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Ocean Economy Valuation Studies in the Asia-Pacific Region: Lessons for the Future International Use of National Accounts in the Blue Economy

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Ocean Economy Valuation Studies in the Asia-Pacific Region: Lessons for the Future International Use of National Accounts in the Blue Economy

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1. INTRODUCTION

Since 2002 there have been several projects that have addressed the challenges of measuring the ocean economy in the Asia-Pacific region. These experiences have revealed some lessons that those envisaging extending ocean economy measurement exercises internationally may wish to consider. There are a range of reasons to measure the marine economy (Kildow and McIlgorm 2010).

Following from the 1st Asia Pacific Economic Cooperation (APEC) Ocean-related Ministerial Meeting, Seoul, Korea, 2002 and the Seoul Oceans Declaration (APEC 2002), the APEC Marine Resource Conservation Working Group of commissioned a "Measuring the Marine economy" project to promote consistent measurement of the marine economy across the 21 APEC economies. The desire to define and measure the marine economy came from the recognition that this information was a gap that was impeding the development of governance in the APEC region.

The first phase of the APEC study (2002-04) compared the marine industry studies of US, Canada and Australia, as these three countries had existing marine industry studies. Some of the preliminary comparison issues between economies involved reconciling the different descriptive titles of marine industry categories as illustrated in Table 1. This indicated that the use of national accounts number coding systems is essential to ensure accurate categorical comparisons.

Table 1. Differences in Marine Industry Descriptions in the Comparison of Australian and Canadian Marine Industry Studies in 2002 (McIlgorm 2005).

Australia	Canada
Marine Tourism	Ocean Tourism industry
Offshore oil and gas	Offshore oil industry
Fisheries and seafood	Commercial fishing industry
Shipping	Ocean transport industry
Ship and boat building	Marine construction industry
Port based activities	Ocean manufacturing and services
	Government services industry
Marine industry total	**Ocean industries total**

Extension to all APEC economies would require data collection by each economy against a list of agreed marine industry categories. These were developed through an expert APEC MRC project workshop on Easter Island in 2004 with included each of the member economies (McIlgorm 2005). The list of agreed industries categories developed by the workshop are reported in Table 2.

Table 2. The List of Marine Industry categories Produced by the APEC MRC Expert Consultation Workshop on Easter Island, 2004 (McIlgorm 2005).

i.	**Oil and Gas** (ie. minerals)
ii.	**Fisheries / Aquaculture** (ie. living resources including sea plants)
iii.	**Shipping** (ie. transportation and shipbuilding)
iv.	**Defence / Government** (ie. government services)
v.	**Marine Construction** (eg. coastal defences and restoration)
vi.	**Marine Tourism** (ie. leisure services)
vii.	**Manufacturing** (ie. equipment, medicines, etc)
viii.	**Marine Services** (eg. mapping, surveying, consulting)
ix.	**Marine Research and Education**

The nine marine industry categories include government and defence for which national data is generally unavailable due to national security. Marine tourism is a wide ranging category incorporating all expenditure by those who undertake recreation and tourism.

The simple comparisons between marine economies in different countries reveal several lessons in regional or multi- economy comparisons. Apparent gaps should be treated with caution, as they may reflect impediments in gaining information and indicate the need to work collaboratively with experts in other economies to generate an accurate assessment.

This international bench marking exercise between the Australian, Canadian and US studies was informative in the subsequent internationalization of ocean economy measurement (McIlgorm 2005). The Tsunami in SE Asia in late 2004, curtailed the project's plans to pilot the methodology to several SE Asian nations, though the project encouraged New Zealand to produce its marine economy study in this period (NZ Stats 2009).

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2. NATIONAL ACCOUNTS IN DIFFERENT ECONOMIES

There were then issues in comparing national accounts data between economies. For example, the North American Industry Classification System (NAICS) with the International Standard Industrial Classification of All Economic Activities, Rev.4 (ISIC) used outside of North America, for example by Australia. These "correspondence" issues have been addressed by the United Nations (UN STATS 2015).

The System of National Accounts (SNA) is the internationally agreed standard set of recommendations on how to compile measures of economic activity. Compatibility of national accounting data is also an issue to consider in SE Asia and in future regional studies in the Indian Ocean (McIlgorm 2015).

