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Growing the Philippines' Blue Economy: Policy Challenges and Opportunities

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ABSTRACT

The "blue economy" is a version of the "green economy" made relevant to our seas and oceans. It is a model of economic development that focuses on the sustainable management and use of natural and other resources in the maritime sector. Given the Philippines' archipelagic nature and distinct resources and comparative advantages in this sector, this paper examines the challenges and opportunities towards growing the Philippines' blue economy. It argues for the development of an integrated development plan, as well as the institution to catalyze and carry it out, for the entire blue economy. These should recognize and adequately manage rising risks (e.g. geo-political risks in the West Philippine Sea and risks due to climate change) and utilizes opportunities to leverage the marine economy for rapid and inclusive growth (e.g. tourism sector development, sustainable fisheries management and manufacturing and rehabilitation of ships and naval assets). Ultimately, such a strategy could not only help promote inclusive development, it could also help strengthen the country's national security.

Keywords:
blue economy, Philippines

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INTRODUCTION

The Philippines is the 2nd largest archipelagic country in the world, with about 7,500 islands (NAMRIA 2016). Its coastline of 36,289 km is the 5th longest in the world—longer than the coastlines of China (14,500 km), the United States (19,924 km) and Japan (29,751 km). It is geographically located at the apex of the Coral Triangle, which is the global center of marine diversity where 76% of the world's coral species live, and home to at least 2,228 sspecies of reef fish (Asian Development Bank 2014). International marine scientists in 2005 have regarded the Philippines as the "center of the center" of marine biodiversity in the world (Carpenter and Springer 2005).

Including its exclusive economic zone (EEZ), the Philippines' offshore area occupies an estimated 2.2 million km2, which is over seven times larger than its land area of 300,000 km2. There are also potential areas with vast deposits of extractive resources such as the Reed Bank and Benham Rise. Reed Bank is located in the West Philippine Sea with estimated reserves of 55.1 million trillion cubic feet (tcf) of natural gas and 5.4 billion barrels of oil (US Energy Information Agency 2013). Benham Rise is a 13-million-hectare underwater plateau located near Aurora province in the eastern border of the country. In 2012, the UN confirmed Benham Rise as part of the Philippines' extended continental shelf (ECS) (UN Commission on the Limits of the Continental Shelf 2012). However, the security of these resources is uncertain due to the country's maritime disputes with its neighbors, notably China.

Millions of Filipinos rely on fisheries and aquaculture for livelihood and as a source of food. Seventy-eight percent of the Philippines' 80 provinces and 56 percent of its 1,634 cities and municipalities are located along the coastline. Based on the 2015 census, the country's population is at 100.98 million, with 60 percent living in coastal areas (Philippine Statistics Authority 2016a). There are 21.9 million Filipinos who remain mired in poverty; and fishermen have the second highest poverty incidence rate (34%) among basic sectors (Philippine Statistics Authority 2016a) (Figure 1).

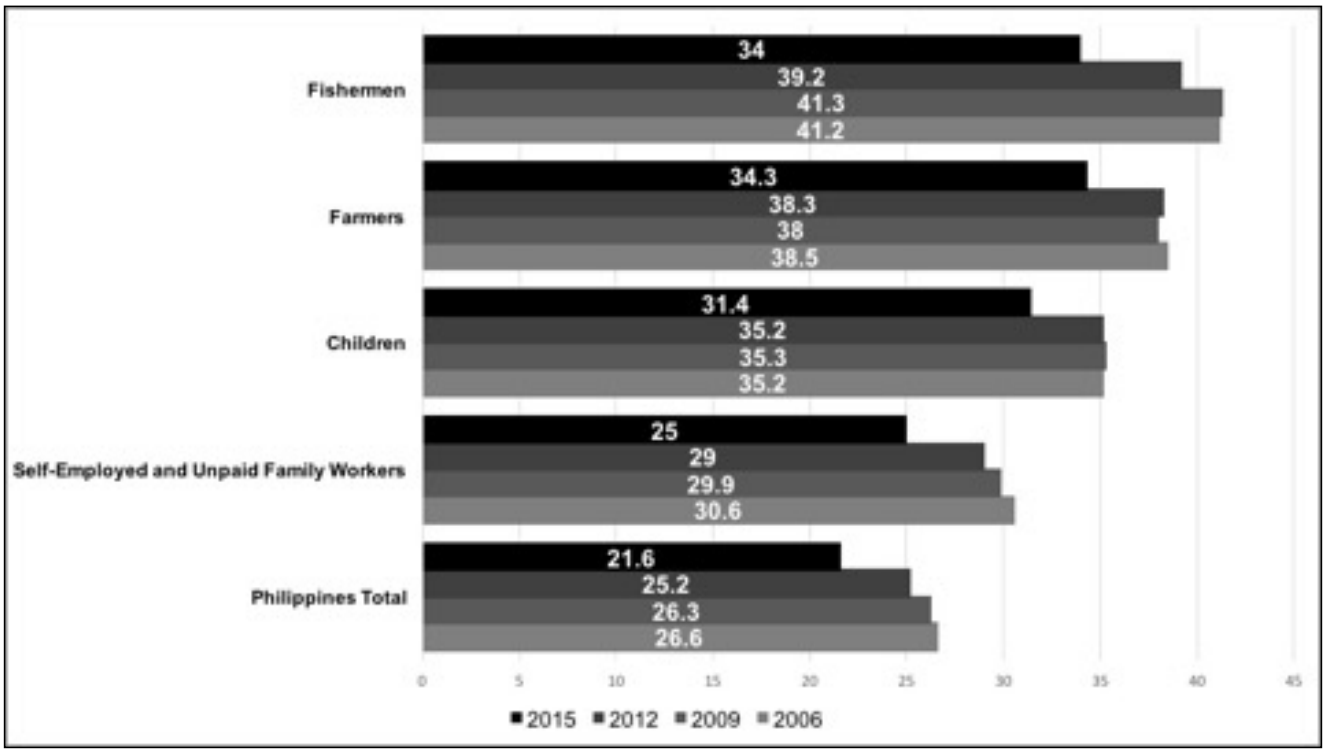

Figure 1. Poverty Incidence Among Basic Sectors, 2006, 2009, 2012, 2015. Source: Philippine Statistics Authority (2017).

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Despite the Philippines' advantage in terms of its vast marine resources and favorable geographical location, it has not been able to fully realize its maritime potential. The latest preliminary estimates of the maritime sector's contribution to the national economy showed that it accounted for only 2.62 percent of the total GDP in 2012 (Azanza et al. 2017). There are many underlying factors for the Philippines' underutilization of its maritime potential, including the absence of an overarching development plan for the entire maritime economy as well as long-lived institutions such as a Department of Marine Resources (or Department of Marine Affairs) that will help catalyze and manage the collective action necessary to boost the Philippines' maritime sector in a sustainable way.

Aside from the "fragmented and uncoordinated" (Batongbacal 2017) maritime governance in the country, there are also rising risks such as environmental degradation, climate change, and maritime disputes, affecting in critically inter-linked ways the country's food security, energy security, health security, and economic security. Taken as a whole, the sustainable development of the Philippines' maritime sector is in the national security interest, enabling it to overcome a variety of risks including those affecting the country's sovereignty itself.

This paper proposes the development of an integrated development plan for the entire maritime economy using the blue economy model. The blue economy can be defined as a "practical ocean-based economic model using green infrastructure and technologies, innovative financing mechanisms, and proactive institutional arrangements for meeting the twin goals of protecting our oceans and coasts and enhancing its potential contribution to sustainable development, including improving human well-being, and reducing environmental risks and ecological scarcities" (Changwon Declaration 2012).

OVERVIEW OF THE PHILIPPINE MARITIME ECONOMY

The maritime sector includes "a wide range of activities from shipbuilding to shipping and ports, to fisheries and aquaculture, to recreational activities and tourism, to offshore energy exploration and extraction and to a large number of related economic services" (Virola et. al., 2010). Combined together, these industries form an essential pillar for the national economy through the creation of jobs, foreign investments attraction, generation of further support industries, and strengthening of the local purchasing power (Ritcher 2016). Recently, analysts provided preliminary estimates of the maritime sector's contribution to the national economy, showing that the sector accounted for 2.62 percent in the country's GDP and 4.35 percent of the labor force in 2012 (Table 1) (Azanza et al. 2017).

