



**TECHNICAL NOTES**  
**Philippine Ocean Economy Satellite Accounts (POESA)**

**I. Introduction**

The Philippines is an archipelago situated in Southeast Asia between Taiwan in the north and by Indonesia and Malaysia in the south. It comprised of about 7,100 islands with an Exclusive Economic Zone of about 2.2 million square kilometers (km<sup>2</sup>), 266,000 km<sup>2</sup> of which are coastal or municipal waters. Out of 1,500 municipalities and 117 cities in the country, 832 (55.47%) and 57 (48.72%), respectively, are situated along the coast. Moreover, 64 (81.01%) out of 79 provinces likewise have coastal domains.

In response to the global initiatives and the demands of policy makers in the country, several efforts had been made to estimate the contribution of ocean-based industries to the Philippine economy. The initial efforts on the compilation of the Philippine Ocean Economy were undertaken by the National Statistical Coordination Board (NSCB). The NSCB team compiled estimates on the revenues of ocean-based industries. These estimates were presented during the *2009 East Asian Seas Congress* which underscored the importance of the maritime sector in the socio-economic development of Southeast Asia.

The NSCB presented to the *11<sup>th</sup> National Convention on Statistics* in 2010 a paper titled “*Towards a Satellite Account on the Maritime Sector in the Philippine System of National Accounts: Preliminary Estimates.*” Covering the period 2003 to 2006, the said paper presented estimates of gross output, intermediate consumption, gross value added, and employment (local and overseas) of the maritime sector.

In 2015, the Philippine Statistics Authority (PSA) presented to *East Asia Sea Congress* in Vietnam the 2012 updates on the contribution of ocean-related industries to the Philippine economy in terms of gross output, intermediate consumption, and gross value added of ocean-related industries. Further updates on the estimates were presented during the *Blue Economy Forum* in Thailand in 2017. This exercise, however, expanded the coverage of the ocean sector to include services such as financial intermediation, education, hotel and accommodation, and recreational activities. In the following year, PSA conducted a consultative forum to present the scope and coverage and methodology of the Philippine Ocean Economy Satellite Accounts and to solicit comments from data providers and stakeholders.

During the *14<sup>th</sup> National Convention on Statistics* in 2019, PSA presented a paper titled, “*Measuring the Ocean Economy: Towards the compilation of the Philippine Ocean Economy Satellite Accounts (POESA).*” This paper exhibited the provisional estimates of POESA in 2012 to 2018. After the said event, PSA updated and compiled the 2019 estimates. For the first time, on 25 October 2019, POESA estimates were shared to the public on the PSA website. However, until an international framework is approved for adoption, the current estimates remain experimental which needs regular reviewing and updating.

## II. Scope and Coverage

Industry	Description	Scope and Coverage
<b>A – Agriculture, Forestry and Fishing</b>		
1) Ocean Fishing	Fishing on open seas and sea-based aquaculture	<ul style="list-style-type: none"> <li>● Commercial</li> <li>● Marine Municipal</li> <li>● Marine Aquaculture               <ul style="list-style-type: none"> <li>- Brackish water fishpond</li> <li>- Brackish water fish pen</li> <li>- Brackish water fish cage</li> <li>- Marine fish pen</li> <li>- Marine fish cage</li> <li>- Oyster farm</li> <li>- Mussel farm</li> <li>- Seaweed farm</li> </ul> </li> </ul>
<b>B – Mining and Quarrying</b>		
2) Offshore and Coastal Mining and Quarrying	Offshore oil and gas extraction activities; offshore and coastal stone, sand, and clay quarrying; and mining of salt	<ul style="list-style-type: none"> <li>● Offshore extraction of crude petroleum</li> <li>● Offshore extraction of natural gas</li> <li>● Offshore stone, clay, and sand quarrying</li> <li>● Extraction of salt</li> </ul>
<b>C – Manufacturing</b>		
3) Manufacture of Ocean-based products	Manufacture of sea-based food products; manufacture and repair of boat and ship building; manufacture of machineries and equipment for shipping; and manufacture of cordage, rope, twine and netting, chemicals, and pharmaceuticals for ocean-based activities	<ul style="list-style-type: none"> <li>● Canning/ packing of fish and other marine products</li> <li>● Drying of fish and other marine products</li> <li>● Smoking of fish and other marine products</li> <li>● Manufacture of fish paste (bagoong) and fish sauce (patis)</li> <li>● Processing of seaweeds; manufacture of agar-agar or carrageenan</li> <li>● Production of fishmeal/ prawn feeds</li> <li>● Manufacture of unprepared animal feeds from fish, crustaceans and mollusks, and other aquatic animals</li> <li>● Processing, preserving, and canning of fish, crustaceans, and mollusks, n.e.c.</li> </ul>

