CHARTING THE WATERS: HARNESSING THE POTENTIAL OF THE BLUE ECONOMY IN THE PHILIPPINES

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PEARL OF THE ORIENT SEA

Four-fifths of the Philippines are comprised of water, whereas one-fifth comprises land. Internal and archipelagic seas cover 171,435 square nautical miles, territorial sea covers 32,106 square nautical miles, and the Exclusive Economic Zone covers 382,669 square nautical miles.[1] It links East Asia to the South Pacific Ocean and is geographically positioned between Southeast Asia and Northeast Asia. Three significant bodies of water around the archipelago: are the Pacific Ocean to the east, the South China Sea to the west, and the Sulu-Celebes Sea to the south.[2] 62 of the 78 provinces of the Philippines are situated along the coast, which is home to an estimated 40 million people.[3]

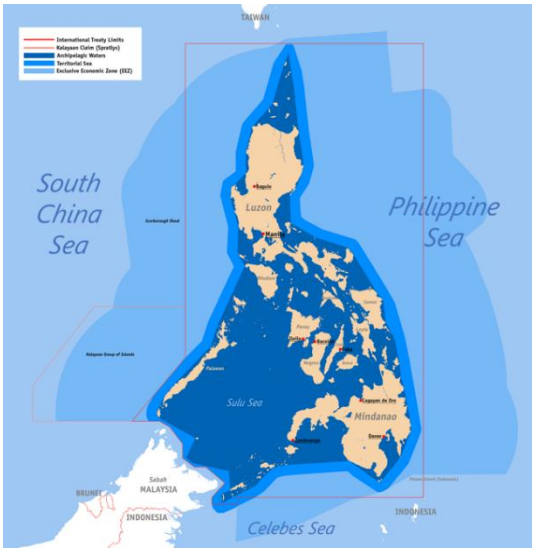

Figure 1. Philippine Territorial Map[4]

The Philippines' location is a distinct advantage that gives it geopolitical and economic influence. The best east-west route from the South China Sea to the Pacific Ocean passes through the Philippine archipelago, along with six important international commerce routes. The Philippines, located at the apex of the Coral Triangle, is a component of the worldwide hub of marine biodiversity and a rich source of marine resources. In addition, the Benham Rise Region

[1] Magallona v. Executive Secretary, et.al., G.R.No. 187167. 16 July 2011.
[2] Mendoza, R. U., & Valenzuela, S. A. *Growing the Philippines' Blue economy: Policy Challenges and Opportunities.* July 2017
[3] Department of Environment and Natural Resources. A Framework for Sustainable Philippine Archipelagic Development. DENR-FASPO, 2004
[4] *File:ph physical map.png - Wikimedia commons*. (n.d.). Retrieved March 22, 2023, from https://commons.wikimedia.org/wiki/File:Ph_physical_map.png

in the east of Luzon encompasses approximately 24.4 million hectares, of which 11.4 million hectares are within the country's exclusive economic zone (EEZ) and 13 million hectares comprise the extended continental shelf (ECS).[5] It has been established that the region contains natural gas resources and manganese nodules, a key ingredient for the making of steel.[6]

The strategic importance of the Philippines' location is not limited to its political and diplomatic significance, but also extends to its military value. This location provides us with a strategic advantage due to its central position and capacity to serve as a suitable base for military operations; additionally, it offers ample facilities to address security concerns.[7] The Philippines, on the other hand, is situated within the typhoon belt, the seismic belt, and the ring of fire in the Pacific.[8] These elements render the country vulnerable to a variety of environmental risks, catastrophes, and the consequences of climate change.[9]

Given the complexity and expanse of our maritime domain, it is imperative that we possess a robust, efficient, and reliable naval force. Furthermore, it is imperative for the Philippine Navy (PN) to possess the foresight and assets required to effectively carry out its duty as guardian of the Philippine waters.

