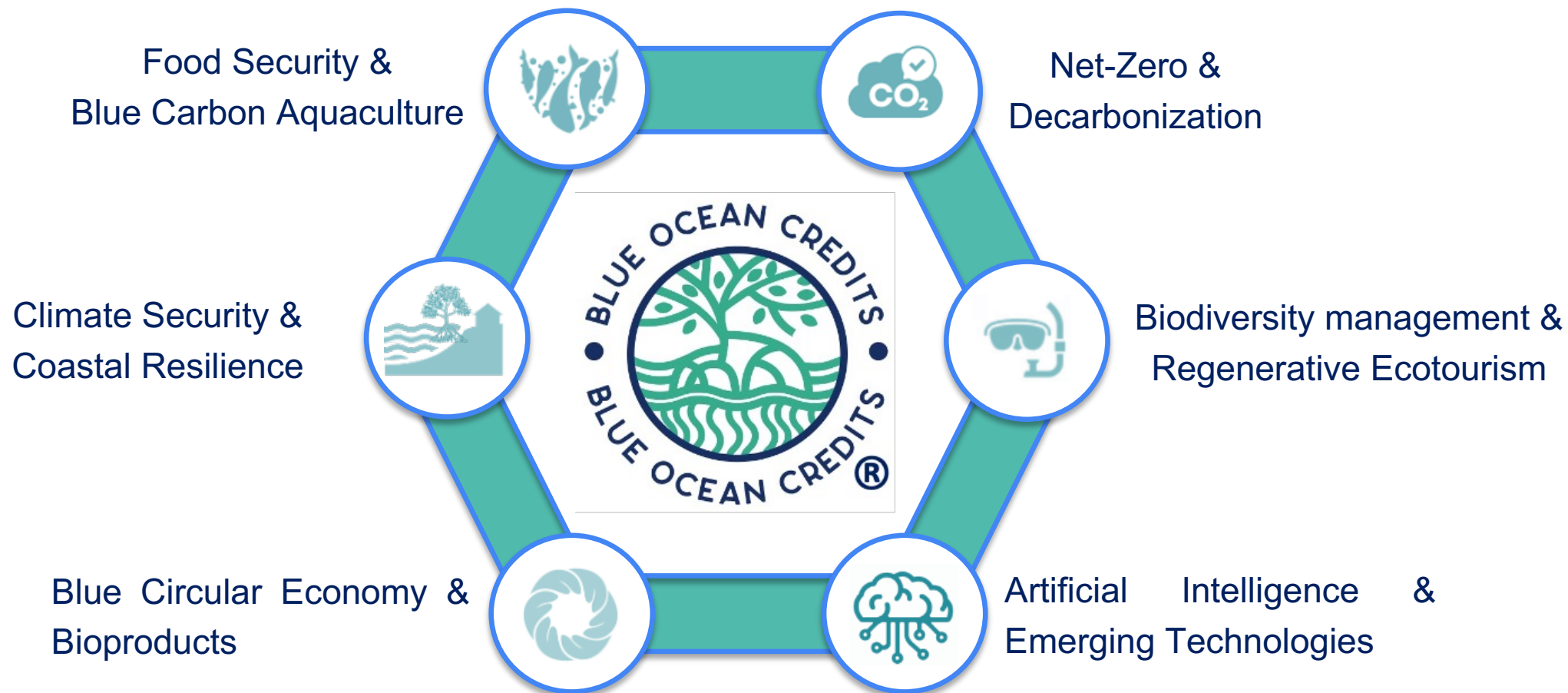


Scotiabank®

Strategic BOCP focus



Strategic focus areas to achieve the long-term implementation of blue nature-based business solutions in coastal areas



BOCP: Nature-based solutions are the future of sustainable business



¡The most efficient economic model is Nature!



