

Refocusing on STI- based Sustainable Philippine Blue Economy

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11 November 2019

Fast Facts (On the Socio-Economic Significance of the Ocean)

- ✓ 2.8 Billion people, more than 40% of the total population, live and work in coastal cities.
- ✓ 2025 – 75% of human populations will be living within
- ✓ 100 km of its coasts.
- ✓ 80% of global trade by volume is carried by the sea.
- ✓ The worldwide ocean economy is valued at US \$ 1.5 trillion per year
- ✓ 80% of global trade by volume is carried by sea

World Bank/UN 2017

PHILIPPINE FISHERY RESOURCES



Pelagic & Demersal species

- 1,645,702 MT
- P99.5 billion

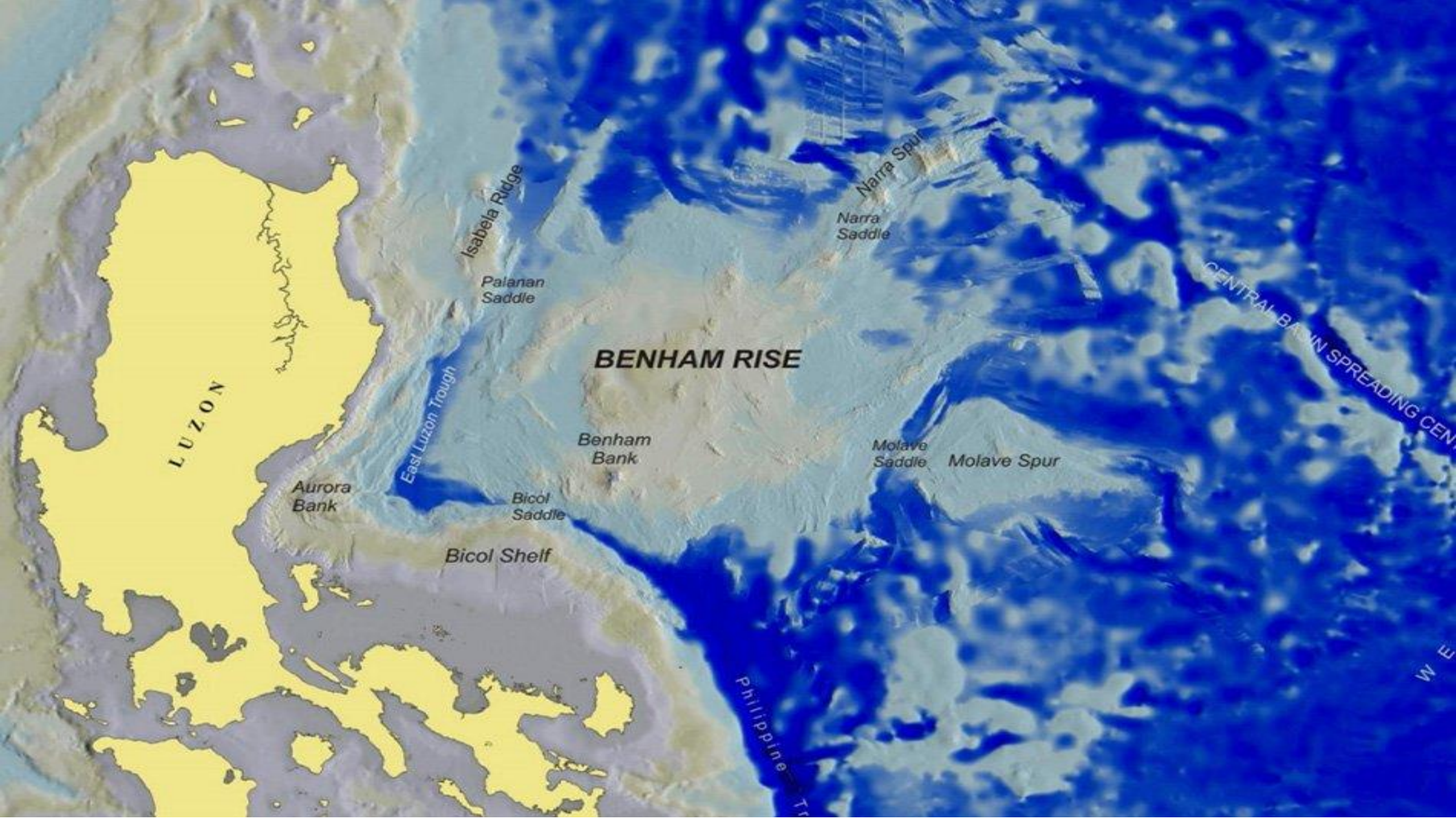
Total
2,155,371 MT
P137.8 billion

Tuna and tuna-like species (migratory fish species)

- 340,467 MT tuna; 169,203 MT tuna-like species;
- Total value: P38.3 billion

**Take care of the municipal waters...
We take care of the whole fishing industry.**

SOURCE: BFAR



Philippines' Potential

- Despite the Philippines' vast marine (living and nonliving) resources, the country has not fully sustainably harnessed their vast socio-economic potential (PEMSEA 2017, Azanza et al 2017, NAST ASM 2011, NAST ASM 2018)

“Back in 1994, the National Marine Policy or NMP was crafted by people in government who saw the great potential in our seas. This NMP was intended to serve as a broad roadmap to guide various stakeholders in the maritime community in managing the sustainable use of maritime resources for economic growth. It was also meant to improve livelihoods and to generate jobs while preserving the health of the marine ecosystem.”

**-SDES MICHAEL P. ONG (National Marine Summit
2019)**

Blue Economy

Changwon Declaration, 2012

- a practical ocean-based economic model using green infrastructure and technologies, innovative financing mechanisms, and proactive institutional arrangements for meeting the twin goals of protecting our oceans and coasts and enhancing its potential contribution to sustainable development, including improving human well-being, and reducing environmental risks and ecological scarcities.”

BLUE ECONOMY

The Blue Economy is sustainable use of ocean resources for economic growth, improved livelihoods and jobs, and ocean ecosystem health.

The Blue Economy encompasses many activities...

RENEWABLE ENERGY

Sustainable marine energy can play a vital role in social and economic development.

FISHERIES

Marine fisheries contribute more than **US\$270 billion** annually to global GDP. More sustainable fisheries can generate more revenue, more fish and help restore fish stocks.

MARITIME TRANSPORT

Over **80%** of international goods traded are transported by sea, and the volume of seaborne trade is expected to double by 2030 and quadruple by 2050.