UNDERSTANDING BLUE ECONOMY

The "blue economy" was first talked about at the United Nations Conference on Sustainable Development (UNCSD) in Rio de Janeiro in June 2012. Since then, it has become more popular The "blue economy" concept encourages economic growth, social inclusion, the maintenance or enhancement of livelihoods, and the long-term sustainability of marine and coastal ecosystems.[10] It entails making a distinction between environmental and ecological degradation and the advantages of economic growth brought about by ocean-related industries and activities. It is based on scientific findings that ocean resources are finite and that anthropogenic activity has significantly worsened ocean health. With the anticipated population growth, these changes are already having a big impact on society and people's quality of life. These effects are likely to intensify significantly in the future.

The blue economy is made up of a variety of sectors, including established ocean industries like fishing, tourism, and maritime transportation as well as emerging businesses like offshore renewable energy, aquaculture, seabed extraction, marine biotechnology, and bioprospecting. Ocean ecosystems provide a wide range of non-market services that have a significant impact on economic and other human activities, including carbon sequestration, coastal protection, waste disposal, and biodiversity.

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[5] NAMRIA, *Benham Rise* (2012). Accessed 18 March 2023.<http://www.namria.gov.ph/benham.aspx>

[6] *The Philippine Maritime Industry: Prospects and challenges in ... - ESCAP*. (n.d.). Retrieved March 23, 2023, from https://www.unescap.org/sites/default/files/0.Philippines-1.pdf

[7] PN Active Archipelagic Defense Strategy, 2017

[8] Maplecroft, *Climate Change Vulnerability Index* (2013).Accessed 18 March 2023 <http://maplecroft.com/about/news/ccvi_2013.html>

[9] Ibid.

[10] https://prepp.in/news/e-492-samudrayaan-mission-upsc-current-affairs

The Philippines, as a maritime nation, boasts several industries that are closely linked to the blue economy. These industries offer direct and indirect employment opportunities, generate revenue, and contribute to the country's food security. Examples of such industries include:

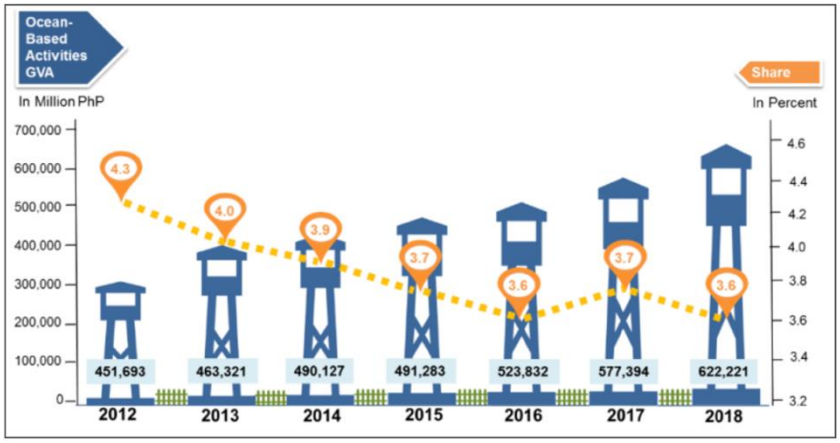

Figure 2. Share of Ocean-based Industries to GDP from 2012 to 2018[11]

1. The Philippines is renowned for its bountiful marine resources, making fishing and aquaculture a vital part of the economy. Many Filipinos are employed in the country's fisheries and aquaculture industry, which is essential for food security and a major source of employment. In 2015, the overall volume of fisheries output in the Philippines reached 4.65 million metric tons with a total value of USD7.26 billion.[12]

In 2014, the fishing sector contributed 3.1 percent of the labor force and 1.8 percent of the Gross Domestic Product (GDP).[13] With 2.4 million metric tons of capture production in 2014, the Philippines has the tenth-place position in the global fishing sector.[14] In 2014, the Philippines ranked as the world's third-largest tuna producer, eighth-largest tuna exporter, and fifth-largest aquaculture producer.[15] At 97,815 metric tons in volume and PhP13,521,026 in value, tuna remained the top export good in 2015.[16]

