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Journal of Ocean and Coastal Economics

Volume 2
Issue 2 *Special Issue: Oceans and National Income Accounts: An International Perspective*

Article 5

February 2016

Accounting for the Ocean Economy Using the System of National Accounts

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Recommended Citation

Talento, Raymundo J. (2016) "Accounting for the Ocean Economy Using the System of National Accounts," *Journal of Ocean and Coastal Economics*: Vol. 2: Iss. 2, Article 5.
DOI: https://doi.org/10.15351/2373-8456.1048

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Accounting for the Ocean Economy Using the System of National Accounts

Acknowledgments

The author acknowedges the technical assistance provided by his staff, Mr. Florande S. Polistico Mr. Mark C. Pascasio, Mr.Polaris C. Bautista, and Mr. John Lorenz S. Poquiz, in data collection

This research article is available in Journal of Ocean and Coastal Economics: https://cbe.miis.edu/joce/vol2/iss2/5

1. ACCOUNTING FOR THE OCEAN ECONOMY USING THE SYSTEM OF NATIONAL ACCOUNTS

The increasing importance to measure the ocean economy cannot be discounted. A number of countries attempted to measure the ocean economy based on their needs and perceptions. At this point, however, there is no agreed scope and coverage of the ocean economy nor is there an agreed operational definition of the variables needed for its measurement. Moreover, there is no internationally endorsed framework that will guide and lead to comparable estimates across countries or regions.

Utilizing the 2008 System of National Accounts (SNA) as a framework, this paper endeavors to estimate the contribution of the ocean economy using the present Philippine System of National Accounts (PSNA) and also explores the possibility of utilizing the System of Environmental Economic Accounting (SEEA) and the Experimental Ecosystem Approach to account for the environmental concerns in the ocean economy.

The System of National Accounts or SNA is the internationally agreed framework to monitor the performance of an economy (UN Statistical Division, 2015). The concepts and definitions that are adopted in the SNA are based on internationally accepted economic principles. Hence, these are applicable to any economy whatever its level of economic development.

1.1 Background on National Accounts

The origins of SNA trace back to the 1947 Report of the Sub-Committee on National Income Statistics of the League of Nations Committee of Statistical Experts under the leadership of Richard Stone.

In 1947, the United Nations Statistical Commission (UNSC) stressed the need for international statistical standards for the compilation of comparable statistics across countries. Out of this need several SNA versions came about with "1953 SNA" as the first SNA publication. This was revised twice, once in 1960 and again in 1964 to reflect individual countries' experiences and to address the consistency with the Balance of Payment Manual of the International Monetary Fund (IMF). The 1968 SNA broadened the scope of the national accounts incorporating the input-output account, the balance sheet and incorporating the relevant concepts of the Material Product System (MPS) used by the socialist countries. The 1993 SNA is a major improvement in compiling the national accounts, fully harmonizing them with other international statistical frameworks and standards. The 2008 SNA, the latest version, is an update of the 1993 SNA addressing the issues resulting from the changes in the global economic environment.

The SNA measures what takes place in the economy, between which agents, and for what purpose. At the heart of the SNA is the production of goods and services. The goods and services produced in an economy may be used for consumption in the period to which the accounts relate or may be accumulated for use in a later period (EC, IMF, et al, 2008). The general interest is the value added of the various producing units in the

economy and the sum of which is the Gross Domestic Product (GDP). The distribution and redistribution of the corresponding income out of the GDP allows the institutional units in the economy to transact with one another. Hence, there is consumption of goods and services produced by another institutional unit or acquisition of goods and services for later consumption. All of these transactions are captured in the structure of the accounts (sequence of accounts) at each stage of production, consumption and acquisition. The SNA is a good framework to start with if our interest is to know the contribution of the ocean economy to GDP[1]. The concepts and classification systems used in the SNA to determine the various products and expenditure items that are part of the transactions in an economy have been harmonized with other major economic frameworks.

The SNA is widely used by a wide range of stakeholders: particularly the planners, policymakers, researchers, and analysts, among others. Some of the interest of these users can be easily found in the central framework of the SNA. However, peculiar interest may not be articulated in the usual publication of national accounts tables. Hence, to address the other needs of its stakeholders the satellite accounts were conceptualized to articulate or expound a certain area in national accounts to extend its analytical usefulness.

Basically, there are two types of satellite accounts (UN Statistical Institute for Asia and the Pacific, 2009). The first type deals with details of an aspect without expansion of the SNA, such as the satellite accounts for tourism, agriculture, health and education, etc. Usually, this involves rearrangement or disaggregation of the national accounts variables without significantly deviating from the basic concepts and definitions of the SNA central framework. The second type expands the SNA framework extending the boundaries of the SNA (production/asset/consumption boundaries) as in the satellite accounts for environment, household, and human resources, among others.