TOURISM

Ocean and coastal tourism can bring jobs and economic growth. Coastal Least Developed Countries and Small Island Developing States receive more than **41 million visitors** per year.

CLIMATE CHANGE

The impacts of climate change on oceans—rising sea-levels, coastal erosion, changing ocean current patterns, and acidification—are staggering. At the same time, **oceans are an important carbon sink** and help mitigate climate change.

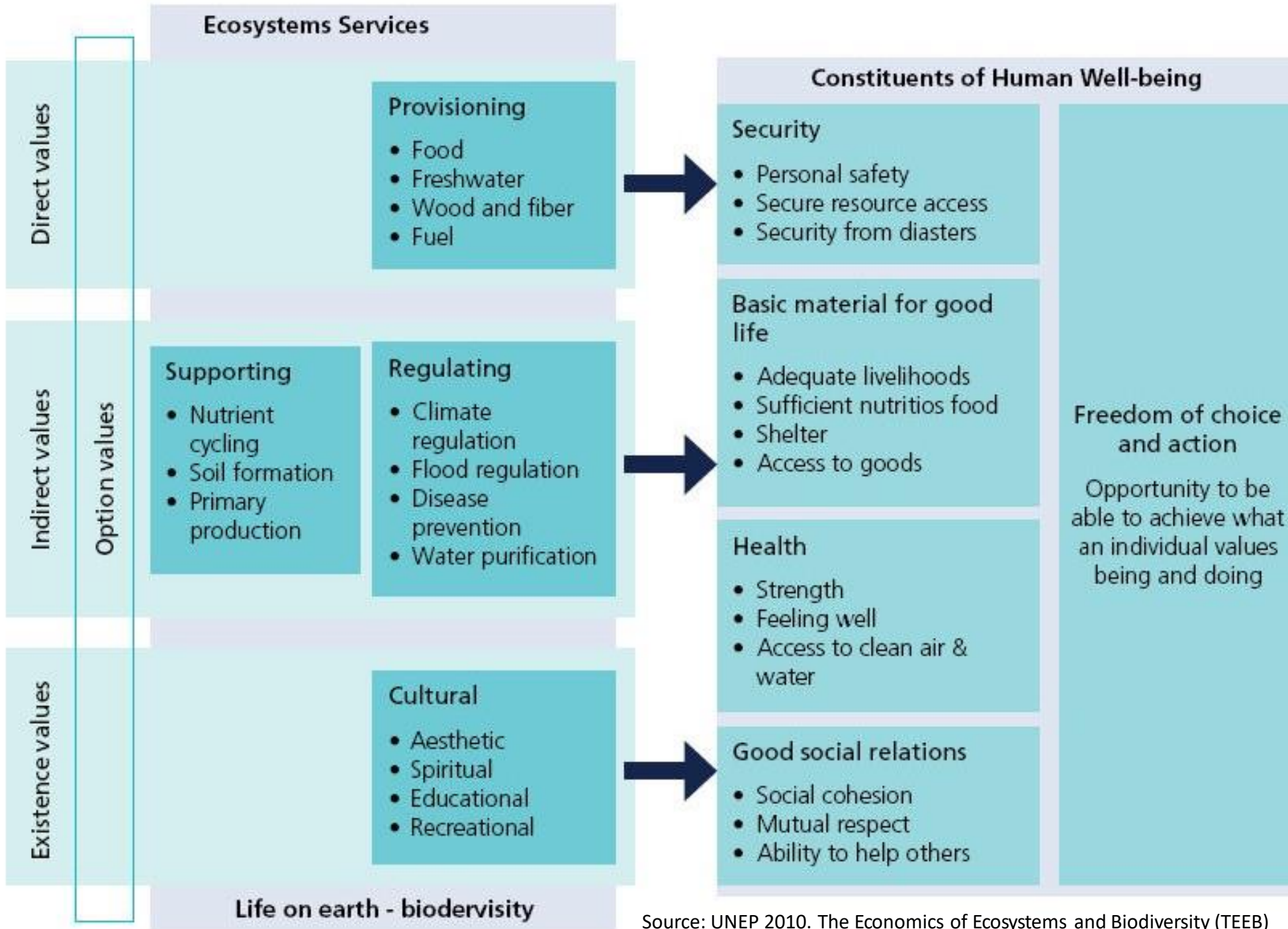
WASTE MANAGEMENT

80% of litter in the ocean is from land-based sources. Better waste management on land can help oceans recover.

Blue Economy Industries

1. Fisheries and Aquaculture
2. Ports, Shipping, and Marine Transport
3. Tourism, Resorts, and Coastal Development
4. Oil and Gas
5. Coastal Manufacturing
6. Seabed Mining
7. Renewable Energy
8. *Marine Biotechnology
9. *Marine Technology and Environmental Services