Despite being the largest of the marine industries, the sustainability and inclusivity of the fishing sector in the Philippines remain pressing concerns. Based on the latest poverty incidence data from the Philippine Statistics Authority, it can be realized that fishermen remain to be one of the most impoverished basic sectors, with a poverty incidence of 34% in 2015 and an average daily wage of only PhP178.43.[17]

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[11] Philippine Statistics Authority. *Philippine Ocean Economy Satellite Accounts. 2021*

[12] Lamarca, N. *Fisheries country profile: Philippines*, 2017. Accessed 18 March 2023 < http://www.seafdec.org/fisheries-country-profile-philippines/>

[13] Op.cit. 2015.

[14] Food and Agriculture Organization 2014

[15] Ibid.

[16] Mendoza, R. U., & Valenzuela, S. A. *Growing the Philippines' Blue economy: Policy Challenges and Opportunities*. 2017

[17] Op.cit. 2017

2. The Philippines is a hub for global logistics and shipping because of its advantageous location in Southeast Asia. The transportation of goods by water accounts for nearly 90% of trade in the Philippines, rendering the shipping sector a crucial component of the nation's economy.[18] The total amount of cargo handled at all of the country's ports was 223.67 million metric tons, while the number of passengers reached PhP62.76 million in 2015.[19]

Figure 3. The Philippines as a Maritime Nation[20]

3. The Philippines is widely recognized for its remarkable coastlines that are characterized by picturesque beaches, vibrant coral reefs, and diverse aquatic fauna. The tourism industry, encompassing activities such as island-hopping, snorkeling, and scuba diving, generates employment opportunities and contributes to economic revenue. Maritime tourism plays a crucial role in enhancing the competitiveness of the tourism industry, given that a significant proportion of travel and tourism activities occur via sea routes.[21] In 2016, the tourism sector of the Philippines witnessed a surge in the number of visitors, with 5.97 million arrivals, indicating a growth of 11 percent from the preceding year.[22] Travel and tourism generated PhP 2.85 billion, or 19.7 percent of GDP.[23] The industry also provided 2.2 million jobs in the same year, accounting for 5.5 percent of overall employment.[24] Undoubtedly, tourism significantly contributes to the economy of the Philippines. However, if stringent regulations are not enforced, it can potentially have adverse effects on the marine environment's quality.

4. The Philippines exhibit significant potential for marine-based renewable energy sources, including but not limited to tidal, wave, and ocean thermal energy conversion. The exploration and implementation of these energy sources have the potential to provide the country with environmentally friendly and enduring sources of energy. A pilot project is

[18] *Maritime Industry in the Philippines: Issues and challenges 2023*
[19] Philippine Ports Authority 2015
[20] Philippines Candidature. IMO Council Category C. 2022-2023
[21] Impact of the Maritime Industry on the Philippine Economy. 12 April 2018.
[22] Department of Tourism. 2017
[23] World Travel and Tourism Council. 2017
[24] Ibid.

currently underway in the central Philippines to establish a hybrid system comprising of tidal streams and solar panels. The objective of this initiative is to provide sustainable electricity to approximately 9,000 households.[25]

5. Marine biotechnology, which is growing as part of the blue economy, uses marine organisms and their byproducts for industrial, agricultural, and medical purposes. The Philippines present a promising prospect for marine biotechnology due to its abundant marine biodiversity.

The Philippines has significant potential for the development of the blue economy, and the aforementioned industries can contribute to long-term economic growth while protecting the health of its oceans and marine resources. Notwithstanding, in order to fully actualize the potential of the blue economy in the Philippines, it is imperative to surmount several obstacles. Some of the challenges faced by marine ecosystems include illegal fishing, overfishing, and degradation due to pollution and climate change. To improve its integration with the international market, the nation must bolster its maritime infrastructure, encompassing its ports and harbors.