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

Sector	Value added (PHP millions)	Total employed
Fishing	170,330.000	1,461,000
Manufacturing	14,069.162	34,328
Processing and preserving of fish and fish products and other seafoods	6,359.367	27,938
Building and repairing of ships and boats	7,709.795	6,390
Transport, Storage, and Communication	25,991.136	30,384
Ocean passenger transport	4,302.751	1,248
Ocean freight transport		

Interisland water passenger transport	5,100.088	8,388
Interisland water freight transport	4,627.895	4,630
Supporting and auxiliary activities to water transport	11,960.402	16,118
Total	210,390.298	1,525,712
Gross Domestic Product	8,026,143	
Total Employed Labor Force		35,061,000
Percent of GDP/ Percent of Labor Force	2.62	4.35

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

On top of these economic estimates, marine ecosystems further contribute in myriad ways, such as through indirect use values including providing nursery habitat for fish and shoreline protection. Summing these up, the total estimated value is about US$970 billion up to US$1.5 trillion[1] per annum contribution to the domestic economy (Azanza et. al. 2017). Total monetary value associated with coral reefs, seagrass, and mangroves alone is already estimated to be about US$98.298B or PhP1.553T, which is almost at par with the contribution of the manufacturing sector to the country's nominal GDP in 2007 (PhP1.568T) (Azanza et. al. 2017)[2]. These types of estimates are not yet routinely reported in the country's national accounting of total output and wealth, possibly leading to a gross underestimate of potential (as well as the damage) in the country's maritime sector.

Fisheries and Aquaculture

The fisheries sector accounted for 1.8 percent of the total GDP and 3.1 percent of the total labor force in 2014 (Philippine Statistics Authority 2015). The Philippines ranks 10th in the world fishing industry with 2.4 million metric tons of capture production in 2014 (Food and Agriculture Organization 2014) (Figure 2). The Philippines is also the world's 3rd largest tuna producer, 8th tuna exporter, and 5th aquaculture producer in 2014 (Food and Agriculture Organization 2014). Tuna remained the top export commodity, with 97,815 metric tons (MT) in volume and PHP 13,521,026 in value in 2015 (Philippine Statistics Authority 2016b) (Table 2). The fisheries statistics of PSA show that there is a decline from 2013 to 2015 in terms of the value of exports of different fisheries products, especially for tuna, shrimps and prawns, and seaweeds (Table 2).

Despite being the largest among the maritime industries, the sustainability and inclusiveness of the fisheries sector remain problematic in the Philippines. Based on PSA's latest poverty incidence report, fishermen remain as one of the poorest basic sectors with 34 percent poverty incidence in 2015 and only an average daily wage of PHP 178.43 (Philippine Statistics Authority 2017).

Maritime manpower

Almost 90 percent of international trade is ship-borne (International Maritime Organization n.d.), and this gives seafarers a crucial role in the maritime sector. In the last 50 years, the Philippines has become a major provider of maritime professionals and it is considered by many as the seafaring capital of the world (Oxford Business Group 2016). The country has been the leading single supplier of global maritime manpower until 2015, when China

[1] In Parity Purchasing Power (PPP) US$ billion, 2007 prices.
[2] All figures are estimated in terms of PPP.

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

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

Source: Philippine Statistics Authority.

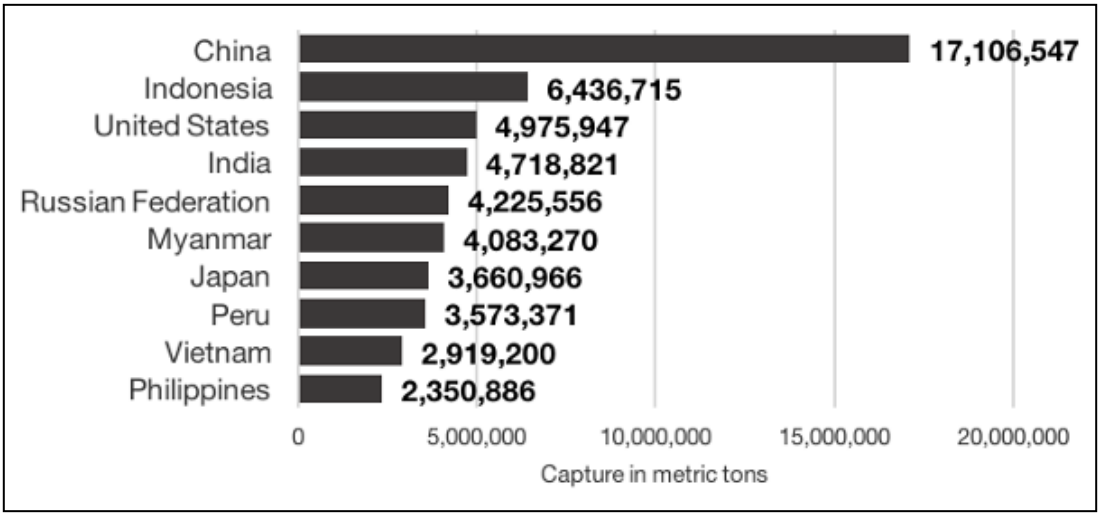

Figure 2. World's leading fishing nations in 2014 based on capture production.
Source: Food and Agriculture Organization (2014).

took the top spot (Baltic and International Maritime Council and International Chamber of Shipping 2016).

While the Philippines is still the top supplier of rated seafarers, it has lagged behind China in producing officers (Figure 3). Out of the 1.5 million seafarers in the world, 25 percent are Filipinos (Baltic and International Maritime Council and International Chamber of Shipping 2016). Out of the total USD 26 billion remittances from all overseas Filipino workers, seafarers alone contributed USD 5.572 billion (21 percent) in 2016 (Bangko Sentral ng Pilipinas 2017).

Notwithstanding early trends at automation in the maritime industry, there still appears to be an increasing global demand for seafarers, especially officers. The 2016 report of the Baltic and International Maritime Council (BIMCO) and International Chamber of Shipping (ICS) indicates that there is a current shortfall of about 16,500

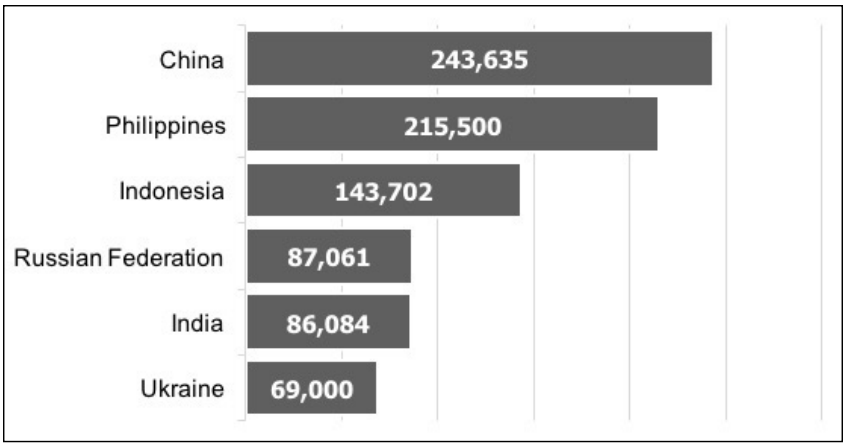

Figure 3. Six Largest Seafarer Supply Countries in 2015. Source: Baltic and International Maritime Council and International Chamber of Shipping (2016).

officers and estimates a need for an additional 147,500 officers by 2025, while there is a surplus of about 119,000 ratings (15.8 percent) (BIMCO & ICS 2016). The shortage of officers is seen by analysts as a favorable moment for Filipino seafarers to upgrade in their ranks and and eventually fill in the projected manpower shortage (Oxford Business Group 2016). To regain the country's position as the "Seafaring Capital of the World", there are issues in the maritime education and training sector that need to be addressed first. According to the Commission on Higher Education (CHEd), in 2016 only 5,101 (19.73%) out of 25,855 students of BS in Marine Transportation (BSMT) and BS in Marine Engineering (BSMarE) programs were able to undergo the mandatory 12-month Shipboard Training Program (Commission on Higher Education 2017). This is mainly due to the high cost of training being charged by shipowners (PHP 25,000–30,000 per month) and the lack of ships that could accommodate cadets for training (Philippine Association of Maritime Training Centers, Inc. and Philippine Association of Maritime Institutions 2017). The lack of required training is the main reason why most Filipino seafarers remain as ratings[3], instead of advancing into the ranks as officers. Since they did not acquire the necessary license to become officers, most Filipino seafarers perform menial tasks in the ships.