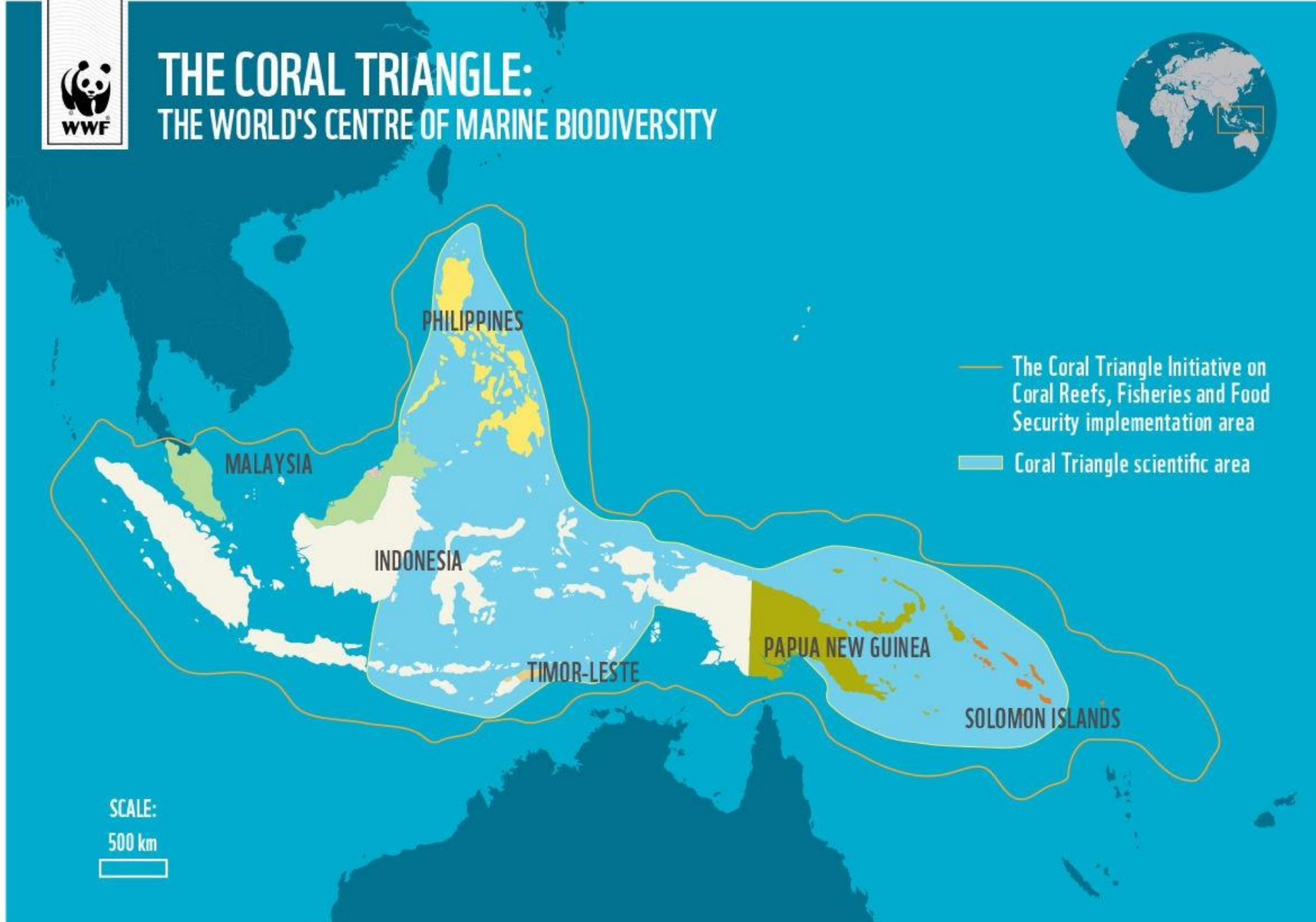
Azanza et al., 2017
PEMSEA, 2017



Ecosystem services and types of values and their contributions to human well-being



THE CORAL TRIANGLE: THE WORLD'S CENTRE OF MARINE BIODIVERSITY



Physical attributes and extent of coastal and sea areas

Attributes (km ²)	Indonesia	Malaysia	Papua New Guinea	Philippines	Solomon Islands	Timor - Leste
Total sea area	5,800,000	614,159	3,120,000	2,000,000	1,340,000	...
Total coastline	108,800	4,809	17,110	37,008	4,000	706
Total coral reef area	51,000	3,600	13,840	26,000	3,591	146
Total mangrove area	35,337	5,750	4,265	2,472*	650	18
Total seagrass area	30,000	978	100	22

* Estimated as of 2005; ... data not available

Source: Country State of the Coral Triangle reports as cited in ADB (2014)

RV Azanza, P Aliño, Cabral R, Juinio-Meñez, Pernia E, Mendoza R and C Siriban (2017). Valuing and Managing the Philippines Marine Resources Toward A Prosperous Ocean-Based Blue Economy

Blue economy of East Asian countries

1. Shandong Peninsula ,China

- first Blue Economic Zone , 2010
- GDP from marine economy rose from 8.68 to 9.65 percent from 2001 to 2012

2. Xiamen, China

- First annual host for APEC Blue Economy Forum

3. Bali and Lombok , Indonesia

- Blue Economic Zone

4. Other East Asian Countries (considering the initiative)

- Vietnam – 15 coastal economic parks

Ocean as natural capital

Provisioning

- Fish and seafood
- Medicines
- Timber; fuelwood

Supporting

- Nutrient cycling
- Habitat for species
- Genetic diversity

Regulating

- Climate regulation
- Carbon sequestration
- Shoreline protection
- Waste assimilation

Cultural

- Recreational
- Educational
- Spiritual
- Aesthetic

Country	Value of ecosystem services (US\$)
Cambodia	83.4 M
Indonesia	77 B
Malaysia	17.7 B
Philippines	17 B
RO Korea	40.5 B - 42.6 B
Thailand	36 B
Timor Leste	5.25 B



Valuation of Philippine Blue Economy

- Computed net annual benefits (in US\$) from Philippine marine ecosystem components

Marine ecosystem components	Net annual benefits per ha (US\$)	Total area (ha)	Net annual benefits
Coral reefs	2,347	2,600,000	6,102,141,278
Fisheries	1,184		
Tourism	827		
Research	50		
Carbon Sequestration	18		
Shoreline Protection	50		
Biodiversity	218		
Mangroves	973	247,200	240,451,507.54
Fisheries	13		
Mollusks/Echinoderms	26		
Nursery Role	243		
Shoreline Protection	672		
Biodiversity	19		
Seagrass	41	97,800	4,055,676.32
Fisheries	23		
Mollusks/Echinoderms	18		
Total			6,346,648,461.86

Source: RV Azanza, P Aliño, Cabral R, Juinio-Meñez, Pernia E, Mendoza R and C Siriban (2017). Valuing and Managing the Philippines Marine Resources Toward A Prosperous Ocean-Based Blue Economy

Ocean economy

- Fisheries & Aquaculture
- Oil and Gas
- Mining (Minerals)
- Energy/electric supply (ocean energy)
- Water (desalination)
- Manufacturing:
 - seafood processing,
 - marine biotechnology & pharmaceuticals, salt,
 - ship building and repair,
 - marine transport equipment
- Marine Construction
- Shipping and Ports
- Marine tourism and recreation
- Public/Government
- Marine communications (submarine cables)
- Marine education and research
- Marine services (mapping, monitoring, consulting, insurance, etc.)