The Philippines' Maritime Industry Development Plan (MIDP) was created in 2017 to provide long-term planning and a road map for the country's rapid expansion of its marine sector from 2019 through 2028.[26] The MIDP recognizes four important strategic thrusts that are critical to the development of the Philippine marine industry, which are as follows: 1) bolstering the domestic marine sector, 2) improving maritime safety and security, 3) increasing the international shipping industry, and 4) promoting environmental sustainability.[27]

The presence of a robust and modern Navy is crucial in the pursuit of sustained expansion in the blue economy and the effective use of the nation's abundant maritime resources. This is particularly important in establishing a secure and stable marine environment that promotes economic advancement while ensuring the safeguarding of the country's maritime territory and its resources.

THREATS AND VULNERABILITIES

The Philippines' blue economy is confronted with various challenges such as overfishing, habitat degradation, pollution, climate change, and the issue of IUU fishing. Overfishing has resulted in the depletion of fish stocks, particularly in the coastal waterways of the country. The impact of habitat degradation, specifically in coral reefs and mangrove forests, has significantly affected the marine biodiversity of the nation. As per the findings of the World Resources Institute (WRI), the Philippines exhibits the most degraded coral reefs globally in 2002. The report indicates that 98% of the reefs in the country are susceptible to the adverse impacts

[25] IRENA. Innovation Outlook. 2020

[26] Philippines Candidature. IMO Council Category C. 2022-2023

[27] Maritime Industry Authority. Philippine Maritime Industry Development Plan 2018-2028. 2017 Retrieved from https://marina.gov.ph/images/DOCS/MIDP_Final.pdf

of human activities, with 70% of them being at high or very high risk.[28] The situation remained the same in 2011, when the WRI reported that the Philippine coral reefs are among the most threatened in the world due to overfishing, pollution, and climate change.[29]

Another major challenge facing the Philippine blue economy is pollution. Plastic pollution is a significant area of concern. The marine ecosystem is also put at risk by pollution originating from sources on land. As per reports, the Philippines is among the leading contributors of plastic waste in the ocean, alongside China and Indonesia.[30] An estimated 2.7 million tons of plastic trash are generated annually in the Philippines, making it one of the world's top plastic polluters.[31] Hazardous trash frequently enters the nation's streams and oceans, causing harm to marine life and ecosystems. Plastic trash has a substantial effect on the fishing industry, as it can harm fishing gear and entangle marine wildlife.

The blue economy of the Philippines is confronted with a significant challenge in the form of climate change. The Philippines is experiencing adverse effects of climate change across various domains, such as the deterioration of marine ecosystems and the increased frequency and intensity of natural calamities such as typhoons and floods. The majority of the populace, exceeding 60 percent, inhabits coastal regions, rendering them especially susceptible to the impacts of sea level rise associated with climate change. As per the report by the World Wildlife Fund (2009), Metro Manila, which serves as the financial and economic hub of the Philippines, ranks third among the most vulnerable megacities in Asia. This is attributed to its significant environmental exposure, high levels of socioeconomic sensitivity, and low levels of inverse adaptive capacity.

[28] World Resources Institute. 2012

[29] Ibid.

[30] Jambeck et al. 2015

[31] Ranada P. *Why the PH is the World's Third's Biggest Dumper of Plastic in the Ocean*. 2015

Figure 4. The aftermath of typhoon Ursula (2019) as it pummeled the coastal areas of central Philippines[32]

Illegal, unreported, and unregulated (IUU) fishing is another serious concern for the blue economy of the Philippines. IUU fishing, estimated to reach up to 26 million tons annually, remains one of the greatest threats to marine ecosystems and undermines national and regional efforts to manage fisheries sustainably and conserve marine biodiversity.[33] The aforementioned activities encompass fishing in areas with limited access, utilization of unauthorized gear, and engaging in fishing without proper licensure. The practice of illegal, unreported, and unregulated (IUU) fishing poses a significant challenge to the sustainable management of fisheries and poses a threat to the food and livelihood security of coastal populations. The Philippines experiences significant impacts on marine biodiversity and fisheries due to the decline in these resources. This is particularly concerning as fish constitute more than fifty percent of dietary protein and are a crucial source of dietary nutrients.