2.1 Measuring the marine economy in the Asian Pacific region

In 2005 the second APEC Ocean related Ministerial meeting led to the Bali Plan of Action which prioritized issues of the marine economy (APEC 2005). The plan stated the following priority:

> *Understanding the value of the marine sector: A better understanding of the short-term and long-term market and non-market value of the marine sector would better enable stakeholders and decision makers to achieve sustainable, integrated marine management. Study the market and non-market value of the marine environment and marine industries in the Asia-Pacific region, including by undertaking research, communication and information exchange on marine activities* (APEC 2005).

In 2008-09 the Partnership for the Environmental Management of the Seas of the East Asia (PEMSEA) funded a project to work with marine economists in eight member countries using the APEC classifications to achieve more regionally consistent marine economy estimates (Tropical Coasts 2009). Table 3 presents an overview of the availability of data on categories of information for the marine sector in the eight economies.

Table 3. The Availability of Marine Economy Date in the South East Asian Economies included in the PEMSEA Study (Tropical Coasts 2009).

OCEAN ECONOMY- APEC Industry Sectors	P.R. China	Indon.	Japan	Korea	Malaysia	Phil.	Thai.	Vietn.
Oil and Gas (Minerals)	•	•	•	•	•	•	•	•
Fisheries/ Aquaculture (Living Resources)	•	•	•	•	•	•	•	•
Shipping (Marine transport/ship building)	•	•	•	•	•	•	•	•
Defence/Government	N/A	N/A	N/A	Some	N/A	Some	•	•
Marine Construction	•	•	•	•	N/A	N/A	•	•
Marine Tourism (Leisure services)	•	•	•	•	•	•	•	•
Manufacturing (Equipment)	•	•	N/A	•	•	•	N/A	•
Marine services- maps, surveys, consulting	•	•	N/A	Some	N/A	N/A	•	N/A
Marine research and education	N/A	N/A	N/A	N/A	N/A	•	•	N/A

In Table 3 we see that data is not generally available on defence and government expenditure for national security reasons. Data on marine services and research and education is available for only two of eight economies.

In Figure 1 we see that several SE Asian ocean economies had substantially higher marine economy gross domestic product (GDP) as a percentage of total national GDP than in more developed economies (McIlgorm 2009a and b). This was also true for employment.

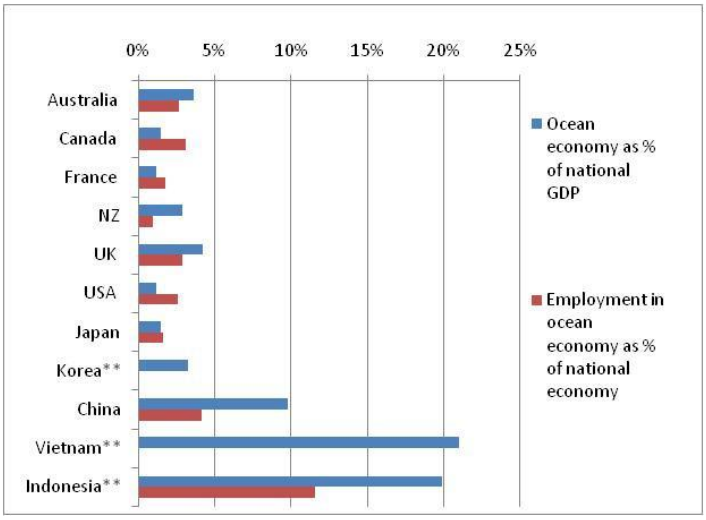

Figure 1. A graph comparing the marine economy GDPs and employment as a percentage of national GDP and employment for a range of developed and developing coastal nations and GDPs (McIlgorm, 2009 a& b).

The East Asia Seas (SEAS) Congress workshop 2009, gathered the findings of the project with recommendations for the future (EAS Congress 2009).

3. THE BLUING OF THE OCEAN ECONOMY

The recent surge of interest in the Blue economy merits some examination of the drivers of OE and BE studies and their past and future dependence on National accounting data. Through the Rio 20+ process small island developing states have been vocalizing and emphasizing the importance of the Blue economy in the United Nations.

In the past five years China has hosted several Blue economy forums through the APEC Blue economy center in Xiamen (APEC 2011, 2012, 2014).

The South East Asian Seas Congress has also had Blue economy initiatives such as the Changwon Declaration 2012 with recommendations for the future (PEMSEA 2014). In mid-2015 PEMSEA commenced a new Blue economy measurement project for SE Asian economies (2015-2018). Differences in the systems of national accounts used by different economies in the region are less than a decade ago, with more global consistency.