Industry	Description	Scope and Coverage
Manufacture of Ocean-based products ( <i>cont'd</i> )		<ul style="list-style-type: none"> <li>● Manufacture of fishball, etc.</li> <li>● Manufacture of engines and turbines for marine propulsion</li> <li>● Building of ships and boats other than sports and pleasure boats</li> <li>● Manufacture of floating or submersible drilling platforms</li> <li>● Manufacture of inflatable rafts</li> <li>● Manufacture of metal sections for ships and barges</li> <li>● Manufacture of inflatable boats</li> <li>● Manufacture of other pleasure and sporting boats, n.e.c.</li> <li>● Manufacture of fishing nets and other nettings, (excluding mosquito and hairnets)</li> <li>● Manufacture of cordage, rope and twine</li> <li>● Manufacture of products of cordage, rope and twine products</li> <li>● Manufacture of chemical and chemical products</li> <li>● Manufacture of basic pharmaceutical products and pharmaceutical preparations</li> <li>● Repairing of ships and boats other than sports and pleasure boats</li> <li>● Repair of transport equipment, except motor vehicles, n.e.c.</li> </ul>
<b>D – Electricity, Gas, Steam and Air Conditioning Supply</b>		

Industry	Description	Scope and Coverage
4) Ocean-based Power Generation, Transmission, and Distribution	Power generation, transmission and distribution from coastal windfarms and natural gas-fired power plants	<ul style="list-style-type: none"> <li>● Power generation, transmission, and distribution from onshore wind power plants</li> <li>● Power generation, transmission, and distribution from natural gas power plants</li> </ul>
<b>F – Construction</b>		
5) Coastal Construction	Construction of structures related to and near the ocean which contributes to economic activity in the area such as seaports, lighthouses, hotels, etc.	<ul style="list-style-type: none"> <li>● Construction of seaports and other structures related to and near the ocean of the National Government (NG), Government-owned and Controlled Corporation (GOCC), and Local Government Unit (LG)</li> <li>● Construction of hotels and other structures in all coastal areas nationwide</li> </ul>
<b>G – Wholesale and Retail Trade, Repair of Motor Vehicles and Motorcycles</b>		
6) Marine equipment wholesale and retail	Wholesale of other marine machinery and equipment and other retail sale of new goods in specialized stores	<ul style="list-style-type: none"> <li>● Wholesale of industrial machinery and equipment</li> <li>● Wholesale of professional and scientific and measuring and controlling equipment</li> <li>● Wholesale of transport equipment and supplies, except land motor vehicles, motorcycles and bicycles</li> <li>● Other retail sale of new goods in specialized stores</li> </ul>
<b>H – Transportation and Storage</b>		
7) Sea-based Transportation and Storage	Ocean transport and inter-island water transport; and ocean-based shipping and port operations	<ul style="list-style-type: none"> <li>● Ocean passenger transport</li> <li>● Inter-island water passenger transport</li> <li>● Renting of ship with operator</li> <li>● Ocean freight transport</li> <li>● Inter-island water freight transport</li> </ul>

Industry	Description	Scope and Coverage
		<ul style="list-style-type: none"> <li>● Towing and pushing services on coastal and transoceanic waters</li> <li>● Freight forwarding services and terminal facilities</li> <li>● Logistics services</li> <li>● Service activities incidental to water transportation</li> <li>● Cargo handling auxiliary activity to water transport</li> <li>● Customs brokerage (ship)</li> </ul>
<b>I – Accommodation and Food Service Activities</b>		
8) Coastal Accommodation	Covers the services for coastal hotels and resorts	Identified beach destinations from the main list of the Department of Tourism (DOT)
<b>J – Information and Communication</b>		
9) Marine Information Services	Covers data processing, hosting, and related activities	Data processing, hosting, and related activities
<b>K – Financial and Insurance Activities</b>		
10) Marine Insurance	Insurance of ships, passenger of maritime transports, and insurance of freight	Marine insurance
<b>M – Professional, Scientific and Technical Activities</b>		
11) Marine Renting and Business Activities	Marine research	Research and development in natural sciences
<b>N – Administrative and Support Service Activities</b>		
12) Marine Renting and Business Activities	Renting of boats, ocean-based equipment, travel agency, tour operator service, and reservation activities	<ul style="list-style-type: none"> <li>● Renting of water transport equipment</li> <li>● Renting of pleasure boats, canoes, and sailboats</li> <li>● Travel agency, tour operator, reservation service and related activities</li> </ul>
<b>O – Public Administration and Defense; Compulsory Social Security</b>		
13) Maritime Safety, Surveillance, and Resource Management	Government services aimed at the management, protection, utilization, and preservation of marine and coastal resources	<ul style="list-style-type: none"> <li>● Bureau of Fisheries and Aquatic Resources</li> <li>● Philippine Council for Agriculture and Fisheries</li> <li>● Philippine Fisheries Development Authority</li> <li>● National Marine Polytechnic</li> </ul>