If businesses prioritize nature can generate:

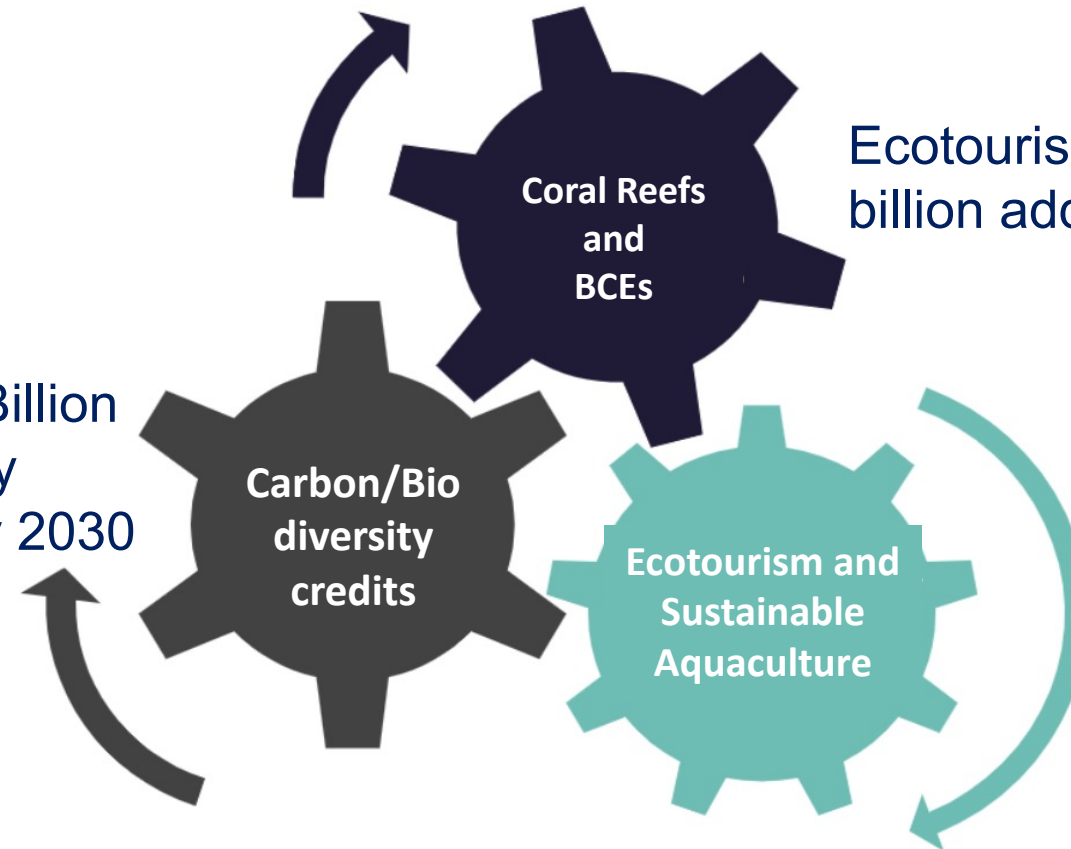


USD 10.1 trillion in new business opportunities



395 million of new sustainable jobs

Carbon
USD 250 Billion
Biodiversity
2 Billion by 2030



Ecotourism USD 290 billion additional/year

Sustainable Aquaculture USD 115 billion additional/year



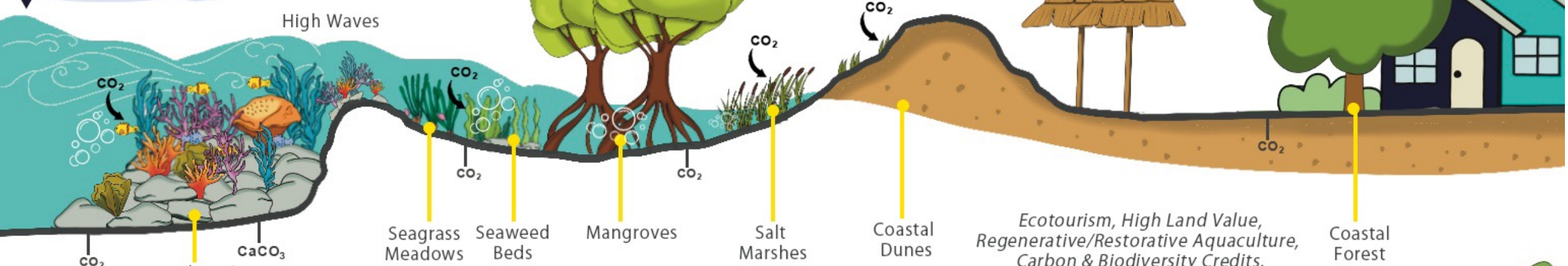
ET= USD 300 billions (2019) SA= USD 250 billions (2020) CC=978.56 billions (2022)