From these international origins there is also a recurring theme of the Blue economy being measured within a sustainable environmental framework. Blue economy studies inevitably come back to re- examine the 3 pillars of sustainable development, especially in developing countries. The development of the ocean economy to the Blue economy, within the green economy and sustainable development frameworks is conceptualized in Figure 2 (McIlgorm 2011).

In Figure 2 the ocean economy (red) has minimal environmental and equity considerations. The Blue economy encompasses the ocean economy adding blue growth sustainability and equity principles. However the extent to which the blue economy is truly green, as in the land usage of the term, is still under development.

In the Asia Pacific's developing economies, industry estimates acknowledge the three pillars of sustainability, due to social and environmental impact being important in these developing countries.

To date examples of the interactions of growth and Blue economy are generally seen in trade-offs between economy and environment. However there also has to be equitable considerations and the literature on this and social aspects of the Blue economy are limited.

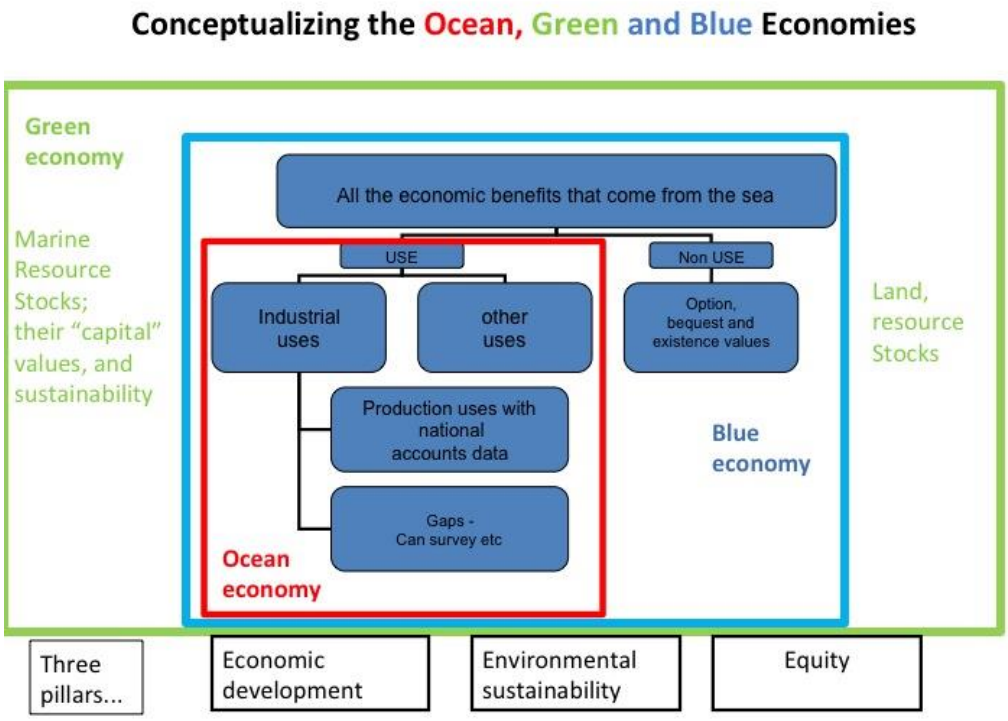

Figure 2: Conceptualizing the Ocean, Green and Blue economies (adapted from McIlgorm 2011).

4. LESSONS AND ISSUES IN OCEAN AND BLUE ECONOMY STUDIES

The paper has outlined the development of the ocean and Blue economy in the Asian Pacific economies in the last 15 years. We wish to assess the development of international Blue economy studies to date. This will have elements of diagnostic, formative and cumulative assessment, as well as recognition of lessons learned. We find some of the following issues are relevant to the future of measuring the Blue economy and hence national accounts.

4.1 Who Wants Information on Ocean Industries or the Blue Economy?

The drivers of ocean and Blue economy studies in the Asia-Pacific region have been Ministerial declarations (APEC 2002, APEC 2005, APEC 2011, EAS Congress 2009, PEMSEA 2014).

4.1.1 International Fora

International Ministerial Fora endorse the need for greater understanding of the marine industry sector and each national Minister endorses these agreed regional priorities with subsequent implementation responsibilities in their home economy. In APEC, working groups then action projects within competing priorities. Generally external providers complete projects under working group funding donated by members. It appears that regional demand for ocean economy information in the Asia pacific region has been a top down process, driven by regional initiatives and Ministerial declarations.