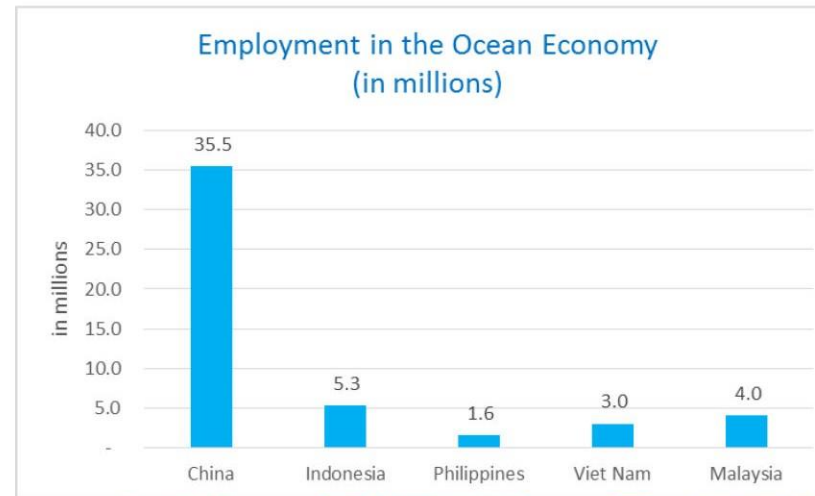
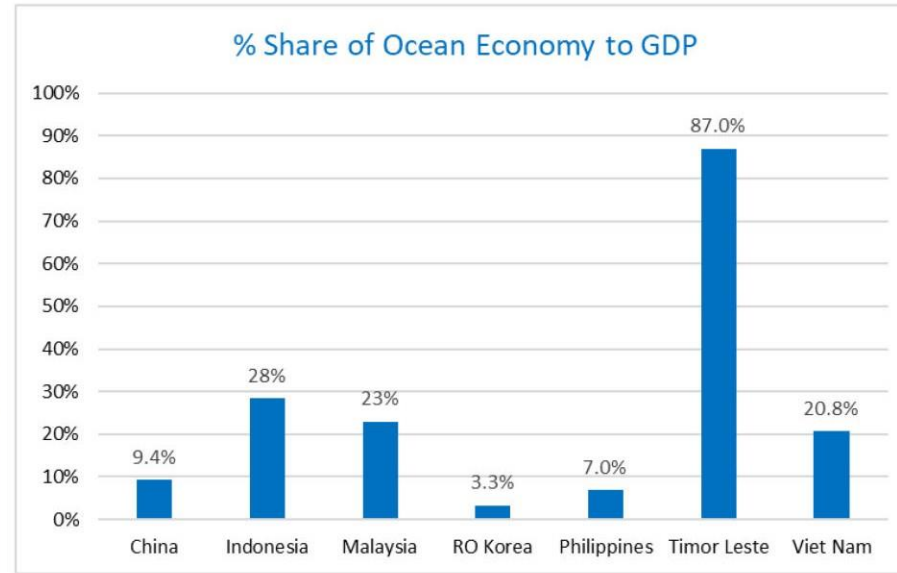


Table 1. Preliminary estimates of maritime sector's contribution to economy, 2012.

Sector	Value added (Php millions)	Total employed
Fishing	170,330.000	1,461,000
Manufacturing	14,069.162	34,328
Processing and preserving of fish and fish products and other seafoods	6,359.367	27,938
Building and repairing of ships and boats	7,709.795	6,390
Transport, Storage, and Communication	25,991.136	30,384
Ocean passenger transport	4,302.751	1,248
Ocean freight transport		
Interisland water passenger transport	5,100.088	8,388
Interisland water freight transport	4,627.895	4,630
Supporting and auxiliary activities to water transport	11,960.402	16,118
Total	210,390.298	1,525,712
Gross Domestic Product	8,026,143	
Total Employed Labor Force		35,061,000
Percent of GDP/ Percent of Labor Force	2.62	4.35

Source: NSCB, NSO (2010), NSO (2012) and Bureau of Labor Employment Statistics (2012), compiled by Azanza, et.al, (2017), 6.

Table 2. Value of Major Fishery Exports by Kind, 2013- 2015, in thousand PHP.

Product	2013	2014	2015
Tuna	26,959,623	19,597,882	13,521,026
Shrimps & Prawns	5,951,581	5,294,856	1,606,011
Seaweeds	9,745,750	11,687,900	9,245,231
Octopus	325,495	1,124,110	410,654
Crab, Crab Fat, and Crab Meat	3,608,937	5,881,136	5,070,842
Grouper, Live	1,611,735	No data	2,094,256
Squid and Cuttlefish	709,285	842,811	614,726
Ornamental fish, Live	262,404	266,928	260,568
Roundscad	39,129	13,205	30,966
Sea Cucumber, Dried	88,119	2,579	179,039

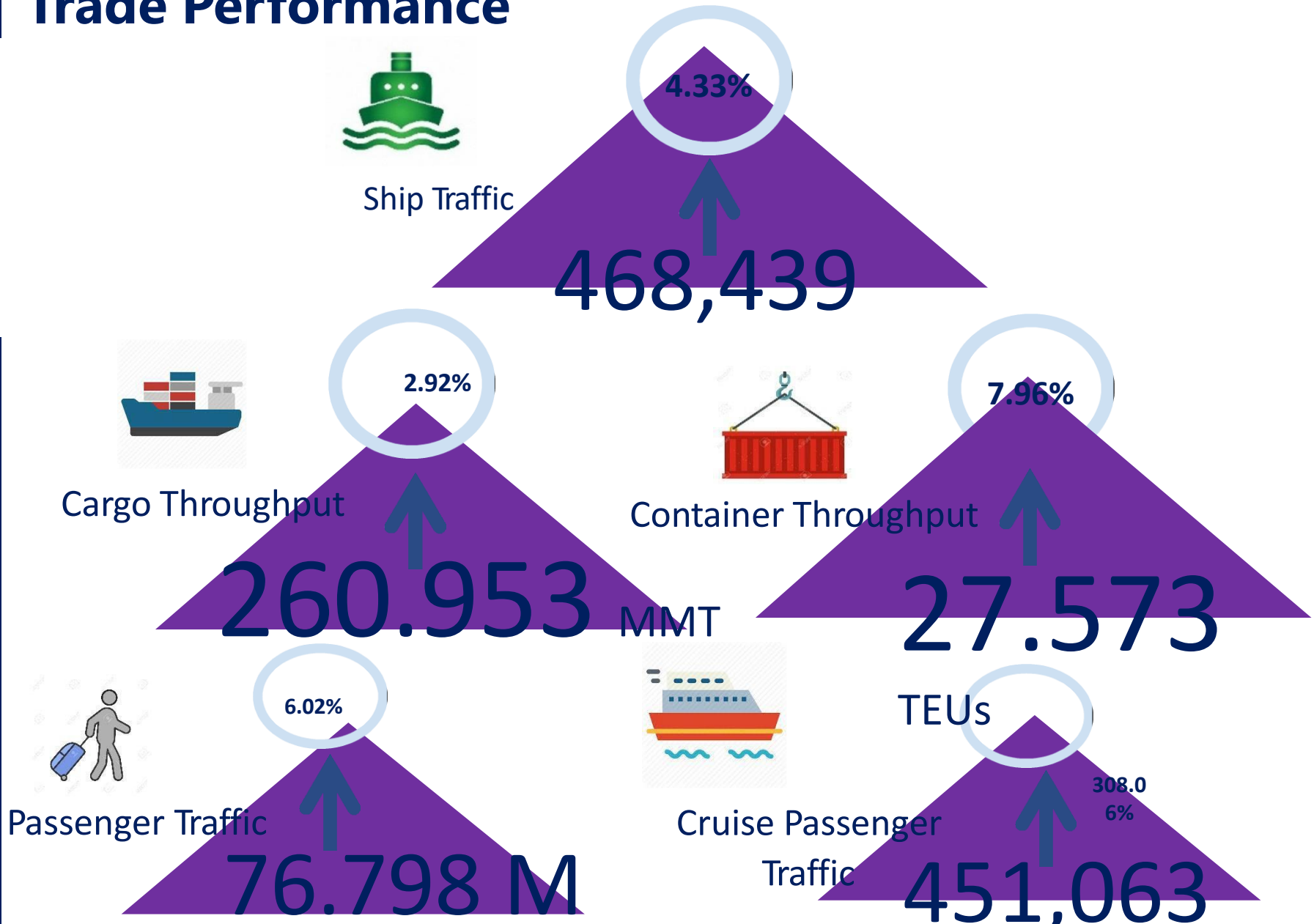
Source: Philippine Statistics Authority (2016b).