To address this issue, stakeholders such as the Philippine Association of Maritime Training Centers, Inc. (PAMTCI) and the Philippine Association of Maritime Institutions (PAMI), proposed a 10-year roadmap for the Maritime Education and Training (MET) sector for during the launch of MARINA's Maritime Industry Development Plan (2018–2028). To ensure that students of BSMT and BSMarE will be able to complete the required Shipboard Training Program, the roadmap recommends the acquisition of training ships and enhancement of partnership with foreign and domestic shipping companies. The roadmap also outlines strategies to strengthen and upgrade the quality of education and training of seafarers through policy and institutional reforms, incentives for Maritime Education Training Institutions (METIs), capacity building, organizational development, and a comprehensive communications program.

By upgrading and being part of a strategy to increase the training of seafarers, this sector can

[3] Mariners without a certificate of competence are called "ratings".

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also contribute heavily to the professionalization and skills upgrading of the domestic and foreign maritime industry.

Shipping, Logistics, and Maritime Transport

Efficient ports are critical in the competitiveness of the maritime industry and the whole Philippine economy. Being an archipelagic country, the Philippines is heavily reliant on domestic and international shipping to transport both passengers and goods. More efficient ports contribute to economic competitiveness and growth by lowering the logistical costs of moving goods; and by contributing to overall convenience of passengers. The total cargo volume handled at the ports nationwide registered at 223.67 million metric tons (MMTs) while passenger traffic reached 62.76 million in 2015 (Philippine Ports Authority 2015). The domestic merchant fleet in the Philippines mainly consists of passenger vessels (63.17%) and cargo vessels (27.38%) with average ages of 9 and 16 years old, respectively (Table 3). A maritime expert noted that most of the vessels are second-hand vessels imported from Japan, which were not designed for the relatively rougher seas of the Philippines (Santos 2017).

In terms of quality of port infrastructure in the world, the Philippines is experiencing a downward trend in recent years. In 2015, the Philippines ranked 101st out of 137 economies in the world and its ranking fell to 113th in 2016 (World Economic Forum 2016) (Table 4). The Philippines has a 2.9 score (I.E. 7 is the most extensive and efficient in the world, while 1 stands for extremely underdeveloped).

An analysis of the domestic shipping industry in the Philippines shows that it is characterized by high costs, low quality of service, and poor safety record that manifests in frequent maritime accidents (World Bank and International Finance Corporation 2014). Philippine domestic shipping is generally more expensive compared to Malaysia and Indonesia. The average port-to-port cost per nautical mile in the Philippines is USD 1.47, much higher than Indonesia's USD 0.77 and slightly

Table 3. Philippines' Domestic Merchant Fleet, 2016.

Type of Service	No. of Vessels	Percentage	Total Gross Registered Tonnages (GRT)	Average GRT	Average Age
Passenger	9060	63.17%	498,942.03	55.1	8.91
Cargo	3927	27.38%	1,951,742.84	497.26	15.63
Tanker	290	2.02%	308,151.29	1,062.59	20.24
Tug	776	5.41%	95,589.66	123.34	27.4
Dredger	37	0.26%	18,652.87	504.13	19.89
Speed Boat	39	0.27%	134.39	3.45	4.82
Special Purpose Ship	31	0.22%	6,026.68	194.41	14.97
Miscellaneous Ship	147	1.02%	21,449.31	145.91	10.05
Others	6	0.04%	2,703.40	540.68	24
No Information	30	0.21%	564.96	18.83	14
Total	14343	100%	2,903,957.43	202.59	12.04

Source: Maritime Industry Authority (MARINA) 2016: Summary of Domestic Merchant Fleet.

Table 4. Quality of port infrastructure in the world (2016).

Rank	Country/Economy	Score
1	Netherlands	6.8
2	Singapore	6.7
3	United Arab Emirates	6.4
4	Hong Kong	6.4
5	Panama	6.3
6	Belgium	6.3
7	Finland	6.2
8	Iceland	5.9
9	Denmark	5.7
10	United States	5.7
..110	Slovak Republic	3.0
111	Sierra Leone	3.0
112	Cameroon	3.0
113	Philippines	2.9
114	Brazil	2.9
115	Mauritania	2.9

Source: World Economic Forum Global Competitiveness Index (2016).

higher than Malaysia's USD 1.36 (World Bank and International Finance Corporation 2014, 15). Ironically, it is also more expensive to transport goods between two Philippine domestic points direct, than compared to two domestic points via an international point. Table 5, for example, shows how shipping charges for the Manila-Cagayan de Oro route could be around 50 percent cheaper if shipments go via Kaohsiung, Taiwan (Table 5). Logistics costs account for 24 to 53 percent of wholesale price in the Philippines compared to less than 20 percent average in the East Asia region (World Bank and International Finance Corporation 2014, 16). Depending on the goods and routes, shipping and port handling costs account for an average of 35 percent of logistics cost, 8 percent (to as high as 30 percent) of wholesale, and an average of 5 percent of retail price (Tables 6 and 7). Hence, improvements in the efficiency of sea-borne logistics could yield important advantages for Philippine firms.

The poor maritime safety record is also an issue in the domestic shipping industry. In the East Asia Region, the Philippines has the highest absolute casualty rate, which is 40 percent higher than the second-ranked country, Indonesia. On average, there are 228 ships involved in accidents and 303 casualties per year in the country (World Bank and International Finance Corporation 2014, 27).

The underlying reasons for the industry's inefficiencies, according to the analysis of World Bank, include: (1) the oligopolistic market structure, (2) low profitability, (3) lack of market scale, (4) lack of connectivity, network planning, and consolidation, (5) lack of port and road infrastructure, and (5) the conflict of interest in the mandate of the Philippine Ports Authority as a regulator and an operator of ports (World Bank and International Finance Corporation 2014, 27).

Several initiatives were introduced to address some of these issues, such as the Philippine

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Table 5. Cost (in USD) of Philippine domestic shipping vs. Foreign transshipment (2014).

Type of shipping container	Manila-Cagayan de Oro	Manila-Hong Kong-Cagayan de Oro	Difference
20 footer	1120	644	476
40 footer	1860	1144	716
	Manila-Cagayan de Oro	**Manila-Kaohsiung-Cagayan de oro**	**Difference**
20 footer	1120	519	601
40 footer	1860	1044	816

Source: World Bank and International Finance Corporation (2014), 24.

Table 6. Shares to total logistic cost (%).

	Average
Shipping	27.2
Ports (cargo handling)	6.9
Trucking	39.5
Storage	17.9
Handling	32.8
Others	30.3

Table 7. Average shares to total logistic costs and Philippine prices (%).

	Logistics costs	Wholesale price	Retail price
Shipping	27.2	6	2.8
Ports	6.9	2.4	2.1
Shipping and ports	34.1	8.4	4.9

Source: World Bank and International Finance Corporation (2014), 25.

Competition Act and the Foreign Ships Co-Loading Act, which were both enacted in 2015. Both laws are designed to boost the country's economic progress through improved market competition and a more efficient shipping system, which would eventually reduce the costs of domestic shipping.

Port and road infrastructure are also currently being improved. For 2017, the government allocated PHP 860 billion for infrastructure, with PHP 355 billion to be used to fix road networks, as well as systems of seaport and airport (National Economic Development Authority 2016). Furthermore, the Philippine Ports Authority's Port Infrastructure Development Plan identified the five priority ports for modernization as the Davao, Cagayan de Oro, General Santos, Iloilo Container Port Complex, and Zamboanga ports, which handle majority of import and export products (Philippine Ports Authority 2016). To improve inter-island connectivity, the Philippine Ports Authority also expanded the operations of the Ro-Ro (roll-on, roll-off) facilities.

Shipbuilding and Ship repair (SBSR) industry

The shipbuilding industry refers to the sector involved in the "construction, launching, and outfitting of watercraft, while the ship repair industry deals with the overhaul, improvement,

alteration, and reconditioning of water vessels" (Maritime Industry Authority 2007). In 2015, the Philippines became the 4th largest shipbuilding nation after China, South Korea and Japan (Figure 4).