ROLE OF THE NAVY

The PN has three distinct roles: military, constabulary, and diplomatic.[34] Its military function is to maintain the Philippines' territorial integrity and independence. This is sustained by fleet-marine operations employing forces deploying from the sea to enable the deployment of military capabilities and sustained units at sea. This function strives to maintain naval dominance inside the country's maritime zones and to strengthen claims in disputed areas and waters. Maintaining the internal peace and unity of the Philippine archipelago is the constabulary mission of the PN. This work requires interagency coordination and cooperation with other maritime enforcement authorities. Thirdly, the diplomatic role of the PN might be seen in terms of its support for regional peace and stability as well as the prevention of interstate conflicts. Thus, the PN engages in a wide scope of military and non-military initiatives to promote peace and security and boost security cooperation in the Southeast Asian (SEA) region.

The PN is essential to the blue economy's implementation. While it is their primary duty to protect the nation's maritime interests and maintain the safety and security of its maritime domain. But, the PN may also boost the blue economy in numerous ways, such as:

1. **Maritime Domain Awareness:** The modernization of maritime surveillance systems and intelligence-gathering capabilities is imperative for the PN to effectively detect, track, and monitor potential threats. Furthermore, it is recommended that they enhance its collaborative efforts with other government agencies, such as the Philippine Coast Guard (PCG) and the Bureau of Fisheries and Aquatic Resources (BFAR), to improve the exchange of intelligence and enhance maritime situational awareness.

2. **Maritime Security:** The 1994 National Marine Policy (NMP) also highlights the Philippines as an archipelagic state whose political, economic, and social interests are

[32] Photo from https://phys.org/news/2019-12-death-toll-philippines-typhoon.html (2019)
[33] Department of Agriculture. UUI Fishing: The Philippine Experience. (n.d.)
[34] Ken Booth. Navies and Foreign Policy. Routledge, 1977

derived from its coastal and marine resources. Politically, the sea is the medium of physical unity of the state. Economically, the marine environment provides food, energy, and raw materials, and serves as a highway for commerce and communication. Its social significance is recognized through its use as a mode of communication, as well as for socio-cultural activities, tourism, recreation, and aesthetic concerns.[35]

To enhance and sustain maritime security in the Southeast Asian (SEA) region, the PN continues carrying out patrols, implementing maritime laws and regulations, and addressing maritime security risks such as piracy and smuggling, which significantly bolster the safety and security of the nation's marine domain. The Department of National Defense (DND) has recently released the Defense Planning Guideline 2018-2023, which aims to reinforce defense and security cooperation while pursuing organizational modifications. Given the constraints of finite resources, capacity development initiatives must prioritize the resolution of fundamental security concerns, while concurrently providing support to other organizations and engaging in proactive measures to tackle ancillary security issues. The sustained expansion of the blue economy is dependent upon the establishment of a secure and stable maritime environment.

3. **Humanitarian Assistance:** Because of the immense effects on life, property, and the environment, the PN leadership has identified this as one of the most important non-traditional security concerns. Typhoons, earthquakes, tsunamis, landslides, and industrial disasters have induced a response from the PN, revitalizing regional and global programs on disaster risk reduction and management and Humanitarian Assistance and Disaster Relief (HADR) cooperation. Due to its inherent organization and rapid deployment-capable equipment, the PN aids the government with disaster mitigation and response operations. A rapid and effective response to such incidents can minimize their impact on the marine environment and protect marine resources.

4. **Capacity Building:** By providing training and technical assistance, the PN may promote the capacity building of local communities and other stakeholders in the maritime industry, such as fishermen. This will help to improve the sustainability of their operations and their contribution to the blue economy. It can also help the development of the skills and knowledge required to engage in blue economy-promoting activities such as oceanographic research, marine security, and disaster response. It can also aid in the formation of collaborations with other organizations to facilitate the exchange of expertise and resources, so enhancing the PN potential to support the marine industry's sustainable economic growth.