Industry	Description	Scope and Coverage
		<ul style="list-style-type: none"> <li>● Philippine Navy (Naval Forces)</li> <li>● Maritime Industry Authority</li> <li>● Office for Transportation Security</li> <li>● Philippine Coast Guard</li> <li>● Department of Environment and Natural Resources, Office of the Secretary (Management of Marine and Coastal resources)</li> <li>● National Mapping and Resource Information Authority</li> <li>● Palawan Council for Sustainable Development</li> </ul>
<b>P – Education</b>		
14) Maritime Education	Covers public and private maritime higher education institutions (HEIs)	<ul style="list-style-type: none"> <li>● Maritime schools</li> </ul>
<b>R – Arts, Entertainment and Recreation</b>		
15) Coastal Recreation	Covers the sea-based and coastal recreation service activities	<ul style="list-style-type: none"> <li>● Identified beach destinations from the main list of the DOT</li> </ul>

### III. Provisional measurement framework

The estimation methodology for POESA employs the Production Accounts from the 2008 System of National Accounts (SNA) as the measurement framework. This approach has several key advantages: removes the danger of double counting, provides a meaningful basis for comparison across industries, and simplifies the analysis of the estimates.

*Gross Value Added (GVA) of Ocean-based Activities*

$$= \sum_i [ \text{Gross Output}_i - \text{Intermediate Input}_i ]$$

where *i* is the index of each ocean-based industry

Gross Value Added (GVA), as defined in the SNA, is “the value of output less the value of intermediate consumption.” The Ocean Economy, in this context, is defined as the sum of the GVA of Ocean-based industries.

#### IV. POESA configuration

##### I. AGRICULTURE, FORESTRY & FISHING

- a. Ocean Fishing

##### II. INDUSTRY

- a. Offshore and Coastal Mining and Quarrying
- b. Manufacture of Ocean-based Products
- c. Coastal Construction
- d. Ocean-based Power Generation, Transmission, and Distribution

##### III. SERVICES

- a. Marine Equipment Wholesale and Retail
- b. Sea-based Transportation and Storage
- c. Marine Information Services
- d. Marine Insurance
- e. Marine Renting and Business Activities
- f. Maritime Safety, Surveillance and Resource Management
- g. Maritime Education
- h. Coastal Accommodation and Food and Beverage Service Activities
- i. Coastal Recreation

#### V. Data and Data Sources

The data used in the compilation of the preliminary estimates on POESA are obtained from several sources. Below are the major data sources for estimation:

Industry	Data	Source Agency
Ocean Fishing	<ul style="list-style-type: none"> <li>● GVA of Fishing, at current prices from National Accounts of the Philippines (NAP)</li> <li>● Fisheries Value of Production by Geolocation, Subsector, Year and Quarter</li> <li>● Aquaculture Value of Production by Geolocation, Aquafarm Type, Species, Year and Quarter</li> </ul>	PSA
Offshore and Coastal Mining and Quarrying	<ul style="list-style-type: none"> <li>● GVA of Mining and Quarrying, at current prices from NAP:               <ul style="list-style-type: none"> <li>-Extraction of crude petroleum and natural gas; and</li> <li>-Stone quarrying, and other mining and quarrying</li> </ul> </li> <li>● 2018 Census of Philippine Business and Industry (CPBI)</li> </ul>	PSA