The shipbuilding industry paid over PHP 24 billion in taxes to the Philippine government in 2015 and in the same year, the cumulative investments in the industry were around PHP 116 billion (Ritcher 2016). Overall, the industry employed 46,000 workers, including subcontractors (Ritcher 2016). Seventy percent of the manpower of the shipbuilding industry are skilled/semi-skilled workers who are welders, crane operators, steel cutters, outfitters, and painters, with a monthly salary ranging from PHP 15,000 to 25,000 (Table 8).

In 2015, shipbuilding accounted for 2.6 percent of the total exports of the country with a value of USD 1.5 billion (Philippine Statistics Authority 2016c) Exports are primarily driven by two foreign-owned shipbuilders (Hanjin and Tsuneishi) (Table 8) that produce bulk carries and containerships as well as some tankers. Domestic shipyards mainly engage in ship repair for domestic ships, accounting for 90 percent of domestic shipyard revenue. While domestic shipyards account for the largest share of the industry based on the number of yards (95 percent), Hanjin and Tsuneishi account for almost all exports, 75 percent of employment, and 97 percent of revenue (Department of Trade and Industry and Board of Investments 2017).

Most of the ships built in the country are exported to countries in Europe, such as the very first Philippine-made liquefied petroleum gas (LPG) carrier by Hanjin Subic (Empeño 2015). Despite the world-class quality of ships being constructed in the country, the domestic demand for ships is very low. As mentioned in the "Shipping and Logistics" section of this paper, the domestic fleet is made up of mostly imported second-hand vessels from Japan. Domestic ship owners prefer second-hand vessels due to its relatively lower price compared to brand new vessels (Santos 2017). To increase their profits, some ship owners construct a second deck in their ships to accommodate more passengers (Santos 2017). Aside from the mismatch of the imported vessels for the rough seas of the Philippines, the old age and overloading of the ships contribute to the increasing maritime accidents in

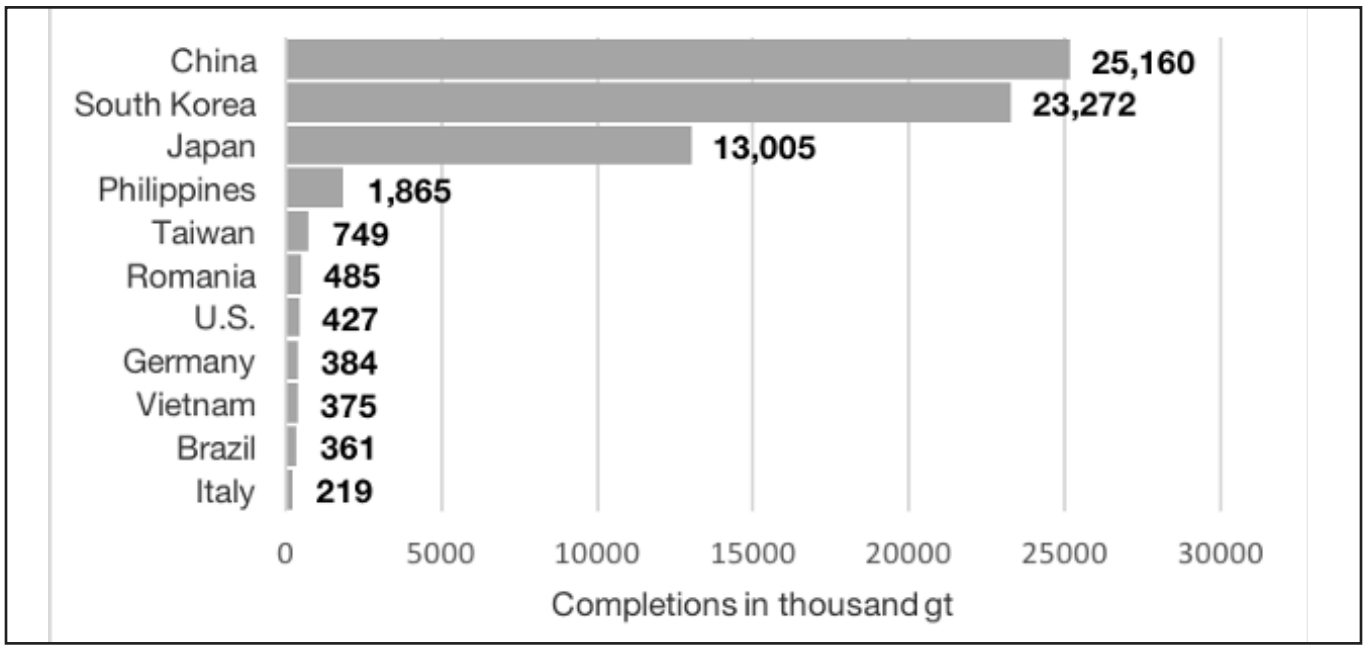

Figure 4. World's largest shipbuilding nations in 2015. Source: HIS: Shipbuilder's Association of Japan (2015).

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Table 8. Shipbuilding industry manpower composition (2012).

Category	Number	Percentage	Skills Set	Salary Range (PHP monthly)
Managerial Personnel	2702	6	Management	25,000-40,000
Administrative Personnel	4954	11	Administrative	10,000-15,000
Technical Personnel	5855	13	Naval architects and engineers (electrical, mechanical, marine; computed aided designs), electricians	25,000-35,000
Skilled workers/semi-skilled workers	31572	70	Welders, crane operators, steel cutters, outfitters, painters	15,000 - 25,000

Source: Maritime Industry Authority (MARINA) 2012: Registered Shipbuilding and Ship Repair Entity with Facilities, Manpower & Capitalization

the country (Dimailig et al. 2011). As the regulator of the domestic shipping companies, the Maritime Industry Authority (MARINA) is responsible for ensuring the safety of both passengers and cargo. As part of its domestic fleet modernization program, MARINA imposed a 20-year age cap on imported passenger vessels, enhanced the financing and incentives on new vessels, and implemented stricter guidelines on ship's design that adhere to international standards (Port Calls Asia 2017). These are among the early policies that could begin to spur domestic shipbuilding; but these need to be coordinated with other policies in the value chain, including on the supply of materials and design (upstream) as well as the possible marketing and service-related businesses (downstream), for fuller economic impact.

Marine Tourism

Analysts note that the tropical biodiversity and hospitable culture make the Philippines among the most attractive tourist destination in Southeast Asia (World Travel and Tourism Council 2017) (Oxford Business Group 2017). The tourism industry of the Philippines recorded a total of 5.97 million arrivals in 2016, which represented a growth of 11% compared with the previous year (Department of Tourism 2017) (Figure 5). In 2016, the travel and tourism contributed 2.85 billion PHP, accounting to 19.7 percent of the GDP (World Travel and Tourism Council 2017). In the same year, the industry also provided 2.2 million jobs, which is 5.5 percent of the total employment (World Travel and Tourism Council 2017). It is no doubt that tourism contributes significantly to the Philippine economy, but it can also adversely affect the quality of the marine environment if strict regulations are not in place.

OPPORTUNITIES

The maritime sector can contribute to more rapid and inclusive economic growth in the Philippines, given the vast resources and potential of this sector. In terms of marine resources, Benham Rise, for example, is potentially rich with natural gas and other resources such as heavy metals. Benham Rise is a 13-million-hectare underwater plateau located near Aurora province in the eastern border of the country. In 2012, Benham Rise—roughly the size of Luzon island—was confirmed by the United Nations Commission on the Limits of the Continental Shelf (UNCLCS) as part of the Philippines' continental

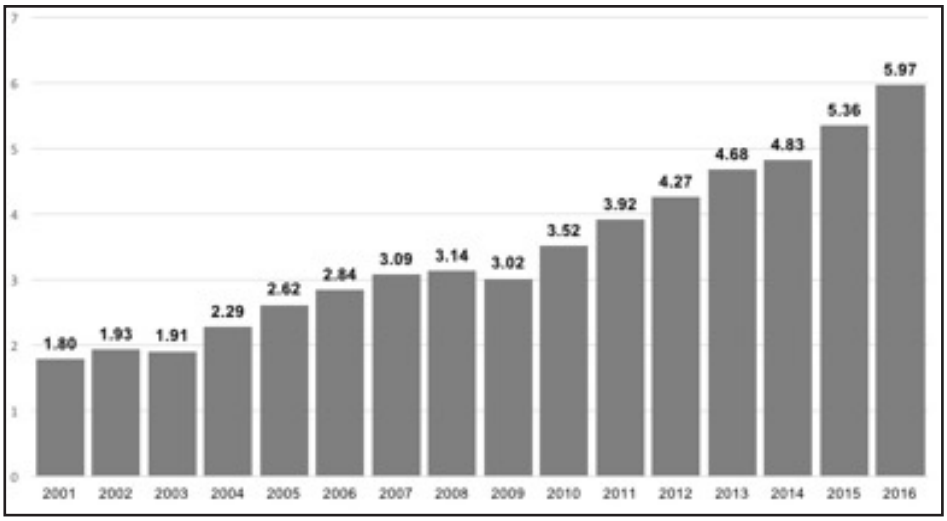

Figure 5. International tourist arrivals from 2001 to 2016, in millions. Source: Department of Tourism (2017).

shelf. The continental shelf includes the seabed and subsoil of the submarine areas 200 nautical miles (NM), or 370 kilometers, from a state's baselines or "edges" (Francisco 2017).