In a satellite account such as the health account, the interest may be more on the sources and uses of funds for health. Hence, the focus can be on the financing units and those that use these resources for health purposes. In accounting for the sources and uses of funds the institutional sectors in the SNA may still be useful. They include financial corporations, non-financial corporations, government, households and non-profit institutions serving households, and the rest of the world.

In some cases, the interest may be on the contribution of an industry or sector in the economy such as tourism, non-profit institutions, etc. For these particular interests, it is important to identify where these are included in the national accounts. The satellite account for tourism may even involve the development or articulations of the industrial classification used in the SNA to properly identify the industries involved in tourism.

For the ocean economy, a satellite account may be necessary since not all of the industries or sectors that are part of the ocean economy can be found in the usual national

[1] The terms ocean, marine, maritime are used interchangeably in this document – it refers to ocean.

https://cbe.miis.edu/joce/vol2/iss2/5
DOI: 10.15351/2373-8456.1048

accounts tables. Hence, a finer disaggregation of the industry data is required to properly account for the ocean economy.

2. WHERE IS THE OCEAN ECONOMY IN THE SNA?

In the SNA, there are three approaches in estimating the gross domestic product (GDP) of a country:

First, in the production approach the interest is to estimate the gross value added (GVA) of the industries; GVA is equal to gross output less intermediate consumption. The GVA is simply the contribution of an industry to the economy or to its GDP;

Second, in the expenditure approach the interest is to account for all the expenditures in an economy that relates to final consumption, capital formation, exports less imports;

Lastly, the income approach is focused on accounting for the payments to the factors of production, which includes compensation of employees, consumption of fixed capital (slightly different from depreciation), taxes on production and imports less subsidies, and operating surplus.

Theoretically, all these approaches should yield the same GDP. However, operationally this is not so for various reasons such as the quality of data used in the three approaches, differences in methodology, point of recording, among others.

For simplicity, it would be easier to look into the two sides of the national accounts, the production side (supply) and the expenditure side (demand) and try to identify where the ocean economy is in the SNA.

If we take into account the production side, we need to go back and review the international standard industrial classification (ISIC) and even other relevant international classification system such as the international standard classification of education (ISCED) to identify what can be relevant in the ocean economy.

Some industries are highly identified with the ocean economy such as fishing, water transport, and offshore extraction of crude oil, natural gas and condensate, among others. These industries' GVA can be derived from the national accounts of a particular country. In some cases, what pertains to the ocean economy would need further articulation of the major industries shown in the usual national accounts tables, such as defense, marine tourism, and marine education, among others. Hence, some estimation methodology should be developed to zero in on what production activities are included in this type of economy.

On the expenditure side, we need to examine other classification systems to identify which expenditures relate to the ocean economy such as the classification of individual consumption according to purpose (COICOP), classification of the functions of government (COFOG) and the central product classification (CPC).

Given the existing national accounts of countries it may be worthwhile to assess what information is already available before any comprehensive compilation system can be developed.

3. THE PHILIPPINE SYSTEM OF NATIONAL ACCOUNTS

3.1 Background on the PSNA

The Philippines has compiled its national accounts for over 60 years. The first attempt to measure the economy was in 1947 when the Joint Philippine American Finance commission undertook the preparations of the estimates for the 10 years between 1938 and 1948 to analyze the economic situation of the country and to assess the rehabilitation program requested by the Philippines from the United States.

In 1950, the Central Bank of the Philippines (CBP) was able to come up with a series of estimates covering the period 1946 to 1950. These estimates accounted only for the final value of goods and services produced, similar to the initial estimates done in 1947. In 1952, the CBP adopted the double entry method in recording economic transaction and released a new set of income accounts for the period 1946 to 1951. This was further extended to cover the series1952 to 1956.

In 1957, the work on national accounting was transferred to the Office of Statistical Coordination and Standards (OSCAS) of the National Economic Council (NEC) considering that the NEC is concerned with policy formulation and the socio- economic development program of the Philippines. It was under NEC that the National Accounts of the Philippines adopted the 1953 UN Guidelines on National Accounting. NEC devised a national accounts series covering the period 1956 to 1967. In 1968, the NEC undertook the first revision of the accounts, changing the base year from 1955 to 1967 and coming up with a national accounts series for 1946 to 1972. The semestral accounts were introduced in 1972 covering the period 1967 to 1972.