BOCP: Nature-Positive Economy



CARBON CAPTURE & STORAGE, HIGH BIODIVERSITY, COASTAL PROTECTION & RESILIENCE
CLIMATE & FOOD SECURITY, DISASTER RISK REDUCTION, SUSTAINABLE LIVELIHOODS.

NATURE-POSITIVE ECONOMY

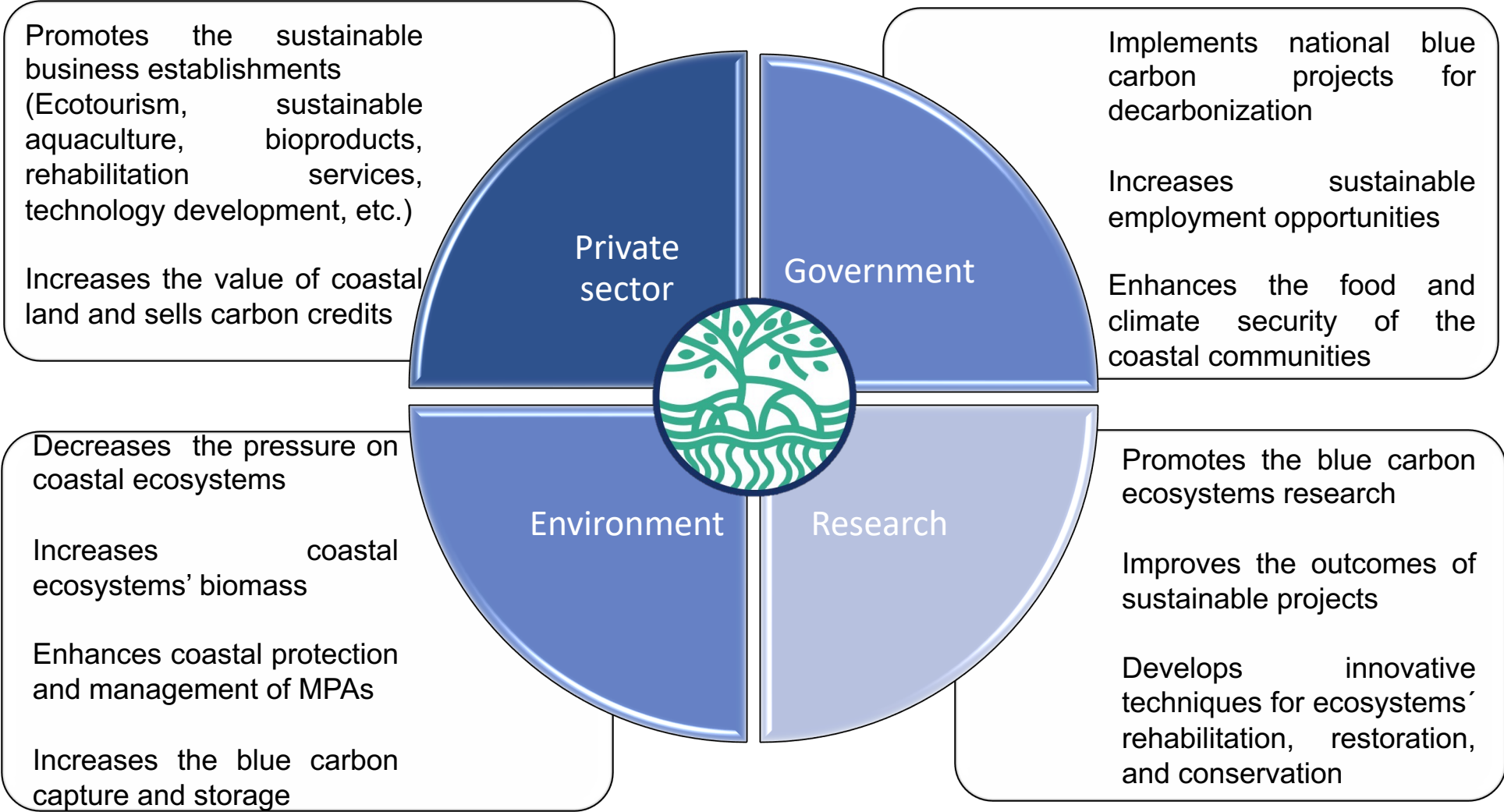


NATURE-NEGATIVE ECONOMY



CO₂ Release, Floodings, Sea Level Rise, Coastal Erosion, Typhoons Impact, Wave and Wind Impact, High Economic/Biodiversity Losses & Disaster Risk.