As part of the government's efforts to develop and effectively utilize the resources of Benham Rise, Senator Sonny Angara proposed the creation of Benham Rise Development Authority (BRDA) that would serve as the lead agency in the formulation and implementation of a development roadmap for Benham Rise, including scientific study and exploration (Senate Bill No. 312, 2016). The National Economic Development Authority (NEDA), however, disapproved the proposal on the grounds that the function of the proposed BRDA is similar to the mandate of the National Coast Watch Council (NCWC) and the creation of an agency dealing with marine resources of the entire country would be more beneficial in the long-term (Llanto 2017).

Nevertheless, in May 2017, President Rodrigo Duterte signed Executive Order No. 25 that renamed Benham Rise to "Philippine Rise" to emphasize the country's sovereign rights and jurisdiction to exploit the oil, gas, and other resources of the area as part of its ECS (Official Gazette 2017). Similarly, Defense Secretary Delfin Lorenzana also stated that the government will increase patrols in the area and may even build structures in the Philippine Rise (Lorenzana 2017). Prior to these pronouncements of the Philippine government, a Chinese vessel was reported surveying the area for 3 months in 2016 (Lorenzana 2017). With Malampaya's reserves set to run out in 2021 (Kraft et al. 2015), the government needs to invest in technology, engage stakeholders, and build up its maritime defense to exploit and protect the resources of Philippine Rise for the country's energy and economic security.

Enhanced productivity in the fisheries sector could also provide a strong engine for growth and poverty reduction in the countryside. As mentioned earlier, despite the notable status of the Philippines in terms of fisheries production and exports, fishermen remain the poorest among the basic sectors of the country. To address this issue, the government is continually investing in projects targeted to reduce poverty. Among these projects is the Community Fishing Landing Centers (CFLCs) in strategic coastal communities, which aims to reduce fisheries post-harvest losses from 25 percent to 18 percent and to improve the conditions of fisher folk communities with high poverty incidence (Bureau of Fisheries and Aquatic Resources 2015a). The CFLCs, with PHP 2.85 million cost for each, will house post-harvest equiment and tools that will enable fishermen to preserve

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the quality of their fish and fishery products, which they could eventually sell for a higher price (Bureau of Fisheries and Aquatic Resources 2015a). These facilities will also be used as venues for skills training for disaster-resilient fisheries-based livelihoods and resource management such as monitoring fish catch and stock assessment (Bureau of Fisheries and Aquatic Resources 2015a). Since its launch in 2013, the number of registered fishermen increased from 50,000 to over 1.6 million in 2015 (Bureau of Fisheries and Aquatic Resources 2015a).

Other stakeholders such as private entities, non-profit organizations, and local governments are also contributing to more inclusive and sustainable development in the blue economy. For example, some resorts in Bataan devised compensation schemes to fishermen living in nearby communities. A PHP 5.00 incentive is given for every pawikan egg (sea turtle) turned over to the conservation center of the resort (Pawikan Conservation Center 2017). In a year, a fisherman turns over an average of 120 pawikan eggs, adding about PHP 600 to his income. These resorts also have conservation trips program that allows tourists to learn and experience the proper way of taking care of endangered pawikans. This also effectively promotes sustainable tourism practices, contributing to the local economy.

In terms of business opportunities, the construction and manufacturing linkages to the maritime industry also hold high potential. As mentioned in the "Shipping, Logistics, and Maritime Transport" section of this paper, the government has increased spending on infrastructure, including improvement of road networks and port modernization. With the Philippine Competition Act in place, companies that offer smart and modern logistics solutions have potential to grow within the market. It can also be expected that with the increase of import and export cargo, the demand for transport will rise, eventually increasing the sales for the trucking industry.

Moreover, the ship building and ship repair industry is in a good position to grow with the incentives, favorable policies, and investments in the sector. In June 2017, MARINA launched the Maritime Industry Development Program (2018–2028), which outlines the strategies to achieve the goal of inclusive growth and socio-economic development through a well-developed and globally-oriented maritime industry (MARINA 2017). MARINA's domestic fleet modernization program, if implemented strictly, would generate domestic demand for new ships. Similarly, the proposed creation of a National Marine Finance Corporation to provide credit and other alternative financing schemes to shipbuilders and shipowners (Senate Bill No. 3545) will help encourage the expansion of businesses and entry of new players.

In terms of maritime security, the modernization of the assets of the Philippine Navy and the Philippine Coast Guard will also generate demand for new ships (and demand for services for maintenance and upgrading). Both maritime agencies also use second-hand ships donated by--or bought from--other countries. The modernization of the navy and coast guard assets is potentially favorable, as it will increase the security capacity of the country, and eventually helps in protecting local fisherfolks' access to the country's resources. Under the 2017 3.35 trillion peso (around $70 billion) budget signed into law on December 22, 2016, PhP137.2 billion was allocated for defense, compared to PhP117.5 billion for 2016 (18% increase). In relation to this, Defense Secretary Lorenzana said that the Philippines needs a rather dramatic increase from around 1 percent of GDP (what the country spend now on defense) to around 2.4 to 2.5 percent of GDP (GMA News 2017).

The shipbuilding industry in the country has already proved its capabilities in the global scene, with billions in export receipts from ships sold to countries in Europe, North America, and East Asia. Patronizing Filipino-made ships that are designed especially for the Philippines could yield economic benefits for the country as well as strengthen national, food and energy security – a modernized Navy and Coast Guard that can protect our own territories can prevent illegal fishing and deter other countries from taking hold of our own resources (i.e., Reed Bank and Benham Rise).

THREATS AND VULNERABILITIES

Before the blue economy model was introduced, the Philippines has been single-minded in utilizing its resources. The aggressive and unsustainable extraction of the resources of the oceans is already taking its toll on the country's marine ecosystems. According to the World Resources Institute (WRI), the Philippines had the most degraded reefs globally in 2002 with 98% of reefs at risk from human activities, and of this number, 70% at high or very high risk (World Resources Institute 2012). The case is still the same in 2011, when the WRI reported again that the Philippine coral reefs are included in the most endangered in the world due to overfishing, pollution, and climate change (World Resources Institute 2012). The numbers of endangered marine and coastal species are also rising, reaching up to 625 threatened fish species in 2010 (International Union for Conservation of Nature 2010). Land-based sources of pollution are also threats to marine environment. It has been reported that the Philippines is among the highest producers of plastic trash in the ocean, next to China and Indonesia (Jambeck et al. 2015).

In addition to the alarming degradation of marine ecosystems, the adverse effects of climate change such as stronger typhoons, flooding, and other disasters are also manifesting in the different parts of the Philippines. With approximately 60% of the country's population residing in coastal areas, the global sea level rise caused by climate change will threaten the lives of the population and affect livelihoods. Metro Manila, the financial and economic capital of the Philippines, ranks as the 3rd most vulnerable megacities in Asia in terms of environmental exposure, socioeconomic sensitivity, and inverse adaptive capacity (World Wildlife Fund 2009).

