

Philippine Ocean Economy Satellite Accounts- Technical Notes No. 2019-1:
Estimating the Philippine Ocean Economy Satellite Accounts (POESA)
– A Short Guide with Scope and Coverage, Data and Methods

Philippine Statistics Authority

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TECHNICAL NOTES

The ***Ocean Economy*** refers to economic activities such as the production, distribution and consumption of goods and services, related to or conducted in, near, or found in the seas. This document covers the scope, data sources and methodologies for the estimation of the Philippine Ocean Economy Satellite Accounts (POESA). The estimates are organized according to ocean-related industries of the economy.

The estimation adheres to the Production Accounts Framework of the System of National Accounts (SNA). The Ocean Economy, in this context, is the sum of the gross value added (GVA) of the ocean-based activities.

The succeeding notes describe the coverage, data sources and estimation methods by sector of the POESA.

I. Scope and Coverage

2009 PSIC	Industry	Description	Scope and Coverage
A	Ocean Fishing	This industry covers fishing on open ocean and sea-based aquaculture.	<ul style="list-style-type: none"> • Commercial • Marine municipal • Aquaculture <ul style="list-style-type: none"> ○ Brackish water fishpond ○ Brackish water pen ○ Brackish water cage ○ Marine pen ○ Marine cage ○ Oyster ○ Mussel ○ Seaweed
B	Off-Shore and Coastal Mining and Quarrying	This industry covers the offshore oil and gas extraction activities, as well as the mining of salt.	<ul style="list-style-type: none"> • Extraction of crude petroleum • Extraction of natural gas • Extraction of salt • Oil and gas extraction activities on a fee or contract basis • Oil and gas extraction activities not performed on a fee or contract basis
C	Manufacture of Ocean-based Products	Ocean-based manufacturing covers the manufacture of sea-based food products, ship building, and the manufacture	<ul style="list-style-type: none"> • Canning /packing of fish and other marine products • Drying of fish and other marine products

		of machineries and equipment for shipping.	<ul style="list-style-type: none"> • Smoking of fish and other marine products • Manufacture of fish paste(bagoong) and fish sauce (patis) • Processing of seaweeds; manufacture of agar-agar or carrageenan • Production of fishmeal/prawn feeds • Manufacture of unprepared animal feeds from fish, crustaceans and mollusks and other aquatic animals • Processing, preserving and canning of fish, crustaceans and mollusks n.e.c. • Manufacture of fishball, etc. • Manufacture of engines and turbines for marine propulsion • Manufacture of marine capstans, pulley tackle and hoists, etc. • Building of ships and boats other than sports • Manufacture of floating or submersible drilling platforms • Manufacture of inflatable rafts • Manufacture of metal sections for ships and barges • Manufacture of inflatable boats • Manufacture of other pleasure and sporting boats n.e.c.
F	Coastal Construction	This industry covers the construction of seaports, lighthouses, and other strictures aiding in maritime travels.	<ul style="list-style-type: none"> • Construction of ports and structures of the Department of Public Works and Highways (DPWH), Department of Transportation (DOTr), Philippine Coast Guard, and Maritime Industry Authority (MARINA) • Construction of establishments in identified port cities

D	Ocean-based Power Generation	This industry covers the power generation from coastal windfarms and natural gas-fired power plants.	<ul style="list-style-type: none"> • Power generation from onshore wind power plants • Power generation from natural gas power plants
H	Sea-based Transportation and Storage	The transportation industry, in this context, covers ocean transport and inter-island water transport. It also covers ocean-based shipping and port operations.	<ul style="list-style-type: none"> • Ocean passenger transport • Interisland water passenger transport • Renting of ship with operator • Ocean freight transport • Interisland water freight transport • Towing and pushing services on coastal and transoceanic waters • Service activities incidental to water transportation • Cargo handling auxiliary activity to water transport • Customs brokerage (ship and aircraft)
K	Marine Insurance	This industry covers the insurance of ships, passenger of maritime transports, and insurance of freight.	<ul style="list-style-type: none"> • Marine insurance
N- M	Marine Renting and Business Activities	This industry covers the renting of boats, ocean-based equipment, and professional activities related to the ocean such as marine research.	<ul style="list-style-type: none"> • Renting of water transport equipment • Renting of pleasure boats, canoes, sailboats
O	Maritime Safety, Surveillance and Resource Management	This covers the government services aimed at managing the protection, utilization and preservation of marine and coastal resources.	<ul style="list-style-type: none"> • Bureau of Fisheries and Aquatic Resources • Philippine Council for Agriculture and Fisheries • Philippine Fisheries Development Authority • National Maritime Polytechnic • Philippine Navy (Naval Forces) • Maritime Industry Authority • Office for Transportation Security • Philippine Coast Guard

			<ul style="list-style-type: none"> • Department of Environment and Natural Resources, Office of the Secretary (Coastal and Marine Resource Management) • National Mapping and Resource Authority • Palawan Council for Sustainable Development • Integrated Coastal Resource Management Project (ADB LN 2311)
P	Maritime Education	This covers the value of output of maritime higher education institutions.	<ul style="list-style-type: none"> • Maritime schools
R	Recreation	The industry covers the sea-based and coastal recreation service activities.	<ul style="list-style-type: none"> • Identified beach destinations from the main list of the Department of Tourism (DOT); narrowed down to 25 destinations.
I	Coastal Hotels	This covers the services for coastal hotels and resorts.	<ul style="list-style-type: none"> • Identified beach destinations from the main list of the Department of Tourism (DOT); narrowed down to 25 destinations.