From Mendoza and Siriban, 2018

IMPACT ON THE PHILIPPINE ECONOMY

Shipping and Trade Performance

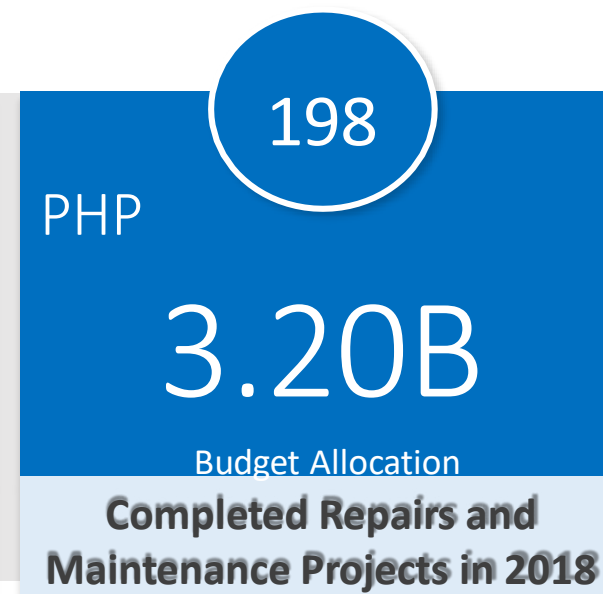
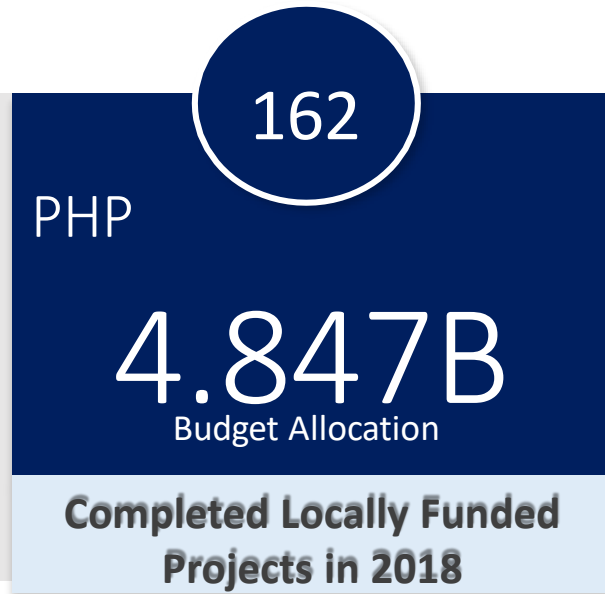
Source: Philippine Port Authority



PPA affirms to sustain its momentum and remain committed to facilitating the movement of goods and people that support the country's economic growth

BUILDING WORLD CLASS-PORTS

Through its consistent and sustained efforts, PPA hopes to further create economic and social value with its port infrastructure, and achieve international standards in port facilities.



Source: Philippine Port Authority

Historical Developments of POESA

2018: A consultative forum was conducted by PSA to solicit comments from data providers and stakeholders for the improvement of the Philippine Ocean Economy Satellite Accounts estimates.



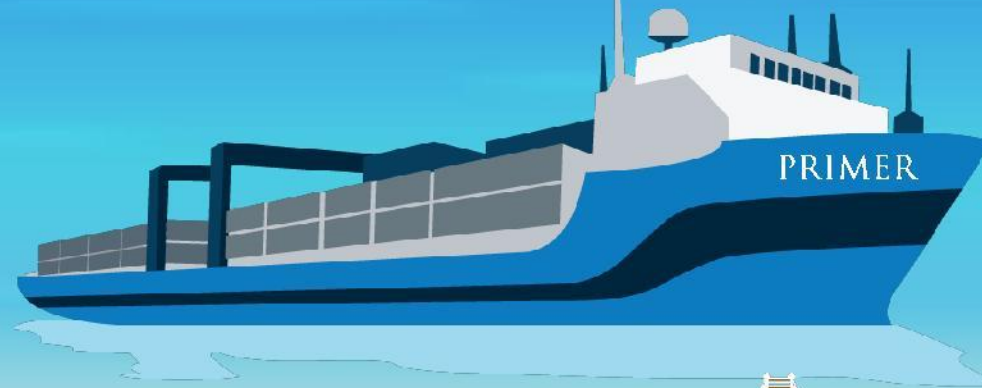
2017: The PSA generated a time series on the contribution of the ocean-based industries to the Philippine economy covering the period 2012 to 2016. These estimates were presented to the Blue Economy Forum in Bangkok, Thailand.

2015: Estimates on the contribution of the ocean-based industries to the Philippine economy were presented by the PSA to the East Asia Sea Congress in Vietnam. The estimates covered the year 2012.