4.1.2 National Government

The drive to measure the ocean or Blue economy at a national level has varied between countries. The role of government as regulator of different marine activities may support the development of an ocean economy profile. However each category of activity (shipping, fishing etc.) is generally under a different Minister, regulatory department and legislation and there is often no one institution in government that sees the national benefit from having marine economic information. This lack of awareness of marine issues is often seen poorly formed governance structures in the marine sector.

While there has been a process of adoption of Exclusive Economic Zones over the past 20 years since the Law of the Sea Convention came into force, there has not been a concomitant realization of the need to govern and measure the marine sector and its economic performance. Alternatively it may be that thousands of years of humans focusing on land based issues give land systems a greater recognition in politics than marine activities. This shows the importance of influencing Ministerial decision makers to provide a reason for measurement of the ocean economy, both now and in an on-going future framework.

4.1.3 Industry

There does not seem to have been a demand from the industries within the Marine sector for an ocean economy profile. Marine industries are not a cohesive set of activities and only their proximity, use or reliance on the sea is a potentially unifying factor. Each ocean industry may have a valuation of their own economic activity or national importance, but there may be no reason for these industries to draft a collective sectoral appraisal.

4.2 How Has Marine Economy Information Been Supplied?

The pathways by which nations and Ministers are informed about the ocean economy vary. Table 4 below reports past studies in different national economies, their funding source, name of organization undertaking the study and finally the direct involvement of the national Statistical office, or equivalent in the study.

Table 4. Past Funding, Organizations and National Accounts Office Involvement in National Ocean Economy Studies.

Country or economy	Study	Funding	Nature of organization	Direct involvement of the National Statistical Office?
Australia	Allen (2004)	Australian Oceans Policy, Government	Consultants	No
	AIMS (2008)	Australian Institute of Marine Science (AIMS), Government	Consultants, Deloitte, Tohmatsu	No
	AIMS (2011, 2012 and 2014)	AIMS, Government	Consultants	No
New Zealan	NZ Stats (2005)	NZ Oceans Policy,	National Statistical office	Yes
US	NOEP (2000)	NOAA-NMFS	NOEP	No
	NOEP (2009, 2014)	NOEP/CBE	NOEP/CBE, MIIS	No
Canada	Stacey (2003)	Government	Consultants	No
	Gardiner Pinfold (2009)	Government	Consultants	No
Philippines	Virola et al. (2009)	Government	National Government	Yes
Japan	Nakahira (2009)	Government	Academic	No

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Country or economy	Study	Funding	Nature of organization	Direct involvement of the National Statistical Office?
China	Rongzi (2009)	Government	National Government	Yes
Vietnam	Tuan and Duc (2009)	Government	National Government	No
Malaysia	Khalid and Joni (2009)	Government	MIMA	No
Indonesia	Rahadian et al. (2009)	Government	Ministry of Marine Affairs & Fisheries	No
Korea	Shin &Yoo (2009)	Government	Korea Maritime Institute, Academic	No
Thailand	Jarayabhand et al. (2009)	Government	Government and academic	No

In Table 4 it can be seen that many of the existing ME studies have been undertaken by consultants, academics or through independent programs or researchers. These suppliers are external to government and gain access to national account tables, or models generated from government sourced statistical data.

Only a few government national account agencies are directly involved in the supply of ocean economy data on a routine basis. Generally central government agencies responsible for statistics and national accounting have not had generating a value profile for marine industries as a national economic priority. National accounts and statistical offices often have fixed budgets leaving few resources to meet additional requests outside of core government's priorities.

Identifying the ocean economy is a themed enquiry, similar to creating a tourism satellite account. Specific retrieval of marine industry data is not a straight forward national accounts extraction exercise, as it requires knowledge of the nature and extent of land and ocean economic activity for a range of different marine industries. Many of data categories have both land and ocean components that can be used to apportion marine activity. Future studies need to be able to have these apportioning assumptions stated clearly so as to enable consistent revisions to be made in subsequent studies.

5. OCEAN POLICY

Other marine industry studies have been developed as part of the development of National Ocean policies. In Australia, Canada, New Zealand and the US, Ocean policy initiatives have led to Marine industry studies (NOEP 2000; Allen 2004; Stacey 2003; NZ Stats 2005). These have been produced by different providers external to government, often on a one off basis.