BOCP: Blue Carbon Economy Sectors



International BOCP Traction



SEEDCORE



RED SYCAMORE




AGUNG aquatic marine

Innovations: Net-Zero AragoReef



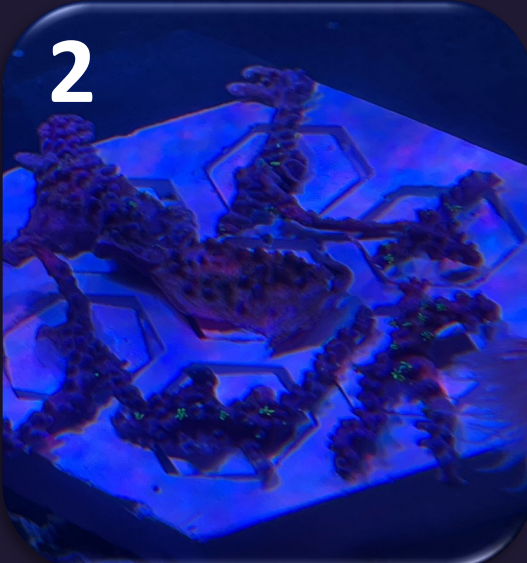
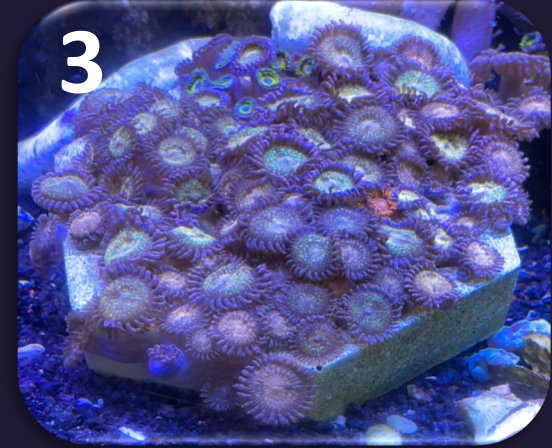
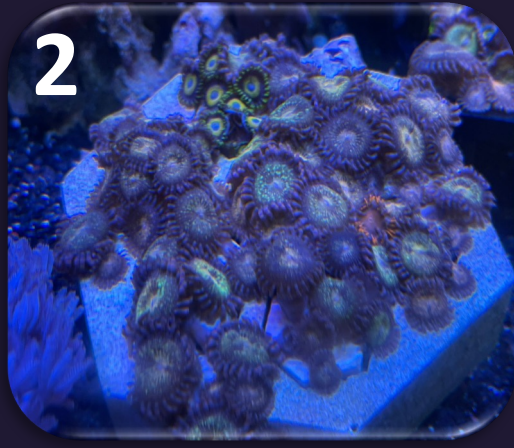
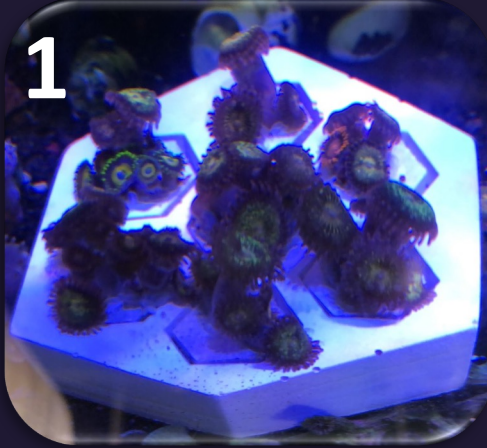
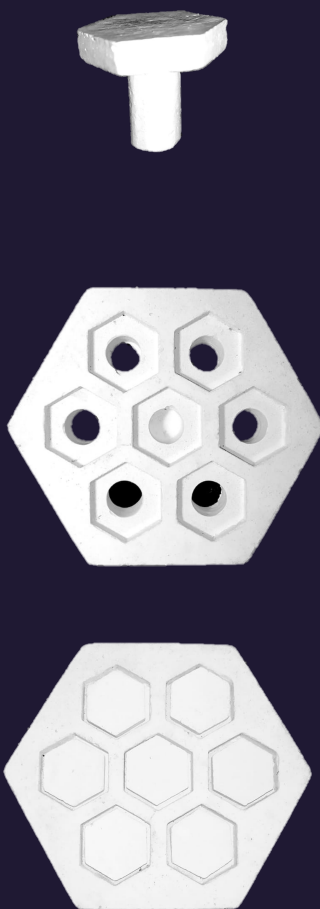
 Exclusive sustainable formulation with natural characteristics