Another risk, which is geo-political in nature, is the maritime dispute with China. China's 9-dash claim, which encroaches on large areas of EEZ and ECSs of the Philippines, Vietnam, Malaysia, Brunei, and Indonesia is the root cause of the dispute. Eighty (80) percent of the Philippine's exclusive economic zone (EEZ), comprising 381,000 km2 of maritime space, and 100 percent of the country's extended continental shelf (ECS) estimated at over 150,000 km2 of maritime space, is at stake (Carpio 2017, 30). This dispute raises significant concerns over food security, energy security, health security, and the economic security of the country. China's claim includes the Malampaya gas field and Reed Bank where majority of natural gas and oil deposits of the country are located. To strengthen its claim to these territories, China has been reportedly building structures intended to house surface-to-air missile systems on its three largest outposts in the disputed Spratly chain of the South China Sea, as a part of a "steady pattern of Chinese militarization" (Japan Times 2017). China's reclamation activities are causing "irreversible and widespread damage to the biodiversity and ecological balance of the South China Sea" (Department of Foreign Affairs 2015). The destruction of 311 hectares of coral reef systems is estimated to cause economic losses to coastal states in the South China Sea valued at $109.5 million annually (Bureau of Fisheries and Aquatic Resources, 2015b). These are rising risks in the maritime sector that should be addressed and managed, otherwise, we stand to lose resources that majority of Filipinos depend on.

NEED FOR DOMESTIC AND INTERNATIONAL POLICY STRATEGY TO GROW THE BLUE ECONOMY

Regional Cooperation

The oceans are interconnected and borderless; fish stocks move through different countries' boundaries and one issue in a small area, such as pollution and overfishing, may adversely affect other parts of the ocean. This is why regional and international cooperation is crucial in addressing different maritime related issues. Using a regional public goods framework, Mendoza and Siriban (2013) analyzed how international cooperation could help in resolving maritime conflicts and build long-term solutions to maritime issues. For example, Malaysia and Thailand have a long-

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standing territorial dispute on overlapping maritime areas, but in 1979, the two countries decided to pursue a Joint Development Agreement that outline mechanisms which they would use to manage and allocate the marine resources found in the joint development zone. All this, while also noting that the joint development initiative would not affect their maritime delimitation efforts. The analysis shows that the key to success involves the "use of financing and burden-sharing mechanisms, and the importance of joint research and producing credible data and information for conducting collaborative policymaking and, if necessary, settling disputes" (Mendoza and Siriban 2013).

The Philippines is also a part of several regional cooperation agreements. Being "the center of the center of marine biodiversity", the country is part of the Coral Triangle Initiative together with Malaysia, Indonesia, Papua New Guinea, Timor-Leste, and the Solomon Islands. The Coral Triangle Initiative aims to address the urgent threats facing the coastal and marine resources of one of the most biologically diverse and ecologically rich regions on earth (Coral Triangle Initiative website, n.d.). Another more recent case of regional cooperation is the Sulu-Sea Initiative. Every year more than 100,000 ships pass through the Sulu-Sulawesi Seas carrying 55 million metric tons of cargo and 18 million passengers (Indonesian Foreign Ministry 2015). The Philippines, Indonesia, and Malaysia agreed to undertake trilateral patrols in the Sulu-Sulawesi Seas to combat terrorism, piracy, kidnapping, and other crimes in the area (The Philippine Star 2017).

As part of the Association of Southeast Asian Nations (ASEAN), the Philippines can benefit from the efforts of the regional bloc in boosting the maritime economy. Among significant efforts are the ASEAN Cooperation in Fisheries 2016–2020, Roadmap to Integrated and Competitive Maritime Transport, and the Regional Forum Workplan for Maritime Security. The ASEAN Cooperation in Fisheries aims to enhance the quantity and quality of production with sustainable, "green" technologies, enhance trade facilitation, ensure food security, increase resilience to climate change, and assist small producers to improve productivity (ASEAN 2015). The Roadmap in maritime transport aims to develop a single ASEAN voice in maritime matters, intensify infrastructure development, formation of an ASEAN Single Shipping Market, which includes the establishment of an ASEAN Ro-Ro Shipping Network, harmonization of regulatory requirements, and strengthen the management capacity and technologies in the sector (ASEAN Briefing 2016). Lastly, the ASEAN Regional Forum prioritizes shared awareness and exchange of information and best practices, confidence building measures, and capacity building of maritime law enforcement agencies (ASEAN Regional Forum 2014).

National Policies on Maritime Economy

The Philippines can also learn from the national policies and strategies of its neighboring countries such as Vietnam, Indonesia, and Singapore. In 2007, Vietnam adopted its "Sea Strategy up to 2020", which aims to increase the contribution of its marine economy to GDP from 20 percent to 56 percent, build 15 coastal economic parks with maritime industry as the leading economic sector, followed by oil and gas, seafood, and tourism industries; and increase the standard of living of coastal residents 2.5 times compared to the general living standards of non-coastal residents (VOV5 News 2013). Indonesia also adopted its National Sea Policy that aims to bring Indonesia into a "global maritime axis" and assert itself as a force between the Indian Ocean and Pacific Ocean (The Jakarta Post 2014). The National Sea Policy is effectively a "bureaucratic umbrella" document, as it emphasizes connecting preexisting policies and programs rather than proposing new ones (The Jakarta Post 2014). Another example is the maritime strategy of Singapore, which is one of the leading maritime nations in the world. Singapore focuses on investing on maritime research and development through a dedicated fund, as well as simplifying port dues structure which lead to lower port dues, and streamlining the tax incentives for shipping companies, encouraging international shipping owners and operators to establish operations in Singapore (Lewis 2013).

National Marine Policy (1994)

The National Marine Policy (NMP) of 1994 is the most comprehensive national marine-related policy in the Philippines. It was designed to be an integrated policy planning and management framework for addressing the country's entire marine, coastal, and ocean-related interests. Twenty two (22) years after its implementation, a review of the policy shows that it has notable accomplishments, such as putting the emphasis to an integrated coastal zone management, and prioritization of the establishment of Marine Protected Areas (MPAs) (Co et al. 2016). However, there are also many gaps in its agenda, which contributed to an "uncoordinated and fragmented governance of the sector" and poverty in coastal communities despite continuous economic growth (Batongbacal n.d.) (Co et al. 2016). Other issues identified are the absence of a marine research agenda, lack of scientific basis of some of the existing plans, decisions, and laws (Co et al. 2016) and the improper valuation of marine resources (Azanza et al. 2017).

The Department of Foreign Affairs (DFA) is the lead implementing agency of the NMP, through its Maritime and Ocean Affairs Office (MOAO). Batongbacal (n.d.) observed that the agency focuses mainly on addressing international incidents instead of "turning to an agenda for policy coordination, management, and archipelagic development". There is an inclination to implement the NMP using a foreign policy perspective instead of marine regulation and marine development and conservation (Co at al .2016). An examination of the several mandates of government agencies and related institutions showed that there are more than 20 key institutions involved in the administration, regulation, implementation, and enforcement of marine and maritime-related laws and regulations in the country (Garcia 2005). This has not only caused fragmented implementation but also generated conflicts in jurisdiction and responsibilities – there are too many agencies involved yet their mandates are not explicitly specified (Co et al. 2016).

BLUE ECONOMY DEVELOPMENT PLAN AND DEPARTMENT OF MARINE RESOURCES/ MARINE AFFAIRS

Issues in governance of the maritime sector mentioned in this paper strengthen the call for the creation of an integrated and comprehensive plan for the blue economy and a separate government entity to manage and develop it in a holistic manner. Since the 1990s, there have been discussions to create a separate agency dealing solely with maritime related affairs. The most recent legislative proposals on the creation of a "Department of Maritime Affairs" are House Bill (HB) No. 949, filed by Magdalo Party-list representatives Gary Alejano and Francisco Ashley Acedillo, and Senate Bill (SB) No. 493, filed by Senator Antonio Trillanes in 2013. It aims to converge the different agencies, such as the Maritime Industry Development Authority, Philippine Ports Authority, National Seafarers Administration, Philippine Merchant Marine Academy, National Maritime Polytechnic, Maritime Research Institute, and the Philippine Coast Guard, into a single Department.

The academe also takes part in the proposals, such as the recommendation of the Center for Integrative and Development Studies (CIDS) of the University of the Philippines to create the "Department of Marine Affairs" that will focus on politics and jurisdiction, marine regulation and enforcement, and marine development and conservation (Co et al.2016). The proposal is similar to HB 949 and SB 493 but it is "more comprehensive" in a sense that it also involves the Bureau of Fisheries and Aquatic Resources (BFAR) in the new department. The proposal used the term "marine" instead of "maritime" because it is more inclusive of all ocean activities and objects. Another proposal by scientists and economists involves the creation of the separate executive agency called "Department of Marine Resources" (Azanza et al. 2017). Compared to the other versions, this proposal focuses mainly on research and valuation of the ocean-based economy and development of investments and strategies for ocean use (Azanza et al. 2017). Although there are differences in the

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proposals, their goals appear similar: to harmonize efforts and policies and trigger collective action to develop the blue economy of the Philippines.