5. **International Cooperation:** As part of its role in diplomacy, PN’s participation in international cooperation initiatives aimed at enhancing sustainable management and conservation of marine resources, including joint patrols, information sharing, and capacity-building programs, is viable for the navy. As an example of this regional cooperation, the PN, together with the navies of Indonesia and Malaysia, agreed to conduct trilateral patrols in the Sulu-Sulawesi Seas to combat terrorism, piracy, kidnapping, and other crimes in the area as

[35] National Marine Policy, 8 November 1994

part of this regional cooperation.[36] Furthermore, the PN can form collaborations with other government agencies, international organizations, the private sector, and other stakeholders to promote the blue economy's sustainable growth. These may include joint activities such as capacity training programs, joint research and development projects, and public-private partnerships to boost blue economy investment.

REACHING THE FULL POTENTIAL

A comprehensive national strategy outlining the government's vision and priorities for the development of the blue economy is required in the Philippines. This strategy is anchored to the *"AmBisyon Natin 2040,"* a twenty-five-year long-term vision developed by the Philippine government as a guide for development planning, which includes strong engagement between the government, commercial sector, and civil society, as well as a roadmap for the naval force's participation.[37] And recently, House Bill No. 69 was proposed for *"Blue Economy Act"* filed by Congressman Francisco Benitez of Negros Oriental. This bill aims to create a single framework that promotes a whole-of-nation approach to sustainable development, managing, protecting, and preserving our marine and coastal resources.[38]

Additionally, the Philippines can benefit from the national policies and initiatives of neighboring nations like Indonesia, Vietnam, and Singapore. In 2007, Vietnam adopted its "Sea Strategy up to 2020," with the goal of increasing the marine economy's contribution to GDP from 20 percent to 56 percent, constructing 15 coastal economic parks with the maritime industry as the leading economic sector, followed by the oil and gas, seafood, and tourism industries, and raising the standard of living of coastal residents by 2.5 times that of noncoastal residents.[39] The marine policy of Singapore, one of the premier maritime nations, is another such. Singapore invests in marine research and development through a dedicated fund, simplifies port dues structure, resulting in lower port dues, and streamlines tax advantages for shipping businesses, so encouraging multinational shipping owners and operators to start operations in Singapore.[40]

In order to facilitate the advancement of the blue economy, it is imperative for the Philippines to allocate resources toward enhancing its maritime infrastructure, with a specific focus on the augmentation of ports and harbors. The provision of specialized knowledge and assistance in the development of maritime infrastructure could potentially position the PN as a pivotal contributor in this undertaking.

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[36] The Philippine Star. 2017. Philippines, Indonesia, Malaysia kick off joint patrols in Sulu Sea. The Philippine Star. June 19. Accessed March 24, 2023. http://www. philstar.com/headlines/2017/06/19/1711573/ Philippines-Indonesia-Malaysia-kick-joint-patrols-sulu-sea.

[37] National Economic and Development Authority. Republic of the Philippines. 2015

[38] Philippine House of Representatives. House Bill No. 69, 19th Congress. 2022

[39] VOV5 News. 2013. Developing Vietnam marine trademark. VOV5 News. June 14. Accessed March 24, 2023. http://www.vietnamnewstoday.com/nd5/ detail/business-trading/making-vietnam-a-strongmarinebased-economy/1564.004001.html.

[40] Lewis, Morgan. 2013. Initiatives to boost Singapore's maritime industry. Lexology. May 13. Accessed March 24, 2023 http://www.lexology.com/library/detail. aspx?g=05dacf66-74ef-462d-85b3-609097d25353.

The establishment of a stable marine environment is a crucial prerequisite for the advancement of the Blue economy. In addition to other governmental bodies, the PN has the potential to significantly contribute to ensuring maritime safety and security.