Industry	Data	Source Agency
	<ul style="list-style-type: none"> <li>● 2019 Annual Survey of Philippine Business and Industry (ASPBI)</li> <li>● 2018 Supply and Use Table (SUT)</li> <li>● Philippine Petroleum Production</li> <li>● Pink Sheet commodity price data</li> </ul>	<p style="text-align: center;">Department of Energy (DOE) Worldbank</p>
Manufacture of Ocean-based products	<ul style="list-style-type: none"> <li>● GVA of Manufacturing, at current prices from NAP: <ul style="list-style-type: none"> <li>-Manufacture of food products;</li> <li>-Manufacture of machinery and equipment except electrical;</li> <li>-Manufacture of transport equipment;</li> <li>-Manufacture of textiles;</li> <li>-Manufacture of chemical and chemical products;</li> <li>-Manufacture of basic pharmaceutical products and pharmaceutical preparations; and</li> <li>-Other manufacturing</li> </ul> </li> <li>● 2018 CPBI</li> <li>● 2019 ASPBI</li> <li>● 2018 SUT</li> </ul>	<p style="text-align: center;">PSA</p>
Ocean-based Power Generation, Transmission, and Distribution	<ul style="list-style-type: none"> <li>● GVA and Gross Output in Electricity, Steam, Water and Waste Management, at current prices from NAP</li> <li>● Generation, Transmission and Distribution Revenues of Electricity from NAP</li> <li>● Generation of electricity per fuel type</li> <li>● Dependable capacity of wind power plants</li> </ul>	<p style="text-align: center;">PSA</p> <p style="text-align: center;">DOE</p>
Coastal Construction	<ul style="list-style-type: none"> <li>● GVA of Construction, at current prices from NAP</li> <li>● 2018 CPBI</li> <li>● Budget of Expenditures and Sources of Financing (BESF)</li> </ul>	<p style="text-align: center;">PSA</p> <p style="text-align: center;">Department of Budget and Management (DBM)</p>
Marine Equipment Wholesale and Retail	<ul style="list-style-type: none"> <li>● GVA of Trade, at current prices from NAP: <ul style="list-style-type: none"> <li>-Wholesale trade, except of motor vehicles and motorcycles; and</li> <li>-Retail trade, except of motor vehicles and motorcycles</li> </ul> </li> <li>● 2018 CPBI</li> <li>● 2018 SUT</li> </ul>	<p style="text-align: center;">PSA</p>



Industry	Data	Source Agency
Sea-based Transportation and Storage	<ul style="list-style-type: none"> <li>● GVA of Transportation and Storage, at current prices from NAP:               <ul style="list-style-type: none"> <li>-Water Transportation; and</li> <li>-Warehousing and Storage and Support Activities for Transportation</li> </ul> </li> <li>● 2018 CPBI</li> </ul>	PSA
Coastal Accommodation and Food and beverage serving services	<ul style="list-style-type: none"> <li>● Tourism Direct Gross Value Added of Accommodation and food and beverage serving services, at current prices</li> <li>● 2018 CPBI</li> <li>● Regional Distribution of Overnight Travelers</li> </ul>	PSA  DOT
Marine Information Services	<ul style="list-style-type: none"> <li>● GVA of Information and Communication, at current prices from NAP               <ul style="list-style-type: none"> <li>-Information and Publishing</li> </ul> </li> <li>● 2018 CPBI</li> <li>● 2019 ASPBI</li> </ul>	PSA
Marine Insurance	<ul style="list-style-type: none"> <li>● Gross Value Added in Financial and insurance activities, at current prices from NAP               <ul style="list-style-type: none"> <li>-Insurance and pension funding except compulsory social security</li> </ul> </li> <li>● Net premiums from Marine Insurance</li> <li>● Total net premiums of all Insurance type</li> </ul>	PSA  Insurance Commission
Marine Renting and Business Activities	<ul style="list-style-type: none"> <li>● Gross Value Added in Professional and Business Services, at current prices from NAP</li> <li>● 2018 CPBI</li> </ul>	PSA
Maritime Safety, Surveillance and Resource Management	<ul style="list-style-type: none"> <li>● Gross Value Added in Public administration and defense; compulsory social activities, at current prices from NAP</li> <li>● Annual Financial Report</li> <li>● BESF</li> </ul>	PSA  Commission on Audit DBM
Maritime Education	<ul style="list-style-type: none"> <li>● Gross Value Added in Education, at current prices from NAP</li> <li>● Total enrollment in public and private schools' basic education</li> <li>● Total enrollment in higher education institutions (HEIs)</li> </ul>	PSA  Department of Education

Industry	Data	Source Agency
	Total enrollment in maritime schools	Commission on Higher Education
Coastal Recreation	• Tourism Direct Gross Value Added of Recreation	PSA
	• Regional Distribution of Overnight Travelers	DOT

## VI. Methodology

### VI.1. Estimation Methodology

#### 1) Ocean Fishing

The GVA of ocean fishing is equal to the sum of the GVAs of the following fisheries subsectors: commercial fisheries, marine municipal fisheries, and marine aquaculture. Marine aquaculture consists of brackish water fishpond, brackish water fish pen, brackish water fish cage, marine fish pen, marine fish cage, oyster farm, mussel farm, and seaweed farm.