But what happens when specially funded Ocean Policy programs end? In Australia marine scientists have recognized the benefits from making the government aware of the economic value of marine activities. The Australian Institute for Marine Science (AIMS) has funded consultancies to provide estimates for the marine economy (AIMS 2008, 2011 and 2012) and the Blue economy (AIMS 2014). This information underpins requests to government to maintain or increase marine research funding (OPSAG 2013) Marine Nation 2025). The national statistical office, the Australian Bureau of Statistics, has not produced any marine economy studies.

However in a few countries in region the national statistics agencies measure marine industries. In China, planning agencies and the national statistical agency has an ocean economy section that produces annual marine national accounts. In the Philippines an ocean economy satellite account has been developed (Virola et al. 2009). The 2005 New Zealand study was supplied by their government statistical agency (NZ Stats 2005).

6. DEVELOPING BLUE ECONOMY PROFILES: THE TRIANGLE APPROACH

Considering the experiences above, we can assess what we have learnt about approaches to the demand and supply of marine economy data and information. The review above shows that the development of blue economy data is not a rigid or formalized process, reflecting its evolving nature.

The experience to date suggests there is a “triangle approach”, where measuring the ME has generally involved (a) a marine economist/policy person with economics training; (b) a contact in the national accounts office of government, or with an agency or consulting firm with access to National Accounts data, modeling expertise, or experience in regional economic modeling;

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and (c)a marine expert with knowledge of marine industries, though government often refers marine issues to either a marine science or environment agencies by default. These proposed approaches are reported in Figures 3 and 4 below.

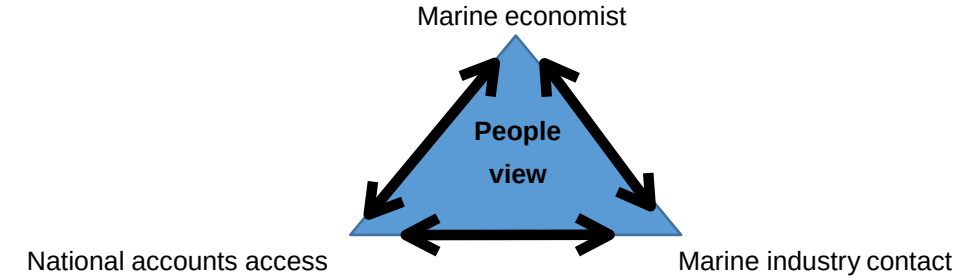

Figure 3. The three sided triangle people approach to developing profiles of the marine or blue economy.

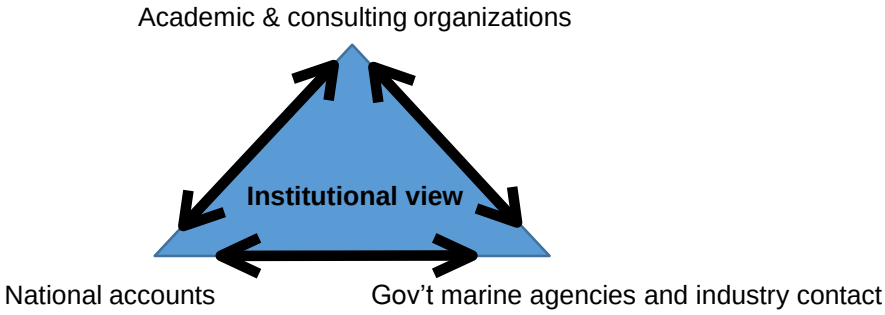

Figure 4. The three-sided triangle institutional approach to developing profiles of the marine or blue economy.

The combination of the three roles can cover the range of issues required to build a profile of an ocean economy. Like a triangle, the arrangement is strongest when the three skill sets are mutually supportive. In addition, industry contacts can review national accounts data relevant to their industry estimates and can give contextualization to changes in economic activity and assist in the identification of double counting. The results of the process can then be communicated to gain influence from the studies.

7. DISCUSSION

The review suggests the need for the measurement of the economic activity associated with marine activities and values is part of a larger process. The formation of Exclusive Economic Zones by most nations following the coming into force of the United Nations Law of the Sea Convention in 1994, has seen a twenty year period where nations come to terms with administration and management of their extended marine jurisdictions. The primary addition to national economic activity in the ocean economy in this period has been new offshore oil and gas developments that have brought the economic contribution of the EEZ to the attention of "land centric" governments. In the last few years "Blue growth" (EC 2012) promises incremental growth across a range of industries in the ocean as part of the evolving Blue Economy.

In a sector that is regulated by government due to the common property nature of the sea, information on economic activity is part of the data required for a suite of management needs arising as governments engage more fully with the process of marine and coastal management. There are both private industry and public good parts of the ocean economy and a need to regulate the externalities arising from ocean economic activity.