The proposed measures to enhance maritime security may include increasing the frequency and coverage of patrols, reinforcing the capabilities of the coast guard, improving the country's ability to monitor and analyze maritime activities, and enhancing the diplomatic engagement of the navy with regional partners.

The maritime military branch has the potential to provide assistance to blue economy-focused research and development endeavors, including but not limited to oceanic exploration, cartography and assessment of the maritime sphere and its assets, and the development of cutting-edge technology to ensure the responsible management of resources. This endeavor can be conducted in collaboration with government agencies such as the Department of Science and Technology (DOST) and the National Mapping and Resource Information Authority (NAMRIA).

In addition to these responsibilities, the Navy can help the growth of the nation's renewable energy industry by providing security and protection for renewable energy projects in its waters. Additionally, the Navy may aid in the growth of the marine biotechnology industry by supporting research and development efforts and guaranteeing the sustainable utilization of marine resources.

The participation of local communities is essential to the success of the blue economy, and the PN can assist in enhancing the capacity of local communities to engage in economically viable activities. This can include offering training and education programs, boosting tourism and other economic activities, and supporting the development of sustainable fisheries and aquaculture techniques.

Significant economic, social, and environmental benefits accrue to the Philippines as a result of the blue economy. Many blue economy industries, including fisheries, aquaculture, coastal tourism, offshore oil and gas, renewable energy, and marine biotechnology, have substantial potential in the country. Nonetheless, the nation's blue economy faces a number of obstacles, such as overfishing, habitat degradation, pollution, climate change, and illegal fishing.

The PN assumes a crucial function in safeguarding the nation's blue economy, apart from its mandate to enforce laws and regulations, uphold maritime boundaries, facilitate disaster response and management, and promote the advancement of renewable energy and marine biotechnology. The Philippines can sustain its economic, social, and environmental benefits from its maritime resources and activities by addressing the challenges and optimizing the potential of its blue economy.

References:

2020: Blueing the Economy—10 years, 100 innovations, 100 million jobs. https://unctad.org/system/files/official-document/ditc2020d3_en.pdf

Booth, K. (1977). Navies and Foreign Policy (Routledge Revivals) (1st ed.). Routledge. https://doi.org/10.4324/9781315769646

Department of Transportation. (2017). Philippines' Maritime Industry Development Plan 2018-2028 launched. Retrieved from https://www.dotr.gov.ph/39-dotc-news/1744-philippines-maritime-industry-development-plan-2018-2028-launched.html

European Commission. (2020). The EU Blue economy Report 2020. https://ec.europa.eu/maritimeaffairs/sites/maritimeaffairs/files/eu-blue-economy-report-2020_en.pdf

FAO 2023. Fishery and Aquaculture Country Profiles. Philippines, 2014. Country Profile Fact Sheets. Fisheries and Aquaculture Division [online]. Rome. Updated Nov 28, 2014 [Cited Saturday, March 18th 2023] from https://www.fao.org/fishery/en/facp/phl?lang=en

IRENA (2020), Innovation outlook: Ocean energy technologies, International Renewable Energy Agency, Abu Dhabi.

Jaal, Marilyn Labasan, "Implementation of the Port State Measure Agreement (PSMA) to combat IUU Fishing in the Philippines" (2022). World Maritime University Dissertations. 2092. https://commons.wmu.se/all_dissertations/2092

Jambeck, J. R., Geyer, R., Wilcox, C., Siegler, T. R., Perryman, M., Andrady, A., Narayan, R., & Law, K. L. (2015). Marine pollution. Plastic waste inputs from land into the ocean. *Science (New York, N.Y.)*, *347*(6223), 768–771. https://doi.org/10.1126/science.1260352

Lamarca, N. (2017). *Fisheries country profile: Philippines*. SEAFDEC. Retrieved March 18, 2023, from http://www.seafdec.org/fisheries-country-profile-philippines/

Maritime Industry Authority. (2017). Philippine Maritime Industry Development Plan 2018-2028. Retrieved from https://marina.gov.ph/images/DOCS/MIDP_Final.pdf

Maritime Industry in the Philippines: Issues and challenges. (2023, February 2). Maritime Fairtrade. Retrieved March 18, 2023, from https://maritimefairtrade.org/maritime-industry-in-the-philippines-issues-and-challenges/#:~:text=The%20maritime%20industry%20in%20the,GDP%20(gross%20domestic%20product).