#### **GVA of ocean fishing**

$$= \text{GVA of commercial fisheries} + \text{GVA of marine municipal fisheries} + \text{GVA of marine aquaculture}$$

Given the GVA of fishing and aquaculture and its support activities from the NAP, the GVA of ocean fishing is estimated using ratios derived from the value of production of fisheries by subsector and the value of production of marine aquaculture by farm type and culture environment.

#### **GVA of commercial fisheries**

$$= \text{GVA of fishing and aquaculture and its support activities} \times \text{Ratio of commercial fisheries to total fisheries}$$

#### **GVA of marine municipal fisheries**

$$= \text{GVA of fishing and aquaculture and its support activities} \times \text{Ratio of municipal fisheries to total fisheries}$$

#### **GVA of marine aquaculture**

$$= \sum_j [\text{GVA of aquaculture} \times \text{ratio of marine aquaculture } j \text{ to total aquaculture}]$$

where  $j$  is the farm type and culture environment of marine aquaculture

## 2) Offshore and Coastal Mining and Quarrying

The GVA of Offshore and Coastal Mining and Quarrying is equal to the sum of the GVAs in the following sub-industries: Offshore extraction of crude petroleum and natural gas; Offshore stone, clay, and sand quarrying; and Extraction of salt.

### **GVA of ocean mining and quarrying**

= GVA of Offshore extraction of crude petroleum and natural gas + GVA of Offshore stone, clay, and sand quarrying + GVA of Extraction of salt

For the GVA of Offshore extraction of crude petroleum and natural gas, the GVA of Extraction of crude petroleum and natural gas at current prices from NAP is adjusted by removing the GVA specific for onshore crude petroleum and natural gas extraction.

The share of onshore crude petroleum and natural gas extraction to the total GVA of Extraction of crude petroleum and natural gas was derived using the Philippine Petroleum Production data from DOE.

### **GVA of Offshore extraction of crude petroleum and natural gas**

= GVA of Extraction of crude petroleum and natural gas x [1 - share of onshore crude petroleum and natural gas extraction to the total GVA of Extraction of crude petroleum and natural gas]

Meanwhile, the GVA of Offshore stone, clay, and sand quarrying was obtained by applying the ratio of the GVA of Stone, clay, and sand quarrying over the total Stone quarrying, and other metallic and non-metallic mining from the CPBI to the levels of Stone quarrying, and other mining and quarrying at current prices from NAP. This is further adjusted by deriving the GVA of specific offshore quarrying only by using parameters from the 2018 SUT.

### **GVA of Offshore stone, clay, and sand quarrying**

= GVA of Stone quarrying, and other mining and quarrying x Ratio of the GVA of Stone, clay, and sand quarrying to the total *Stone quarrying, and other metallic and non-metallic mining* (CPBI) x derived ratio for offshore stone, clay, and sand quarrying only

Lastly, the GVA of Extraction of Salt is computed by applying the ratio of the GVA of Extraction of Salt over the total Stone quarrying, and other metallic and non-metallic mining from the CPBI/ASPBI to the levels of Stone quarrying, and other mining and quarrying at current prices from NAP.

### **GVA of Extraction of salt**

= GVA of Stone quarrying, and other mining and quarrying x Ratio of the GVA of *Extraction of Salt* to the total *Stone quarrying, and other metallic and non-metallic mining*

### **3) Manufacture of Ocean-based products**

The GVA of Manufacture of Ocean-based Products is equal to the sum of the GVAs in the following sub-industries: Manufacture of ocean-based food products, Manufacture of machinery and equipment for shipping, Manufacture and building of boats and ships, Manufacture of nettings, cordage, rope and twine products, Manufacture of chemical and chemical products, Manufacture of basic pharmaceutical products, and Maintenance and repair of boats and ships.