 High content of porous aragonite, versatile, aesthetic, durable, pH buffering action

 Marine life fully colonizes the AragoReef structures after 3 months



Net-Zero CoralHive propagation system



Hard and soft corals on the Net-Zero CoralHive



Scientific validation of AragoReef in the Mesoamerican Reef System and Mexican Pacific



Scientific validation of AragoReef as a marine bio-substrate

Mexican (Zihuatanejo) vs Pacific Caribbean (Puerto Morelos)



Coral Aquaculture in the Mesoamerican Reef System





Developed hexagonal plugs and port plugs of AragoReef for coral micro-fragmentation (*Diploria spp.*, *Pseudodiploria spp.*, *Orbicella spp.*)



Net-Zero Intelligent Multi-Trophic AragoReef System (Net-Zero iMTARS)



 3-Dimensional habitats (Crustaceans, Mollusks, Algae, Corals, Seagrass, etc.)

 Modular and scalable systems (Multiple configurations)

 AragoReef 3D design and printing technology



Net-Zero iMTARS in El Meco-Cancun



Deployment and monitoring of the 3D Net-Zero iMTARS (Intelligent multitrophic AragoReef Systems) in "El Meco"



Ecotourism and biodiversity projects on corals and seagrasses



Bioarmonia in “El Meco” and “Punta Nizuc” Cancun



4 Bioarmonia modules
(28 Net-Zero iMTARS)



254 aquacultured
staghorn coral colonies
(*Acropora cervicornis*)



12 aquacultured boulder
star coral colonies
(*Orbicella* spp.)