In land based industrial activities it is taken for granted that economic information on all industries are available in the national accounts framework which has been established for well over half a century. Economists use national accounts to measure industry value, and trends in growth, or contraction of economic activity through time. However when we come to ocean activities, national accounts sections of government do not readily produce national accounts data for the marine sector, as the measurement process is different to that for land based industries. Tourism satellite accounts are multi sector and provide similar challenges to the approach required to measure the ocean economy. To date only the Philippines have developed a marine economy satellite account (Virola et al. 2009).

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8. THE ROLE OF NATIONAL ACCOUNTS IN MEASUREMENT AND USE OF MARINE ECONOMY INFORMATION

At a national level of government "valuing the oceans" is a relatively new need trying to find its place within existing national accounting frameworks. The government vision for oceans may be proposed in a national ocean policy, but is divided in administration and management by the key marine regulatory agencies for each sector, for example, the navy, energy, marine transport or fisheries.

In the Asia Pacific, regional Ministerial meetings and national ocean policies have been part of the genesis of ocean economy measurement studies. This suggests that often it is the regional initiative that enables the Ministers to gather their national ocean industry profile together. The drivers to provide the information on ocean economic activity appear to have different priorities between nations. Experience has shown that international comparisons give interesting comparisons between nations, but enable a nation to see its marine economy characteristics through seeing and comparing with other marine economies. The greatest benefit from measuring the ocean economy is to the nation itself as it is a precursor to impoved management on the basis of the "if you can't measure it, then you can't manage it" principle. The studies are also an important benchmark from which to measure prospective economic growth.

Thus in looking into the use of national accounts in ocean economy measurement the following questions are assumed to have been answered:

a) Who wants to measure the ME?
b) Why do they need the information?
c) How often is it needed?
d) Who are the final users of ocean economy information?
e) What more could marine economic information be used for?

It is these questions about values that will drive the need for ocean economic studies and hence more attention and resourcing to examine national account information as part of the process. The institutional arrangements for the long term supply of ocean economy information are linked to the demands and needs identified nationally. It is essential we keep identifying these information needs and how national accounts can provide accurate information to key policy issues.

The apparent solution is to have the national accounts office generating an ocean economy profile and this happens in a few of the larger nations examined. Where the national accounts office does not measure the ocean economy, there are a series of possible reasons: it may not be seen as a need or priority?; it may not merit the cost if the sector has a low level of economic activity; the financial resources may not be available to produce the data; and Statistical office staff may not have the information or experience to be able to apportion marine use from land use.

The involvement of academics and consultants to assist in the supply of marine economy data may be due to being able to relate the national accounts data to marine activities. Familiarity with the marine issues in which the national accounts valuation data will be applied, is more than an apportionment issue. Government managers, academics and consultants will be placing the marine value data into policy issues faced by government. This is a major difference between the role of a national statistics department providing national accounts information annually, as opposed to policy makers wishing to access national accounts data in respect of addressing issues in industry, externalities, coastal management and maintaining or increasing value in specific marine or coastal policy situations.

It appears the data process for the whole marine sector is in development and evolving over a long period of time measured in decades. Ocean economy information needs to be available in a form that can measure sector growth, and is useful in addressing policy questions faced by government agencies.

In among this process, many non-economists do not recognize the role of national accounts in the valuation approach of the ocean economy. They emphasize that national accounts do not capture the environment and ecological values sufficiently, a point recognized by marine economists. There is a need to convince non economists hailing the blue economy, that national accounts are inherent to delivering their vision. Double counting inherent in most of the alternative approaches and makes national accounts data essential. National accounts are a necessary, if not sufficient, proven framework for ocean economy measurement at the core of total valuation approaches.

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9. CONCLUSION

There have been a range of national studies in the Asia Pacific originating from regional Ministerial agreements. Measurement of the ocean or Blue economy has had a range of both different drivers and ways the information has been supplied.

The provision, measurement and use of ocean and Blue economy data is still developing and national accounts are an essential part of this process. Although the limits of national accounting in valuation are well known, the use of national accounts data is an essential basis for the measurement of the ocean/blue economy, particularly in helping to reduce double counting in ocean economy estimates.

The paper concludes that National accounts should be viewed as necessary to blue economy evaluation, if not sufficient in all aspects. They provide a solid basis for improvements in measurement of the Blue economy and in time more sustainable institutionally relevant information systems will be developed.

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