In 1973, the Philippine government was reorganized giving birth to the National Economic and Development Authority (NEDA) as the successor of the NEC. The national accounts work was passed on to the National Accounts Staff (NAS) of NEDA. During this time there was an increasing demand for subnational data on the economy that would be useful for planning, policy formulation and monitoring. With such a demand the Philippine System of National Accounts (PSNA) came up with the gross regional domestic product (GRDP) in 1974, covering the original 11 regions that were organized as part of the Integrated Reorganizational Plan of then President Ferdinand Marcos.

In 1976, the second comprehensive revision of the PSNA was undertaken shifting the base year from 1967 to 1972. It was during this time that the PSNA adopted the 1968 United Nations System of National Accounts. The most notable improvements in this 1976 series were the adoption of the commodity flow method for the estimation of the personal consumption expenditure (PCE) and the use of new price deflators to estimate the gross value added of industries in real terms. The 1976 PSNA was presented in more

detail featuring a breakdown of the PCEs into major expenditure groups and the external transaction accounts with the rest of the world was further elaborated. Provisions were also made for the eventual integration of the input-output table, the flow of funds account and the GRDP

In 1983, the National Accounts Staff under NEDA came up with the Quarterly National Accounts of the Philippines. It was also during this time that the Inter-Agency Committee on the PSNA was established to review the existing national accounts and recommend improvements and expansion of the accounts to address the growing demands of economic planning.

Major improvements were continued until the restructuring of the Philippine Statistical System (PSS) in 1987. With Executive Order 121, the Statistical Coordination Office that housed the National Accounts Staff was detached from NEDA and became the National Statistical Coordination Board (NSCB). The task of developing and maintaining the PSNA was transferred to the Economic Statistics Office of NSCB.

Under the NSCB, the subnational accounts were further articulated with the release of the gross regional domestic expenditure (GRDE) in 1987. Another milestone was the start of the compilation of the seasonally adjusted national accounts aggregates in 1993 and in 1996 the confidence interval estimate of the quarterly GDP became a regular feature of the PSNA publication.

It was also under the NSCB that the third overall revision of the PSNA was undertaken. It was launched in 1990 with the shift in the base year from 1972 to 1985 adopting the remaining major recommendations of the1968 SNA and on a limited scale the recommendation of what was then the draft of the 1993 SNA.

More importantly, the 1990 PSNA has institutionalized the quantification of the contribution to production of the organized and unorganized sectors of the economy[2]. In the past, estimates featured mostly the formal sector. The 1990 PSNA paved the way for the identification and an approximation of the informal sector in the Philippines.

To address the varying dates of revision of the data sources of the PSNA, the NSCB Executive Board in 1997 approved the Revision Policy of the PSNA, wherein the updating of quarterly accounts for each quarterly estimation round is limited to the immediately preceding quarter while the rest of the past quarters are revised during the May round of estimates.

Similarly, NSCB adopted a policy of releasing in advance the schedule of press releases for the national accounts. Quarterly accounts are released 60 days from the reference quarter except for the 4th quarter & advance annual national accounts, which are released 30 days from the reference period.

In May 2011, the NSCB undertook the fourth overall revision of the PSNA and adopted the 2008 SNA, shifting the base year from 1985 to 2000.

[2] Unorganized sector is defined as that area or sector not covered by the establishment surveys in the Philippine Statistical System. Estimates of the unorganized sector were incorporated in the PSNA during the third revision of the PSNA and cover the period 1980 onwards.

At present, there is now the on-going second reorganization of the Philippine Statistical System. With the enactment of Republic Act No. 10625, otherwise known as the Philippine Statistical Act of 2013, the four major statistical agencies in the Philippines, namely the Bureau of Agricultural Statistics (BAS), the Bureau of Labor and Employment Statistics (BLES), National Statistical Coordination Board (NSCB) and the National Statistics Office (NSO), were merged into one body known as the Philippine Statistics Authority or PSA. Hence, the national accounts function is now transferred to the Macroeconomic Accounts Service of the PSA, headed by the author of this paper.

Similarly, the PSA has started work on the fifth overall revision of the PSNA, adopting the remaining major 2008 SNA recommendations applicable to the Philippine. To this end, the base year will be changed from 2000 to 2012 before the PSNA adopts the chain volume measure as an approach to real price estimates.

4. WHERE IS THE OCEAN ECONOMY IN THE PSNA?

Based on the Inception Workshop on Blue Economy Assessment, held last 28-30 July 2015 at the PEEMSEA office in Manila, members agreed to assess the following ocean economic activities: fisheries and aquaculture; offshore oil and gas; mining; energy/electricity supply (tidal and wave energy, costal and offshore wind energy, and other renewables); water (desalination); manufacturing (fish and seafood processing, shipbuilding and repair, marine transport equipment, marine biotechnology, pharmaceuticals and chemicals); marine construction; shipping (marine transportation, ports, warehouses); marine tourism and recreation; defense/government (navy, coast guard, etc.); marine research and education; and marine services (mapping, monitoring, consulting, maritime insurance).