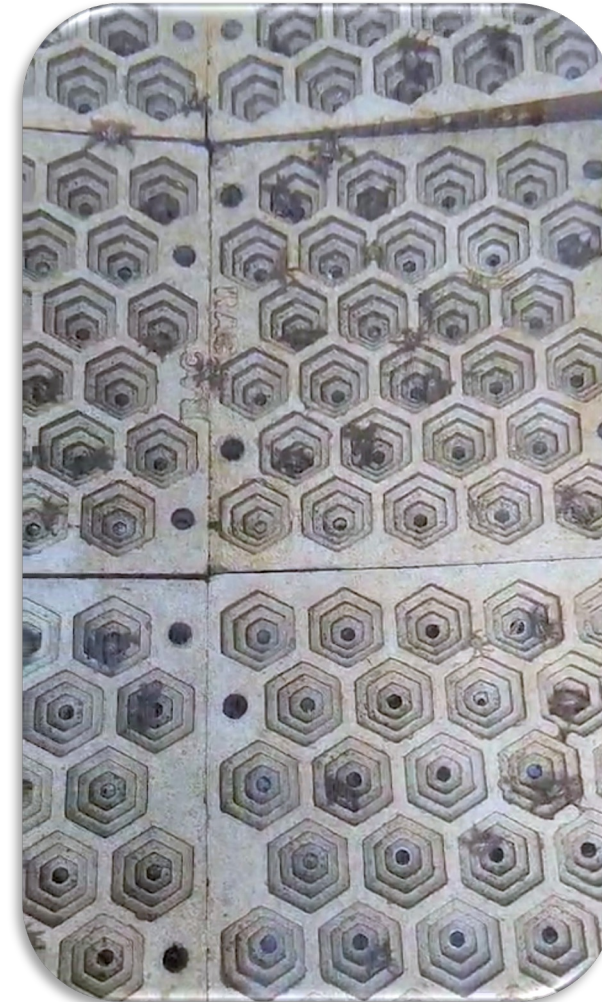


Corals against white spot syndrome (WSS)



Developed AragoReef structures to reintroduction of the massive corals affected by the WSS (*Diploria spp.*, *Pseudodiploria spp.*, y *Orbicella spp.*)

Hervivorous spiny crab aquaculture



Developed structures to enhance the culture of spiny crab (*Mithrax spinosissimus*)



Coral gardening and seagrass rehabilitation



mayakoba™
mexico



BACABES DEL MAR
Servicios profesionales

Coral gardens designed and deployed (*Acropora palmata*, *A. cervicornis*, *A. prolifera*) and seagrass bed rehabilitation (*Thalassia testudinum*, *Halodule wrightii*) for conservation/ecotourism activities



Sustainable production of biochar from sargassum seaweed



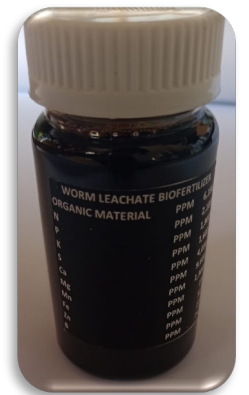
Developed an innovative and energy-efficient furnace to produce pelletized biochar



Sustainable production of biofertilizers and alternative proteins from sargassum seaweed