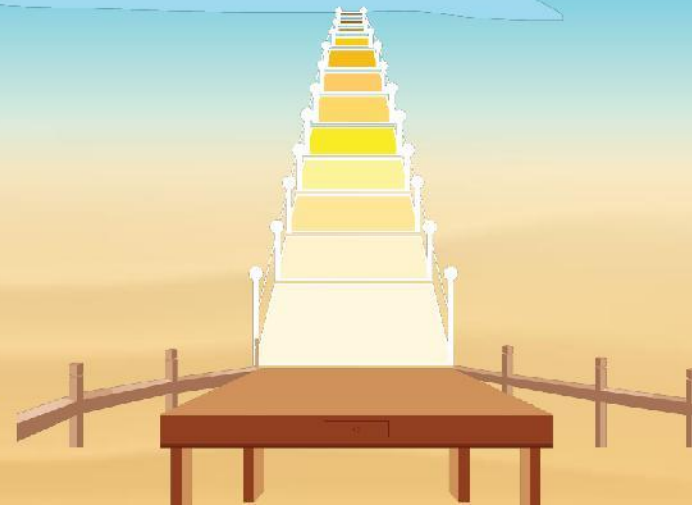


2010: A proposal for a "Maritime Satellite Accounts" was presented to the 11th National Convention on Statistics. The study measured the contribution of ocean-based industries to the Philippine economy.

2009: The National Statistical Coordination Board produced the estimates of revenues from ocean-based industries in the Philippine economy. Results were presented at the 2009 East Asia Seas Congress.



PHILIPPINE OCEAN ECONOMY SATELLITE ACCOUNTS



For further inquiries, write, call, or visit:
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What is the Ocean Economy?

It refers to the economic activities that take place in the ocean, conducted near the ocean, receive outputs from the ocean and provide inputs to the ocean.

What are the industries under the Ocean Economy?



Ocean Fishing industry covers fishing on open seas and sea-based aquaculture.



Offshore and Coastal Mining industry covers the offshore oil and gas extraction activities, as well as the mining of salt.



Manufacture of Ocean-Based Products industry covers the manufacture of sea-based food products, ship building, and the manufacture of machineries and equipment for shipping.



Coastal Construction industry covers the construction of seaports, lighthouses, and other structures aiding in maritime travels.



Ocean-Based Power Generation industry covers the power generation from coastal windfarms and natural gas-fired power plants.

What are the industries under the Ocean Economy? (cont'd)?

Sea-Based Transportation industry covers ocean transport and inter-island water transport. It also covers ocean-based shipping, coastal warehousing activities and port operations.



Marine Insurance industry covers the insurance of ships, passenger of maritime transports, and insurance of freight.

Marine Renting and Business Activities industry covers the renting of boats, ocean-based equipment and professional activities related to the ocean such as marine research.



Maritime Safety, Surveillance and Resource Management covers the government services aimed at the management, protection, utilization and preservation of marine and coastal resources.



Maritime Education industry covers the value of output of maritime higher education institutions.

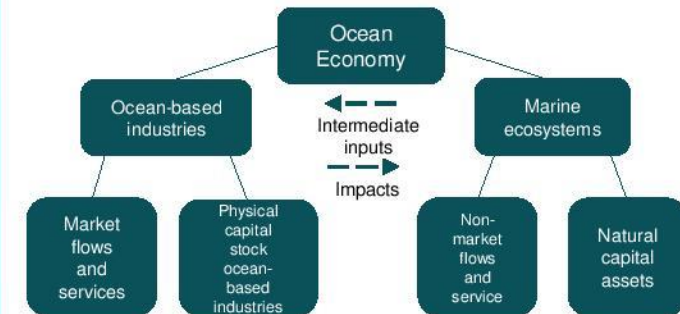


Recreation industry covers the sea-based and coastal recreation service activities.



Coastal Hotels industry covers the services for coastal hotels and resorts.

What are the components of the Ocean Economy?



Reference:
OECD's 2016 report *The Ocean Economy in 2030*
Organisation for Economic Co-operation and Development: <http://www.oecd.org/>

What are the data sources?



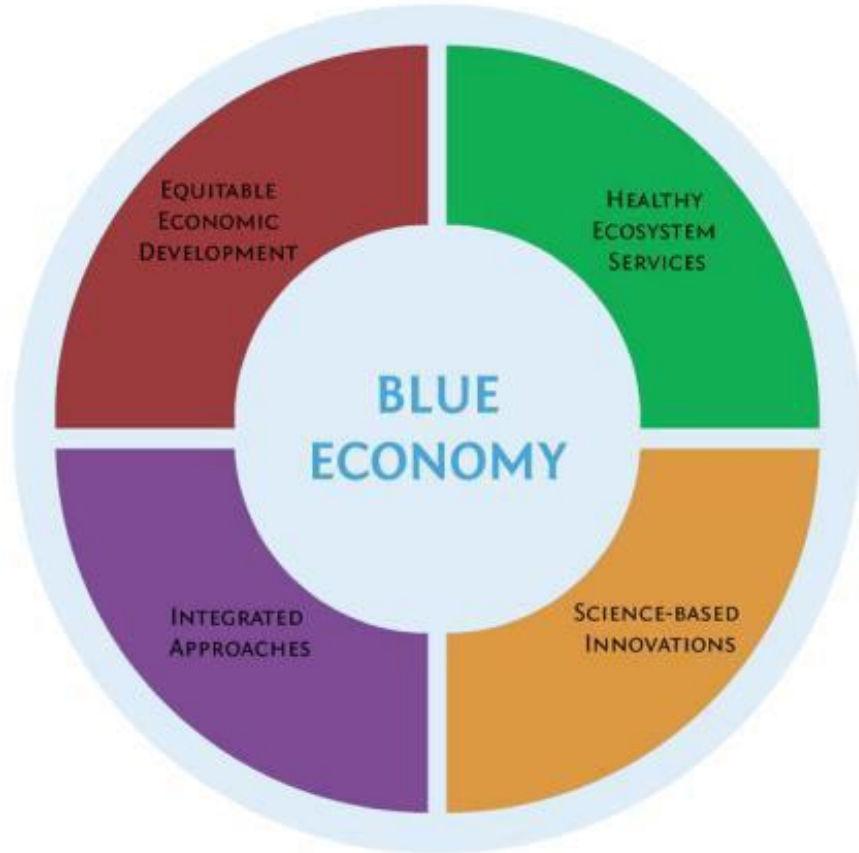
Elements of a blue economy

Four key elements present in coastal and marine economic activity that can be considered blue economy:

1. Protects, restores and sustains healthy coastal and marine ecosystem services;
2. Generates sustainable, equitable economic benefit and inclusive growth;
3. Integrates approaches between multiple industries and government; and
4. Innovates, informed by the best available science

PEMSEA, 2017

Azanza et al., 2017



Hazards and Risks

- **Primary threats to the sustainability of marine ecosystems in Blue Economy:**
 - Climate Change impacts
 - Unsustainable coastal development (physical, leading to other hazards)
 - Excessive nutrient input and pollution (chemical, anthropogenic)
 - Sedimentation
 - Overfishing
 - Illegal/unreported and unregulated (IUU) fishing/ invasive species

Cabral et al. 2015, Azanza et al. 2017

Initiatives should include valuation and management of hazards and risks:

- Integrated and sustainable ecotourism
- Mitigating and abating pollution from agriculture, industry, shipping etc..
- Disaster risk reduction and climate change adaptation
- Enhanced research and development for alternative energy and marine biotechnology

Source: Cabral et al. 2015, Azanza et al. (2017)

Philippine National Initiatives and Regional Cooperation for Ocean Management and Sustainable Blue Economy

- ecosystem approach to fisheries management,
- investment in technology for sustainable and efficient fisheries and aquaculture,
- professionalizing fisheries,
- community-level compensation mechanisms,
- advocating for a “blue” solution for consumption and production
- marine spatial planning and good governance

Marine Spatial Planning and Use

1. Mapping of the coastal and marine ecosystem
2. ID and valuation of ecosystem products and services
3. Robust assessment of ecological and economic linkages
4. Policy and institutional arrangement that affect such relationship (more studies on provisioning than on regulatory and supporting services)

Source: Azanza et al 2017, PEMSEA 2017

Philippine Blue Economy Framework (Institutionalization)

1. Valuation of natural capital i.e. marine ecosystem services and goods (provisioning supporting and regulatory functions)
2. Reinvest portion of benefits from the blue economy to ensure resiliency and sustainability of ecosystem (a prerequisite to” the right to fish”)
3. Partnerships for capacity building , infrastructure development
4. Institutionalize and increase support for the Philippine Navy and Coast guard –in relation to monitoring ,management,national security
5. Climate change commission and HEIs in activities for “ de-risking the resource base” which is good for the blue economy

The Philippines' and ASEAN's Future Direction

- Countries develop/adopt approaches accounting systems for marine ecosystem services for relevant policies/guidelines
- Wealth Accounting and Valuation of Ecosystem Services (WAVES) . UN Statistical Commission's System of Environmental and Economic Accounting (SEEA)
- Cooperation/Collaboration on monitoring /management of adjacent seas (Hazard and Risks)
- Cross border regional cooperation towards national/regional marine/blue economy



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ASIA AND THE PACIFIC

Sustainability Initiative in the Marginal Seas of South and East Asia (SIMSEA)

A project developed in Asia to meet the requirement for transformative change towards global sustainability



www.simseaasiapacific.org

Summary/ Way Forward

- a strategic archipelagic framework and a pragmatic international cooperation needed to enhance benefits within and beyond its areas of national jurisdiction
- Valuation and management of opportunities and risks institutionalized
- Primary Benefits for:
 - a) Resiliency and sustainability of the coastal & marine ecosystems
 - b) Equitability of benefits for the Filipino people

National Marine Summit

➤ *Resolutions and Recommendations*



Resolutions

- Harnessing better inter-agency mechanism for all Marine Science Research (MSR) ;harmonize efforts for interagency cooperation whole government approach
- Pursue robust and strengthened MSR Regions (National Research Academic Fleet) – state of the art equipment
- Legislative support and budgetary requirements UPMSI , NIGS, DOE research vessels

(Sec. Esperon , National Security Council)