### **GVA of ocean manufacturing**

= GVA of Manufacture of ocean-based food products + Manufacture of machinery and equipment for shipping + Manufacture of boats and ship building + Manufacture of cordage, rope and twine products + Manufacture of chemical and chemical products + Manufacture of basic pharmaceutical products and pharmaceutical preparations + Maintenance and repair of boats and ships

The GVA of Manufacture of ocean-based food products is obtained by applying the ratio of the GVA of manufacture of ocean-based food products over the total manufacture of food products from CPBI to the levels of Manufacture of food products at current prices under the Manufacturing industry in NAP.

### **GVA of Manufacture of ocean-based food products**

= GVA of Manufacture of food products x Ratio of the GVA of manufacture of ocean-based food products to the total manufacture of food products

Likewise, GVA of Manufacture of machinery and equipment for shipping is obtained by applying the ratio of the GVA of manufacture of machinery and equipment for ships over the total manufacture of machinery and equipment from the CPBI to the levels of Manufacture of machinery and equipment except electrical at Current Prices under the Manufacturing industry in NAP.

### **GVA of Manufacture of machinery and equipment for shipping**

= GVA of Manufacture of Machinery and equipment except electrical x Ratio of the GVA of manufacture of machinery and equipment for ships to the total manufacture of machinery and equipment

The GVA of Manufacture and building of boats and ships is obtained by applying the ratio of the GVA of manufacture of transport and equipment for boats and ship building over the total manufacture of transport and equipment from the CPBI to the levels of Manufacture of transport equipment at current prices under the Manufacturing industry in NAP.

#### **GVA of Manufacture and building of boats and ships**

= GVA of Manufacture of transport equipment x Ratio of the GVA of manufacture of transport and equipment for boats and ship building to the total manufacture of transport and equipment

For the GVA of Manufacture of nettings, cordage, rope and twine products, it is computed by applying the ratio of the GVA of manufacture of fishing nets and other nettings, products of cordage, rope and twine products over the total manufacture of textile from the CPBI to the levels of Manufacture of textiles at current prices under the Manufacturing industry in NAP. This is further adjusted by deriving the GVA specific for the manufacture of netting, cordage, rope and twine products used for fishing and other ocean-based activities using parameters from the 2018 SUT.

#### **GVA of Manufacture of nettings, cordage, rope and twine products**

= GVA of Manufacture of textile x Ratio of the GVA of manufacture of fishing nets and other nettings, products of cordage, rope and twine products to the total manufacture of textile x derived ratio for manufacture of netting, cordage, rope and twine products used for fishing and other ocean-based activities only

Similarly, for the GVA of Manufacture of chemical and chemical products, it is computed by applying the ratio of the GVA of manufacture of chemical and chemical products used for ocean-based activities over the total manufacture of chemical and chemical products from the CPBI to the levels of Manufacture of chemical and chemical products at current prices under the Manufacturing industry in NAP. This is further adjusted by deriving the GVA specific for the manufacture of chemical and chemical products used for fishing and other ocean-based activities using parameters from the 2018 SUT.

#### **GVA of Manufacture of chemical and chemical products**

= GVA of Manufacture of chemical and chemical products x Ratio of the GVA of manufacture of chemical and chemical products used for ocean-based activities to the total manufacture of chemical and chemical products x derived

ratio for manufacture of chemical and chemical products used for fishing and other ocean-based activities only

Moreover, for the GVA of Manufacture of basic pharmaceutical products, it is computed by applying the ratio of the GVA of Manufacture of basic pharmaceutical products used for ocean-based activities over the total manufacture of basic pharmaceutical products and pharmaceutical preparations from the CPBI to the levels of Manufacture of basic pharmaceutical products and pharmaceutical preparations at current prices under the Manufacturing industry in NAP. This is further adjusted by deriving the GVA specific for the manufacture of basic pharmaceutical products used for fishing and other ocean-based activities using parameters from the 2018 SUT.

#### **GVA of Manufacture of basic pharmaceutical products**

= GVA of Manufacture of basic pharmaceutical products and pharmaceutical preparations x Ratio of the GVA of Manufacture of basic pharmaceutical products used for ocean-based activities over the total manufacture of basic pharmaceutical products and pharmaceutical preparations x derived ratio for manufacture of manufacture of basic pharmaceutical products used for fishing and other ocean-based activities only

Lastly, GVA of Maintenance and repair of boats and ships is obtained by applying the ratio of the GVA of repair of ships and boats and transport equipment over the total other manufacturing from the CPBI to the levels of Other Manufacturing at Current Prices under the Manufacturing industry in NAP.