Mendoza, R. U., & Valenzuela, S. A. (2017, July). *Growing the Philippines' Blue economy: Policy Challenges and Opportunities*. Retrieved March 23, 2023, from https://transactions.nast.ph/wp-content/uploads/2022/01/2017_Plenary_Paper_Mendoza_RU_1.pdf

Ocean Panel. (2020). Ocean Panel Report. https://oceanpanel.org/recommendations

The Blue Growth Initiative. (n.d.). Food and Agriculture Organization of the United Nations. http://www.fao.org/in-action/blue-growth/en/

OECD (2016). The Ocean Economy in 2030, OECD Publishing, Paris. Retrieved from http://dx.doi.org/10.1787/9789264251724-en

Paixão, J., & Cadete, P. (2017). The Role of Navies in the Blue economy. The Journal of Ocean Technology, 12(4), 19-32. https://www.researchgate.net/publication/319230030_The_Role_of_Navies_in_the_Blue_Economy

Philippine Blue economy Report 2018. (2018). Bureau of Fisheries and Aquatic Resources. http://www.bfar.da.gov.ph/bfar-old-site/download/PBE%20Report%20Final.pdf

Philippine Development Plan 2017-2022. (2018). National Economic and Development Authority. https://www.neda.gov.ph/wp-content/uploads/2018/08/Philippine-Development-Plan-2017-2022.pdf

Philippine Navy (2020). Strategic Sail Plan 2020-2028. Manila

Philippine Navy (2017). Active Archipelagic Defense Strategy. Manila

Ranada, P. (2015, October 6). *Why PH is world's 3rd biggest dumper of plastics in the ocean*. Rappler. Retrieved from https://www.rappler.com/science/108276-philippines-plastic-pollution-ocean-conservancy-study

Silver, J. J., Gray, N. J., Campbell, L. M., Fairbanks, L. W., & Gruby, R. L. (2015). Blue economy and Competing Discourses in International Oceans Governance. The Journal of Environment & Development, 24(2), 135–160. https://doi.org/10.1177/1070496515580797

Sustainable Blue economy Conference 2018. (2018). Government of Kenya. https://sustainableblueeconomyconference.go.ke/

The Blue economy. (2010). Gunter Pauli. http://www.blueeconomy.eu/wp-content/uploads/2019/07/The-Blue-Economy-10-years-100-innovations-100-million-jobs.pdf

The Economics of Ecosystems and Biodiversity (TEEB) for Oceans and Coasts. (n.d.). TEEB. http://www.teebweb.org/our-work/oceans-coasts/

The life of all Filipinos by 2040. AmBisyon Natin 2040. (n.d.). Retrieved March 18, 2023, from https://2040.neda.gov.ph/

United Nations Conference on Trade and Development. (2020). The Blue economy Report

United Nations Development Programme. (2016). The Blue economy Handbook. https://www.undp.org/content/undp/ en/home/librarypage/environmentenergy/water_governance/ the-blue-economy-handbook.html

United Nations Environment Programme. (2019). Blue Carbon Report. https://wedocs.unep.org/bitstream/handle/20.500.11822/23209/BlueCarbonReport.pdf?sequence=1&isAllowed=y

World Bank. (2021). Blue economy Program. https://www.worldbank.org/en/topic/blueeconomy

World Wildlife Fund. 2009. Mega-Stress for MegaCities A Climate Vulnerability Ranking of Major Coastal Cities in Asia.central/page/statistics.