No matter what the institution will be called, it shall lead in the crafting and the implementation of a comprehensive and integrated national blue economy plan, which will serve as the governance framework in the management, utilization, and protection of the country's vast maritime resources. The blue economy development plan shall cover the whole maritime sector, including fisheries and aquaculture, seafaring industry, ports, shipping, logistics and maritime transportation, shipbuilding, recreational activities and tourism, offshore energy exploration and extraction, and maritime regulation and security. Only such a comprehensive and coherent approach can effectively connect key value chains and trigger rapid development in the blue economy.

As elaborated in this paper, all these industries/ sub-sectors are interconnected in so many ways, even to land-based economies. This is why all development plans of each industry – such as the Maritime Industry Development Program (MIDP) of MARINA and the Comprehensive National Fisheries Industry Development Plan (CNFIDP) of BFAR, should be taken into account and linked to the blue economy plan. Most importantly, the plan needs to be able to balance and prioritize the interests and actions among maritime sectors and harmonize the implementation of the policies and programs. The institution tasked with carrying out this plan will be critical, if the plan is to be executed well.

CONCLUDING REMARKS

The Philippines undeniably holds vast potential from its vast marine resources, young, skilled, and abundant workforce, and emerging industries such as the shipbuilding and ship repair industry. With a national blue economy plan and strategy in place, as well as the institution tasked with and empowered for collective action to execute this plan, the Philippines could yet succeed in developing and sustainably utilizing its maritime resources.

REFERENCES

Amaro M, interview by Port Calls. 2017. 10-year PH maritime roadmap for public presentation in April (March 2).

ASEAN Briefing. 2016. A Guide to ASEAN's Strategic Transport Action Plan. Accessed September 11, 2017. http://www.aseanbriefing.com/news/2016/03/23/2016-2025-asean-strategic-transport-action-plan.html

ASEAN Regional Forum. 2014. ARF Workplan on Maritime Security 2015-2017.

Association of Southeast Asian Nations. 2015. Strategic Plan of Action on ASEAN Cooperation in Fisheries 2016-2020. ASEAN. Accessed September 11, 2017. http://asean.org/storage/2016/10/Strategic-Plan-of-Action-on-ASEAN-Cooperation-in-Fisheries-2016-2020.pdf

Asian Development Bank. 2014. State of the Coral Triangle: Philippines. Mandaluyong: Asian Development Bank.

Azanza RV, Aliño PM, Cabral R, Juinio-Meñez MA, Pernia EM, Ronald U. Mendoza RU, and Charles Siriban C. 2017. Valuing and managing the Philippines' marine resources toward a prosperous ocean-based blue economy.

Baltic and International Maritime Council and International Chamber of Shipping (BIMCO). 2016. Manpower Report. London.

Bangko Sentral ng Pilipinas. 2017. Statistics - OFW Remittances. Bangko Sentral ng Pilipinas. http://www.bsp.gov.ph/statistics/efs_ext3.asp.

Batongbacal JL. n.d. Reformulating the national marine policy. Accessed August 16, 2017. http://arcoastnews.tripod.com/issue1/htmls/reformulating.htm.

Bureau of Fisheries and Aquatic Resources (BFAR). 2015a. Philippine Fisheries Profile 2015. Quezon City: BFAR.

Transactions NAST PHL 39 No. 2 (2017)
doi.org/10.57043/transnastphl.2017.1058

Bureau of Fisheries and Aquac Resources (BFAR). 2015b. DA-BFAR, Naonal Sciens t condemns the destrucon of marine resources in the West Philippine Sea. Accessed September 13, 2017. http://www.bfar.da.gov.ph/files/img/photos/DABFAR,NationalScientistcondemsdestructionofmarinebiodiversityintheWPS.pdf

Carpenter KE, and Springer VG. 2005. The center of the center of marine shore sh biodiversity: the Philippine Islands. Environmental Biology of Fishes (Springer Link) 72 (4): 467–480.

Carpio AT. 2017. The South China dispute: Philippine sovereign rights and jurisdicon in the West Philippine Sea.

Changwon Declaraon. 2012. Changwon Declaraon: Toward an Ocean-Based Blue Economy: Moving Ahead with the Sustainable Development Strategy for the Seas of East Asia. The Fourth Ministerial Forum on the Sustainable Development Strategy. Changwon: PEMSEA.

Co E, Gamboa MA, Casllo ME. 2016. Naonal Marine Policy Review and Strategic Direcon: Review and Update of the 1994 Naonal Marine Policy and the Formulaon of the Naonal Marine Strategy. Public Policy (University of the Philippines Center for Integrav e and Development Studies).

Commission on Higher Educaon. 2017. Stas cs. Accessed September 7, 2017. http://www.ched.gov.ph/central/page/statistics.

Coral Triangle Inia v e. n.d. “Coral Triangle Inia v e.” Coral Triangle Inia v e on Coral Reefs, Fisheries, and Food Security. http://coraltriangleinitiative.org/.

Department of Energy. n.d. Malampaya Deep Water Gas to Power Project. Accessed July 25, 2017. https://www.doe.gov.ph/natgas/malampaya-deep-water-gas-power-project.

Department of Foreign A airs. 2015. Statement on China’s Reclamaon Acvies and their Impact on the Region’s Marine Environment. Department of Foreign A airs. April 13. Accessed July 28, 2017. https://www.dfa.gov.ph/dfa-releases/5913-statement-on-china-s-reclamation-activities-and-their-impact-on-the-region-s-marine-environment.

Department of Tourism. 2016. Industry Performance for Travel and Tourism. Accessed September 11, 2017. http://www.tourism.gov.ph/pages/industryperformance.aspx

Department of Trade and Industry & Board of Investments. 2017. Shipbuilding. May. Accessed September 11, 2017. http://industry.gov.ph/global-value-chain-studies/.

Dimailig OS, Jeong J-Y, Kim C-S. 2011. Marine transportaon in the Philippines: the marime accidents and their causes. Journal of Navigaon and Port Research Internaonal Edion 35 (4): 289-297.

Empeño H. 2015. Hanjin Subic builds 1st Philippine-made LPG carrier. September 2. Accessed September 8, 2017. http://www.businessmirror.com.ph/hanjin-subic-builds-1st-philippine-made-lpg-carrier/.

Food and Agriculture Organizaon. 2014. The State of World Fisheries and Aquaculture. Rome.

Francisco K. 2017. FAST FACTS: What you should know about Benham Rise. March 30. Accessed September 11, 2017. https://www.rappler.com/newsbreak/iq/164514-fast-facts-benham-rise.

Garcia M. 2005. Progress in the Implementaon of the Philippine Naonal Marine Policy: Issues and Opons. New York: United Naons – The Nippon Foundaon F ellow .

GMA News. 2017. DND eyes having 2 percent of GDP for defense spending. GMA News. January 26. Accessed July 28, 2017. http://www.gmanetwork.com/news/news/nao n/597250/dnd-eyes-having-2-percent-of-gdp-for-defense-spending/story/.

Internaonal Marime Organizaon. n.d. Internaonal Marime Organizaon. Accessed

Transactions NAST PHL 39 No. 2 (2017)
doi.org/10.57043/transnastphl.2017.1058

August 21, 2017. https://business.un.org/en/enes/13.

Internaonal Union for Conservaon of Nature. 2010. Resilience Assessment of Coral Reefs: Rapid Assessment Protocol for Coral Reefs, Focusing on Coral Bleaching and Thermal Stress. IUCN.

Jambeck J,Geyer R, Wilcox C,Law KL. 2015. Marine polluon. Plasc waste inputs from land into the ocean. Science 347 (6623):768-771.

Japan Times. 2017. Beijing connuing 'steady pa ern of militarizaon' in South China Sea. Japan Times. February 24. Accessed July 28, 2017. http://www.japantimes.co.jp/news/2017/02/24/asia-pacific/beijing-continuing-steady-pattern-militarizaon-south-china-sea/#. WXwQatN95sN.

Joint Manning Group. 2017. "Protecng The Welfare Of The Filipino Seafarers & The Philippine Seafaring Industry: Issues & Concerns." Formulaon of the 10-Year Marime Industry Development Program (MIDP), 2018-2028 Launch .