#### **GVA of Maintenance and repair of boats and ships**

= GVA of *Other Manufacturing* x Ratio of the GVA of repair of ships and boats and transport equipment to the total other manufacturing

### **4) Ocean-based Power Generation, Transmission, and Distribution**

#### **GVA of Ocean-related Electricity**

= GVA of Electricity x Ratio of generation, transmission, and distribution to total electricity x ratio of Ocean-related generation to total generation

### **5) Coastal Construction**

The GVA of coastal construction is equal to the sum of the GVAs of public and private coastal construction.

#### **GVA of public coastal construction**

= GVA of public construction x Ratio of ocean-based infrastructure outlay in BESF

### **GVA of private costal construction**

= GVA of private construction x Ratio of ocean-based infrastructure in CPBI

## **6) Marine equipment wholesale and retail**

The GVA of marine equipment wholesale and retail is equal to the sum of the GVAs of the following industries: Wholesale of industrial machinery and equipment, Wholesale of professional and scientific and measuring and controlling equipment, Wholesale of transport equipment and supplies, except land motor vehicles, motorcycles and bicycles, and Other retail sale of new goods in specialized stores.

### **GVA of marine equipment wholesale and retail**

= GVA of wholesale and retail trade, except of motor vehicles and motorcycles x Ratio of ocean-based wholesale and retail establishments

## **7) Sea-based Transportation and Storage**

The GVA of sea-based transportation and storage is equal to the sum of the GVAs of the following transportation and storage sub-industries: water transportation; and warehousing and storage, and service activities for transportation (WSSAT).

### **GVA of sea-based transportation and storage**

= GVA of water transportation + GVA of warehousing and storage, and service activities for transportation

Given the GVA of water transportation, warehousing and storage, and its support activities from NAP, the GVA of sea-based transportation and storage is estimated using ratios of ocean-related activities derived from the gross value added of water transportation and the gross value added of warehousing and storage, and support activities for transportation from CPBI.

### **GVA of water transportation**

= GVA of Water Transportation x Ratio of ocean-related transportation to total water transportation

## **GVA of WSSAT**

= GVA of WSSAT x Ratio of ocean-related WSSAT to total WSSAT

### **8) Marine Information Services**

The GVA of marine information services is equal to the GVA of data processing, hosting, and related services.

Given the GVA of information and publishing under the information and communication industry from NAP, the GVA of marine information services is estimated using the ratio derived from the GVA of data processing, hosting, and related services to the total information and publishing from the available survey of Philippine businesses and industry.

#### **GVA of marine information services**

= GVA of information and publishing x Ratio of ocean-related data processing, hosting, and related services to the total information and publishing

### **9) Coastal Accommodation and Food and beverage serving services**

The Tourism Direct Gross Value Added (or TDGVA) for accommodation services for visitors is divided by the total number of tourists from the Regional Distribution of Overnight Travelers data to derive the TDGVA per tourist. This value is multiplied to the number of visitors in identified beach destinations. Data on top beach destinations were sourced from the Department of Tourism and is validated and expanded through tourism websites.

For this approach, it is assumed that each tourist generates a particular level of value added and the ratio of value added per tourist is homogenous for all destinations.

For food and beverage serving services, the TDGVA of food and beverage serving services is multiplied by the ratio derived from the GVA of food and beverage serving services in beach destinations to total food and beverage serving services from the available survey of the Philippine business and industry.



### **GVA of Coastal Accommodation**

= Tourism Direct Gross Value Added of Accommodation services for visitors per tourist x Number of Tourist in identified beach destinations

### **GVA of Coastal Food and beverage**

= Tourism Direct Gross Value Added of Food and beverage serving services x Ratio of Food and beverage serving services in beach destinations to total Food and beverage serving services

## **10) Marine Insurance**

Data on the net premiums from Marine Insurance and total net premiums of all insurance types are sourced from the Insurance Commission. The ratio of Maritime Insurance to the net premiums of all insurance types is used to extract the value added of Maritime Insurance from the value added of Insurance from NAP.

### **GVA of Marine Insurance**

= GVA of Insurance and pension funding except compulsory social security x Ratio of Maritime Net Premiums to Total Net Premiums

## **11) Marine Renting and Business Activities**

The GVA of Marine Renting and Business Activities is equal to the sum of the GVAs of the following industries: Renting of water transport equipment, Renting and leasing of recreational and sports goods, Travel agency activities, Tour operator activities, Activities of booking offices, Tourist assistance activities, Tickets sales/booking, for theatrical, entertainment and recreational reservation activities, and Research and experimental development in natural sciences.