II. Measurement Framework

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

$$\text{Ocean Value Added} = \sum_i [\text{Gross Output}_i - \text{Intermediate Input}_i] \quad (1)$$

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 value added of Ocean-based industries.

III. Methodology

Described below are summaries of the methodologies employed for the estimation of value added for each industry belonging on the *Ocean Economy*.

a. Ocean Fishing

GVA of commercial fishing is sourced from the published estimates of the National Accounts of the Philippines (NAP). It is assumed that all commercial fishing activities are conducted either at the seas or on the ocean.

The complication arises with aquaculture. The NAP releases estimates for total aquaculture, however, it does not differentiate between sea-based aquaculture and inland aquaculture. Indicators from the value of production of specific fishing goods were used as distribution keys to isolate the value added of ocean-based aquaculture. It is assumed that the distribution of the value of production is correlated to, if not identical to, those of the value added.

b. Off-Shore and Coastal Mining

Value added of the extraction of crude oil and natural gas is directly sourced from the published estimates of the NAP. A ratio estimator is constructed using the Census of Philippine Business and Industries (CPBI) and Annual Survey of Philippine Business and Industries (ASPBI) to extract the value added of *salt mining* from the *other non-metallic mining*, which is published in the NAP.

c. Coastal Construction

The value of construction of ports and structures from the Philippine Coast Guards, the Department of Transportation (DOTr) and Maritime Industry Authority (MARINA) are sourced from the Budget of Expenditures and Sources of Financing (BESF) published by the Department of Budget and Management (DBM). In order to translate the value of construction to value added, the Gross Value Added ratio (GVAr) of public construction was applied to the estimated value of public construction. This assumes that all public construction would have similar intermediate consumption ratios.

d. Ocean-Based Power Generation

The Department of Energy (DOE) publishes data on the generation of electricity per fuel type. This data is utilized as distribution keys to extract the value added generated by wind and natural gas power plants.

$$GVA \text{ of Ocean-Based Power Generation} = \quad (2)$$

$$\text{Ratio of generation to total electricity} \times$$

$$\text{ratio of Ocean-related generation to total generation} \times GVA \text{ of Electricity}$$

Value added of wind generation is further purified to account for only coastal wind generation by employing the ratio of the dependable capacity of coastal wind farms to the total dependable capacity of wind power plants as distribution keys.

e. Marine Insurance

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

$$GVA \text{ of Marine Insurance} = \quad (3)$$

$$GVA \text{ of Insurance Services} \times \text{Ratio of Maritime Net Premiums to Total Net Premiums}$$

f. Maritime Safety, Surveillance and Resource Management

The value added of ocean-related government services is estimated as the sum of the aggregate compensation, depreciation, and taxes of identified agencies with ocean-related activities. These agencies are:

- Bureau of Fisheries and Aquatic Resources
- Philippine Council for Agriculture and Fisheries/National Agricultural and Fishery Council
- Philippine Fisheries Development Authority
- National Maritime Polytechnic
- Philippine Navy (Naval Forces)
- Maritime Industry Authority
- Office for Transportation Security
- Philippine Coast Guard

The data is sourced from the Commission on Audit.

g. Maritime Education

The Commission on Higher Education (CHED) provides data on the number of enrollees from maritime schools. To estimate the value added from maritime education, the total number of enrollees from all grade levels (including higher education enrollees) were sourced from CHED and the Department of Education.

$$GVA \text{ of Maritime Education} = \quad (4)$$

$$GVA \text{ of Education per enrollee} \times \text{Total No. of maritime enrollees}$$

The value added per employee is multiplied to the number of enrollees in maritime schools to derive the GVA of Maritime Education. This assumes that each enrollee would generate a particular level of value added for the educational institution they are enrolled in. The estimation procedure also assumes that the value added per employee is more or less homogenous across different types of education providers.

h. Survey-Based Industries

Results from various establishment surveys are used to estimate the value added of several ocean-based industries. These industries are Manufacture of Ocean-based Products, Sea-based Transportation and Storage, Marine Renting and Business Activities, and Salt Mining.

For these industries, standard ratio estimators are constructed using the Census of Philippine Business and Industries (CPBI) and the Annual Survey of Philippine Business and Industries. The ratio estimators are constructed as follows:

$$GVA \text{ of Ocean-based industries} = \quad (5)$$

$$\text{Published GVA} \times$$

$$\text{Ratio of the value added ocean-based industries to total value added from the surveys}$$

i. Recreation and Coastal Hotels

Ocean-based tourism comprises of two industries: Hotel and Accommodations and Recreational Activities. The main data sources for this component are the Philippine Tourism Satellite Accounts and the data on Regional Travelers.

The tourism Direct Gross Value Added (TDGVA) for accommodation services and recreation activities is divided by the total number of tourists from the Regional 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.

$$\begin{aligned} \text{GVA of Ocean-Related Accommodation and Recreation} = & \quad (6) \\ & \text{TDGGVA per tourist} \times \text{No. of tourists in identified beach} \\ & \text{destinations} \end{aligned}$$

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.