Kra HJS, Jay L. Batongbacal JL, Cainghog NG, Naval JB. 2015. In Defense of the Philippines: assessing the factors a ecng the country's external defense environment. Public Policy Journal (UP Center of Integrav e and Development Studies) XII-XIII: 68-113.

Lewis, Morgan. 2013. Inia v es to boost Singapore's marime industry. Lexology. May 13. Accessed July 28, 2017. http://www.lexology.com/library/detail.aspx?g=05dacf66-74ef-462d-85b3-609097d25353.

Llanto DG. 2017. NEDA thumbs down creaon of Benham Rise Dev't Authority. ABS-CBN News. March 29. Accessed August 21, 2017. http://news.abs-cbn.com/news/03/29/17/neda-thumbs-down-creaon-of-benham-rise-devt-authority.

Lorenzana D. interview by Rappler. 2017. FAST FACTS: What you should know about Benham Rise (March 18).

Marime Industry Authority. 2007. "MARINA Circular No. 02 Series of 2007." Marime Industry Authority. Accessed September 11, 2017. http://www.marina.gov.ph/policies/MCs/MC%202007-02.pdf

Marime Industry Authority. 2016. Registered Domesc Fleet Inventory. Marime Industry Authority. http://marina.gov.ph/sectoral/summary_dome en ventory2016andprevious.pdf. Accessed August 21, 2017 .

Marime Industry Authority. 2017. Formulaon of the Marime Industry Development Program 2018-2028 Framework and Process. Marime Industry Development Program 2018-2028 Launch. MARINA.

Marime Industry Authority. 2017. Registered Shipbuilding and Ship Repair Enty with Facilies, Manpower, & Capitalizaon in Central Oce. Marime Industry Authority. February. Accessed August 21, 2017. http://www.marina.gov.ph/sectoral/List%20of%20registered%20Shipyards%20Metro%20Manila.pdf.

Mendoza RU, Siriban CS. 2013. Regional public goods in the blue economy: lessons from 14 cases of internaonal cooperaon. Social Science Research Network. July 12. Accessed June 22, 2017. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2292276.

Naonal Economic Development Authority. 2016. Build Build Build. Accessed July 28, 2017. http://www.build.gov.ph/.

Naonal Mapping and Resource Informaon Authority. 2016.

Ocial Gaze e of the Philippines. 2017. Execuv e No. 25, Series of 2017. Ocial Gaze e of the Philippines. http://www.officialgaze e.gov.ph/2017/05/16/executive-order-no-25-s-2017/.

Open Transport. 2016. Open Transportaon Portal. Accessed August 21, 2017. hp:// opentransport.ateneo.edu/index.html.

Oxford Business Group. 2016. Filipinos are acv e in the global marime sector. Accessed June 8, 2016. https://www.oxfordbusinessgroup.com/analysis/seafaring-nation-filipino-workers-have-become-essenal-part -global-marime-indus try.

Oxford Business Group. 2017. The Report: The Philippines 2017: Tourism. Oxford Business Group.

Pawikan Conservaon Center. 2017. Montemar Beach Club Eco-Tourism Project. Phone interview.

Philippine Associaon of Marime Training Centers, Inc. and Philippine Associaon of Marime Instuons. 2017. Sustaining the Compev eness of Filipino Seafarers through Quality Marime Educaon and Training. Marime Industry Development Plan Launch 2017. Manila: MARINA.

Philippine Ports Authority. 2015. Promong Good Governance: 2015 Annual Report. Manila: PPA.

Philippine Ports Authority. 2016. PPA's Port Infrastructure Development Plans. Seminars on Improving Transport Marime Safety and Development of Port Infrastructure. Bangkok: United Naons Economic and Social Commission for Asia and the Pacic.

Philippine Stas cs Authority. 2014. Poverty Stas cs for Basic Sectors. Philippine Stas cs Authority. July 4. Accessed July 25, 2017. hp s://psa.gov.ph/content/fishermen-farmers-and-children-remain-poorest-basic-sectors-0.

Philippine Stas cs Authority. 2015. Quarterly Commercial and Municipal/Inland Fisheries Surveys.

Philippine Stas cs Authority. 2016a. 2015 Census of Populaon.

Philippine Stas cs Authority. 2016b. Fisheries Stas cs of the Philippines 2013-2015. Fisheries Stas cs Division, Que zon City: PSA.

Philippine Stas cs Authority. 2016c. Foreign Trade Stas cs of the Philippines: 2016. Annual.

Philippine Stas cs Authority. 2017. Poverty Stas cs. Philippine Stas cs Authority. June 30. Accessed September 11, 2017. https://psa.gov.ph/poverty-press-releases/data .

Port Calls Asia. 2017. MARINA imposes 20-year age cape on imported vehicles. August 24. Accessed September 9, 2017. hp://w ww.portcalls.com/marina-imposes-20year-age-cap-imported-passenger-vessels/.

Ritcher L. 2016. The Impact of Marime Industry on the Philippine Economy. Maka: German-Philippine Chamber of Commerce and Industry. http://philippinen.ahk.de/fileadmin/ahk_philippinen/Committees/Maritime_Industry_in_the_Philippines__GPCCI_2016_.pdf.

Santos A 2017. Philippine RoRo modernizaon leads to competent tourism movement and safe sea travel. December 18. Accessed August 21, 2017. http://www.businessmirror.com.ph/philippine-roro-modernizao n-leads-to-competent-tourism-movement-and-safe-sea-travel/.

Senate Bill No. 312. 2016. Senate Bill No. 312. Senate of the Philippines. July 2016. Accessed August 21, 2017. https://www.senate.gov.ph/lisdata/2375020412!.pdf.

The Jakarta Post. 2014. Jokowi launches marime doctrine to the world. The Jakarta Post. November 13. Accessed July 28, 2017. http://www.thejakartapost.com/news/2014/11/13/jokowi-launches-marime-doctrine-world.html.

The Philippine Star. 2017. Philippines, Indonesia, Malaysiakicko jointpatrolsinSuluSea. ThePhilippine Star. June 19. Accessed July 28, 2017. hp://w ww.philstar.com/headlines/2017/06/19/1711573/philippines-indonesia-malaysia-kick-joint-patrols-sulu-sea.

UN Commission on the Limits of the Connen tal Shelf. 2012. Philippines. United Naons. April 12. Accessed July 25, 2017. http://www.un.org/depts/los/clcs_new/submissions_files/phl22_09/phl_rec.pdf.

Transactions NAST PHL 39 No. 2 (2017)
doi.org/10.57043/transnastphl.2017.1058

United Naons Conference on Trade and Development. 2016. Review of Marime Transport 2016. New York: United Naons Conference on Trade and Development.

US Energy Informaon Agency. 2013. South China Sea Reserves and Resources. US Energy Informaon Agency. February 7. Accessed July 25, 2017. hp s://www.eia.gov/beta/international/regions-topics.cfm?RegionTopicID=SCS.

Vietnam Ministry of Planning and Investment. 2015. VietNam's marine industries: Current state and perspecv es. The East Asian Seas Congress 2015. Danang: Partnerships in Environmental Management for the Seas of East Asia.

Virola RA, Talento RJ, Lopez-Dee EP, Romaraog MRS, Polisc o FS. 2010. Towards a Satellite Account on the Marime Sector in the Philippine System of Naonal Accounts: Preliminary Esma tes. Maka: Naonal St as c al Coordinaon Boar d.

VOV5 News. 2013. Developing Vietnam marine trademark. VOV5 News. June 14. Accessed July 28, 2017. http://www.vietnamnewstoday.com/nd5/detail/business-trading/making-vietnam-a-strong-marinebased-economy/1564.004001.html.

World Bank and Internaonal Finance Corporaon. 2014. Enhancing Compeon Condions And Compev eness Of Philippine Domesc Shipping . World Bank.

World Bank. 2014. Policy Opons for Liberalizing Philippine Marime Cabotage Restricons. World Bank.

World Economic Forum. 2016. Global Compev eness Index 2016-2017. Geneva: World Economic Forum.

World Resources Instut e. 2012. Reefs at Risk Revisited in the Coral Triangle.

World Travel and Tourism Council. 2017. Travel and Tourism Economic Impact 2017. WTTC.

World Wildlife Fund. 2009. Mega-Stress for Mega-Cies A Climate Vulnerability Ranking of Major Coastal Cies in Asia.cen tral/page/stas cs.