### **GVA of Marine Renting and Business Activities**

= GVA of Professional and Business Services x Ratio of the value added of ocean-based industries to total value added of Professional, Scientific and technical activities and Administrative and Support Service Activities

## **12) Maritime Safety, Surveillance and Resource Management**

The gross value added of ocean-related government services is estimated as a percentage of the published Public Administration and Defense; Compulsory Social Security industry of NAP.

**GVA of Ocean-based government services**

= GVA of Public administration and defense; compulsory social activities  
x Ratio of ocean-based government services

**Ratio of ocean-based government services**

= sum of compensation, depreciation, and taxes of agencies with ocean-related activities / total compensation, depreciation, and taxes of all agencies

**13) Maritime Education**

The GVA of Maritime Education is computed by applying the GVA per enrollee to total maritime enrollment.

**GVA of Maritime Education**

= GVA per enrollee x Enrollment in Maritime schools

**GVA per enrollee**

= GVA of Education / sum of HEIs and basic education enrollment

**14) Coastal Recreation**

The Tourism Direct Gross Value Added (TDGVA) for recreation activities is divided by the total number of tourists from the Regional Distribution of Overnight Travelers data to derive the TDGVA per tourist. This value is multiplied to the number of visitors in identified beach destinations. Data on top beach destinations were sourced from the Department of Tourism and is validated and expanded through tourism websites.

**GVA of Coastal Recreation**

= Tourism Direct Gross Value Added per visitor x Number of Visitor in identified beach destinations

For this approach, it is assumed that each tourist generates a particular level of value added and the ratio of value added per tourist is homogenous for all destinations.

## VI.2. POESA STATISTICAL TABLES

The following are the published POESA statistical tables:

Table 1 Gross Value Added of Ocean-based Activities by Industrial Origin at Current Prices	Refers to the Gross Value Added of each ocean-based industry
Table 2 Growth Rates of Ocean-based Activities by Industrial Origin at Current Prices	Refers to the year-on-year growth of Gross Value Added of each ocean-based industry
Table 3 Percent Distribution of Ocean-based Activities by Industrial Origin at Current Prices	Refers to the share to total Gross Value Added of each ocean-based industry
Table 4 Employment in Ocean-based Activities by Industrial Origin	Refers to the number of persons employed in each ocean-based industry
Table 5 Growth Rates of Employment in Ocean-based Activities by Industrial Origin	Refers to the year-on-year growth of Employment of each ocean-based industry
Table 6 Percent Distribution of Employment in Ocean-based Activities by Industrial Origin	Refers to share to total Employment of each ocean-based industry

## VII. Sources of Revision

The revisions in the estimates of POESA came from several sources. The main sources of revision are the availability of the revised 2019 to 2021 Annual NAP estimates and review/updating of parameters. Other sources of revisions are the availability of the following data:

- 2019-2021 Philippine Tourism Satellite Accounts from PSA;
- 2018-2021 Philippine Petroleum Production from DOE;
- 2019-2020 Restated Annual Financial Report from COA; and
- 2021 Annual Financial Report from COA.

## VIII. Concepts and Definition of Terms

**Ocean Economy** refers to the economic activities, such as the production, distribution, and consumption of goods and services, related to or conducted in, near, or found in the seas.

According to the Technical Guidance on Ocean Accounting for Sustainable Development (2021), conceptual definitions of the ocean economy include some or all the following:

- Economic activity that is physically located on the ocean (e.g., shipping, fisheries, offshore oil, and gas)
- Economic activity that is physically proximate to the ocean (e.g., coastal tourism, coastal aquaculture)
- Economic sectors, located on land, that depend on natural inputs from the ocean environment, either biotic or abiotic (e.g., fish processing, construction materials)
- Economic activity that provides goods or services to sectors located on the ocean (e.g., shipbuilding, marine engineering)
- Market value of natural inputs (fish, minerals) potentially derivable from the SEEA-CF monetary flows accounts and market and non-market value of ecosystem services potentially derivable from the SEEA-EEA services supply accounts.

## IX. Dissemination of Results and Revision

The schedule of release of revised POESA estimates is 10 months after the reference year. A press release, statistical tables, infographic, and social cards are to be posted on the PSA website.

## X. Citation

Philippine Statistics Authority. (2022). *Technical Notes on Philippine Ocean Economy Satellite Accounts*. <https://psa.gov.ph/technical-notes/>.

Global Ocean Accounts Partnership (2021). *Technical Guidance on Ocean Accounting for Sustainable Development v.1.0 March 2021*.

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