To be more systematic in the identification of the industries, the ISIC rev. 4 was used to identify those economic activities that can be included in the ocean economy. For purposes of this paper, identification of the economic activities considered the following criteria: maritime characteristic industry (industries directly related to the ocean); maritime connected industry (industries that utilize input from the ocean or provide inputs to ocean activities); and significance in the Philippines at this point in time.

Table 1. Industries Considered Part of the Ocean Economy (ISIC Rev 4)

Major Subgroupings	Detailed Subgroupings	Description
1. AGRICULTURE, HUNTING, FISHERY AND FORESTRY		
a. Agriculture		
03		Fishing

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DOI: 10.15351/2373-8456.1048

Major Subgroupings	Detailed Subgroupings	Description
2. INDUSTRY		
a. Mining and Quarrying		
06		Crude oil, Natural Gas and Condensate (offshore)
07		Extraction of minerals from the sea
08		Other mining and quarrying
09		Support activities for other mining and quarrying
b. Manufacturing		
10	102	Processing of fish, fish products and other seafood
28		Manufacture of marine machinery and equipment n.e.c
30	301	Building of ships and boats
30	309	Manufacture of other water transport vehicle
c. Construction (marine construction)		
41	410	Construction of building (other support facilities for the marine industry i.e., warehouses)
42	422	Construction of utility projects
42	429	Construction of other civil engineering projects (i.e. piers, wharves, beach reconstruction
d. Electricity, Gas and Water		
35		Electricity Generation (by offshore natural gas including tidal, wave and wind generated electricity –windmills located along the coast)
36	360	Water collection, treatment and supply
3.SERVICES		
a. Wholesale and Retail Trade		
46 and 47		Trading of marine goods (wholesale and retail trade)
b. Transportation, Storage and Communication		
50		Water Transport
52		Storage and Warehousing
52	5222	Service activities incidental to water transportation
c. Financial Intermediation		
65		Maritime insurance
d. Real Estate, Renting and Business Activities		
		Renting of marine equipment
e. Other Services (accommodation, recreation)		
55		Accommodation
61		Telecommunications
72		Scientific research and development

Major Subgroupings	Detailed Subgroupings	Description
78	781	Activities of employment placement agencies
84		Public administration and defense: compulsory social security (government agencies with mandates directly related to regulating and/or monitoring ocean related activities including the Navy & Social Security for sea-based workers)
85	854	Education (maritime education)
86		Human Health Activities (maritime clinics/hospitals)
93		Sports activities and amusement and recreation activities

The value added of some identified industries is readily available in the present PSNA; however, some need to be further disaggregated in order to derive what is part of the ocean economy. Furthermore, data for some industries are not readily available.

Aside from reviewing the ISIC rev. 4, the identification of the industries also necessitates the review of the 2012 Census of Philippine Business and Industries (CPBI) to assess which industries can be further disaggregated in the PSNA. Using the 2008 SNA recommended classification systems as a starting point, Table 1 above shows the industries that can form part of the ocean economy using the ISIC rev. 4

5. SOME ESTIMATES

In preparing the gross value added (GVA) estimate for the ocean economy for the Philippines, much is left to be desired in the level of disaggregation in the data available. Table 2 below shows what industries could be included using the present PSNA. For lack of data, industries such as public administration, defense and social security do not yet include all the government agencies whose mandates involve the ocean industry. Similarly, industries under other services such as marine tourism or employment agencies rendering services dedicated to seafarers need to be reflected in existing establishment surveys. With these observations, the estimation methods that should be used were assessed.

At this point, the production approach is the most feasible method for the Philippines considering the availability of data through the establishment surveys Annual Survey of Philippine Business and Industry (ASPBI) and the CPBI, the government reports and data from industry associations.

The expenditure approach is not workable at present given the limited data to identify household income and expenditures, capital formation (investment) in durable equipment, changes in inventories, and the export and import of ocean-related services.

The data limitation of existing surveys on household income and expenditures is one limiting factor in the income approach, aside from the huge task of reprocessing the results of establishment surveys to reflect the income estimates arising from the use of the factors of production in the economic transactions of the institutional sectors in the economy.