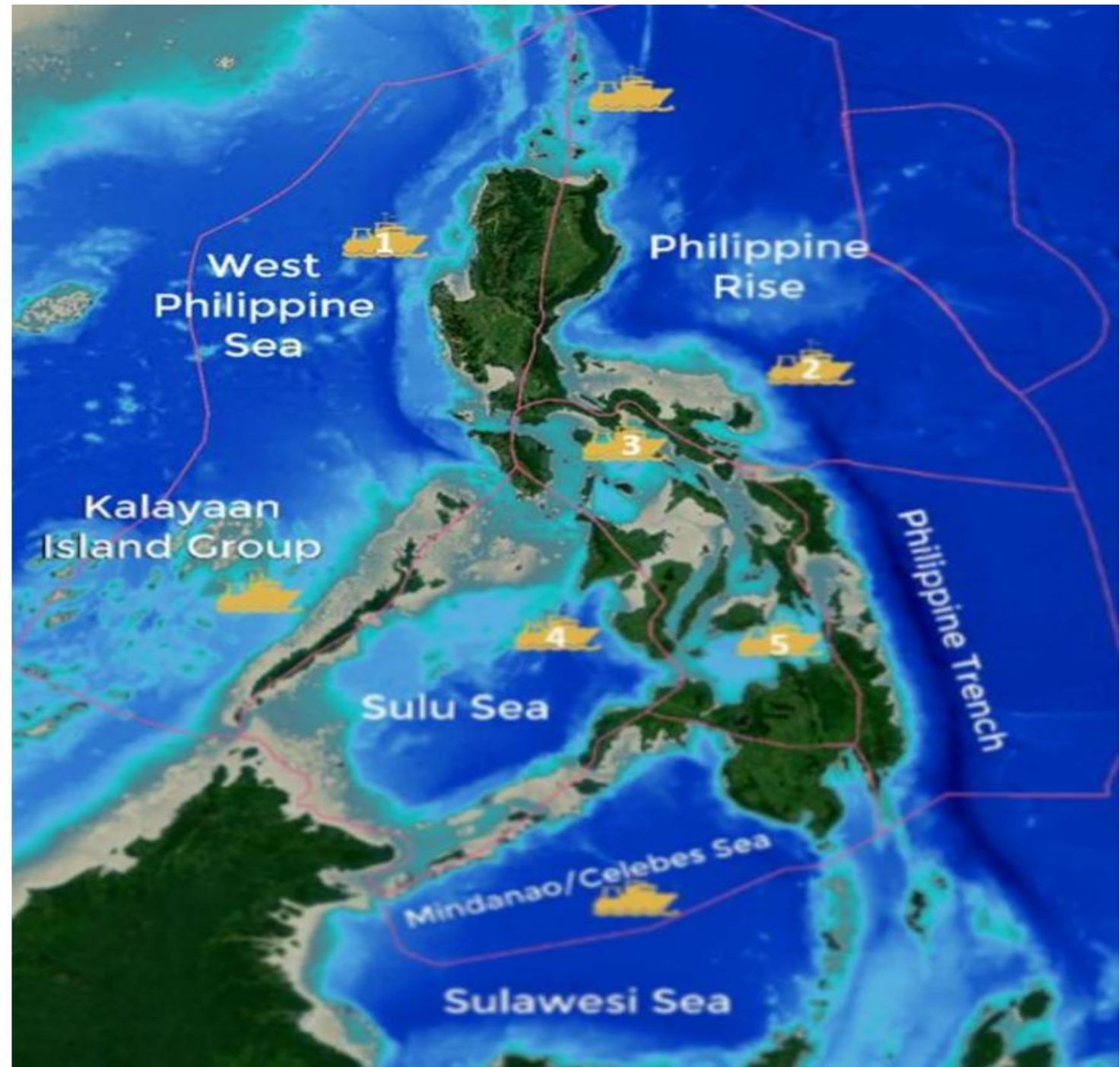
Support Infrastructure

Macrocosm tank laboratory

Marine Technology Testing Center

Marine Biotech/Chemistry labs

Biodiversity research museums



Advancing Integrated Coastal Management for Human Well-being in the Verde Island Passage

Enrique A. Nunez, Jr
Country Executive Director
National Marine Summit
October 29, 2019 Manila Hotel

Highlands to Oceans development strategy

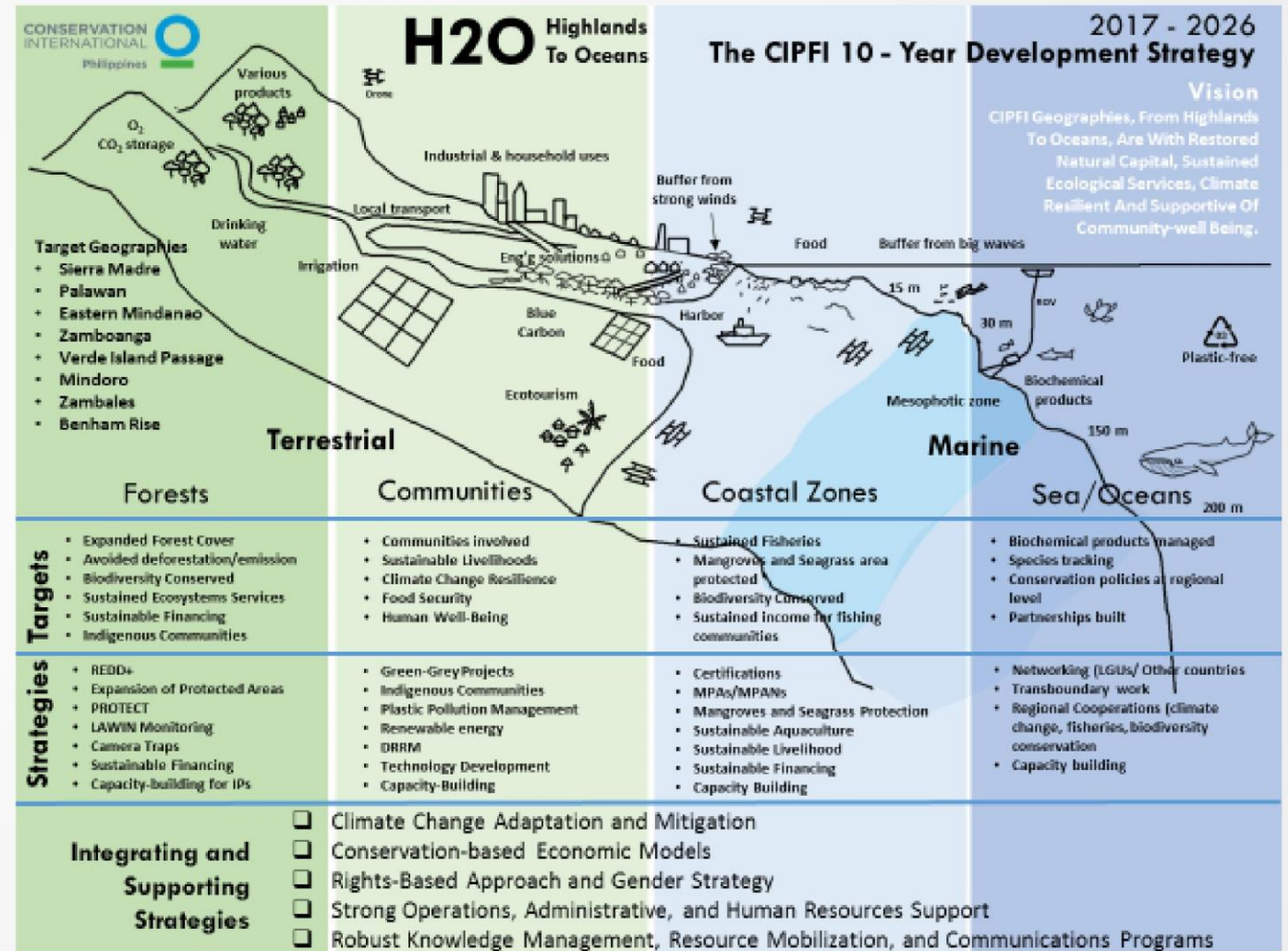
PROGRAMS:

Terrestrial

Marine

Climate change

Transboundary



Coasts and Oceans

- A Refocus for Sustainable Development
- Science and Technology –Anchored
PHILIPPINE BLUE ECONOMY



Thank You!

Development/transition to a blue economy include the following:

- ✓ An assessment of the value of marine resources and their corresponding ecosystem services
- ✓ Increased reliance on evidence-based decision making
- ✓ A framework for ecosystem-based management
- ✓ Improved governance to grow a blue economy
- ✓ New data that can influence decision makers and stakeholders
- ✓ Broad and resilient partnerships for coordination and collaboration of blue economy projects and initiatives
- ✓ Innovative financing to direct investments into economic activities that can enhance ocean health indicators to measure and track progress