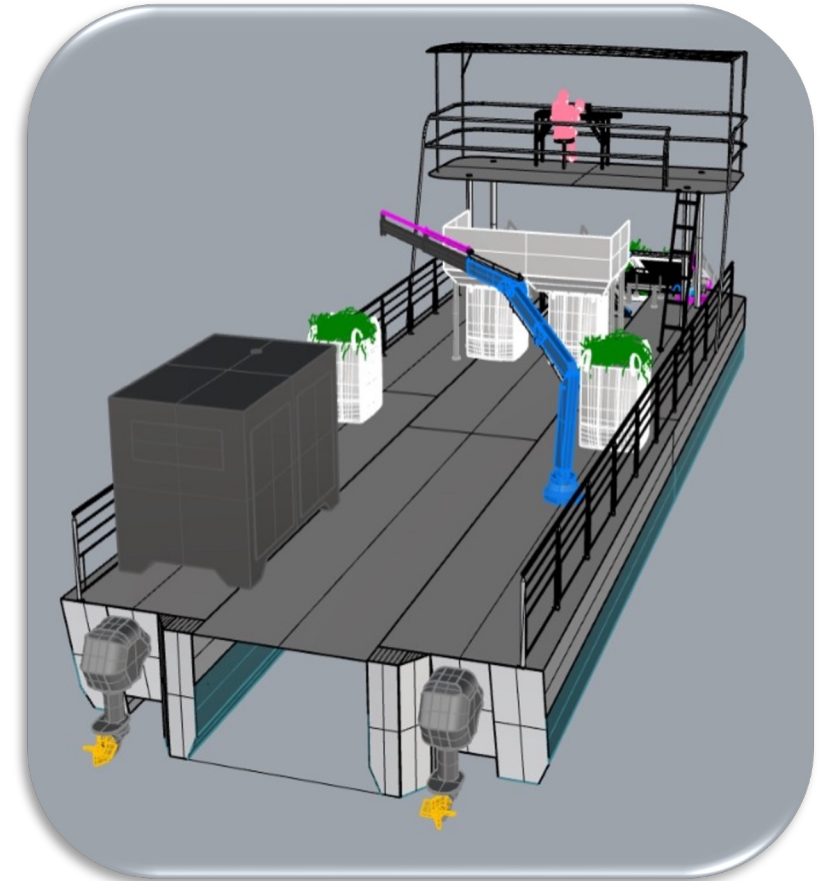
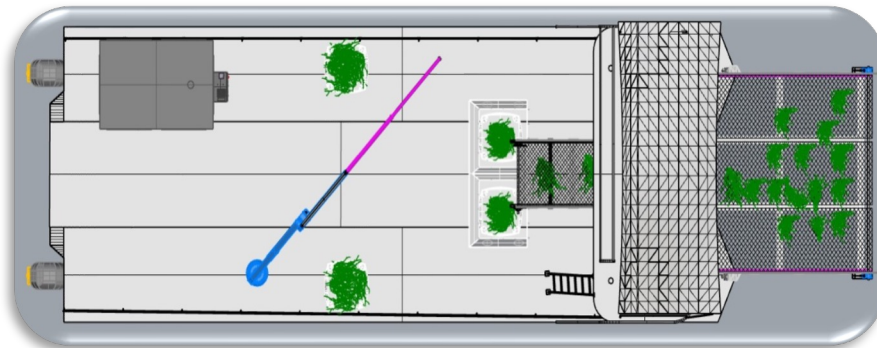
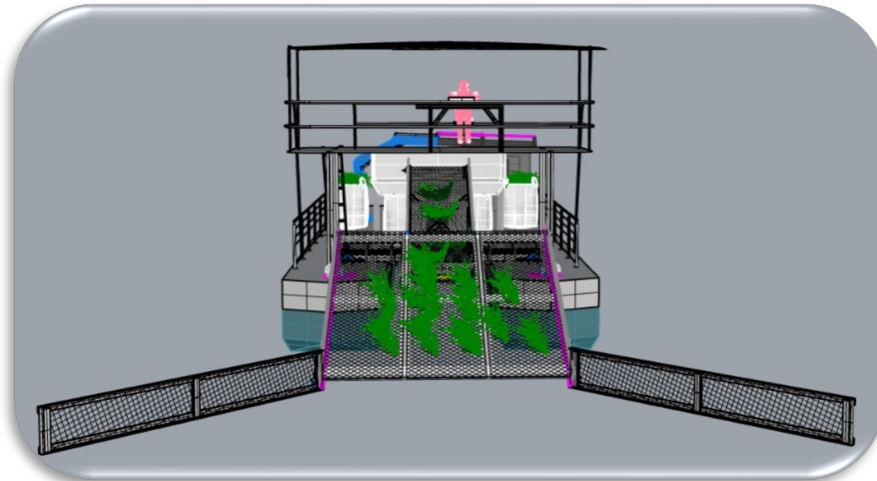
Implemented an integral management system to produce biofertilizers and alternative proteins (Black Soldier Fly and California Red Worms)



Vessel collector design for sargassum seaweed



Designed of a cost-efficient sargassum vessel collector for the Caribbean waters



A healthy planet relies on a healthy ocean

Contact

Dr. Guillermo Corona
President

e-mail: info@reefac.org

Whatsapp. (+521)4431904435

Web: www.reefac.org