Given the available data, the estimated average contribution of the ocean economy to GDP for the period 2011-2013 at constant prices is about 5.35 percent of the Philippine GDP. It has an average growth of 3.42 percent for the period. Fishing accounts for 2.1 percent of the ocean economy's GVA, followed by electricity and storage at 0.61 percent and 0.72 percent growth, respectively.

Table 2. Gross Value Added of Selected Sectors for the Identified Ocean Economy Industries, 2010-2014 at Constant 2000 Prices, Unit: Million Php

Selected Industries	Gross Value Added				
	2010	2011	2012	2013	2014
1. Fishing	136,427	130,529	130,032	131,003	130,495
2. Oil, natural gas and	22,542	23,699	22,617	20,422	20,723
3. Construction	16,611	1,248	50,001	19,270	22,165
4. Electricity (only natural gas generated)	60,233	64,330	68,108	68,396	67,031
5. Manufacturing (only fish and other seafood processing)	23,686	19,974	24,307	27,873	29,108
6. Shipping (Water Transport)	12,337	13,781	15,617	15,341	16,062
7. Storage	34,443	39,673	43,186	48,749	58,663
8. Public Admin, Defense, Social Security (Navy)	11,444	10,886	11,600	12,135	11,562
9. Insurance (marine insurance)	2,090	2,279	2,496	2,911	3,127
TOTAL	319,812	306,399	367,963	346,100	358,934

Table 3. Growth Rates of Selected Sectors for the Identified Ocean Economy Industries, 2010-2014 at Constant 2000 Prices, Unit: Percentage

Selected Industries	Gross Value Added			
	2010-2011	2011-2012	2012-2013	2013-2014
1. Fishing	(4.32)	(0.38)	0.75	(0.39)
2. Oil, natural gas and condensate	5.13	(4.56)	(9.70)	1.47
3. Construction	(92.49)	3,905.84	(61.46)	15.02

Selected Industries	Gross Value Added			
	2010-2011	2011-2012	2012-2013	2013-2014
4. Electricity (only generated by natural gas)	6.80	5.87	0.42	(2.00)
5. Manufacturing (only fish and other seafood processing)	(15.67)	21.69	14.67	4.43
6. Shipping (Water Transport)	11.71	13.32	(1.76)	4.70
7. Storage	15.19	8.85	12.88	20.34
8. Public Admin, Defense, Social Security (Navy)	(4.88)	6.56	4.61	(4.72)
9. Insurance (marine insurance)	9.07	9.51	16.64	7.40
TOTAL	(4.19)	20.09	(5.94)	3.71

6. ISSUES AND CHALLENGES IN MEASURING THE OCEAN ECONOMY

In the process of using the existing PSNA for the estimates of the ocean economy, the following issues and challenges were identified. Some of these issues may also be applicable to other countries.

6.1 Framework for the Ocean Economy

A framework agreed upon by multiple countries is necessary to obtain comparable estimates of the ocean economy. Having a framework could very well define the scope and coverage of the ocean economy.

6.2 Standard Set of Concepts and Decisions

Along with the framework, there should be a standard set of concepts and definitions for the variables that will be used in the methodology for the estimates to address the problem of boundaries in the economic transactions involved in the ocean activities.

6.3 Classification System

As in the Philippine case, the identification of industries in the ocean economy is not well articulated in the ISIC since it was developed to classify economic activities, but not those specific to a particular area of interest. A classification system for the ocean economy would, therefore, be useful. To that end, the ISIC rev.4 is a good starting point.

6.4 Data Issues

While some industries are highly associated with the ocean economy, there are still a number of industries related or connected to the ocean economy that are not well identified in the existing surveys, censuses or administrative-based data systems. Hence, a review of the existing data collection is essential to ensure the data requirements for this purpose are met. Some data requirements can be sourced from administrative systems. Accordingly, fostering formal arrangement among concerned institutions should be considered.

7. EXPLORING THE BLUE ECONOMY

Using the SNA framework, environmental factors that relate to the ocean are not considered in the estimates of the value added of the ocean economy. National accounts estimates could be further articulated using the System of Environmental Economic Accounting (SEEA) to reflect environmental concerns.

The SEEA was developed in response to the need to incorporate environmental issues in the national accounts. Hence, the environmental accounts are treated as one of the satellite accounts in the SNA, and the concepts and definitions in the SEEA are in consonance with the SNA. It is one of the more complex satellite accounts in the SNA considering that natural asset accounting (natural resources) and even degradation is now possible. Within the SEEA framework, other accounts or indicators can be developed, such as the environmental protection expenditures, which can be focused on the ocean. The advantage of using the SEEA in the compilation of the blue economy is that it is harmonized with SNA framework and the SNA is the appropriate tool to measure the contribution of a given activity in an economy.

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