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THE DEVELOPMENT OF A BLUE ECONOMY
AT THE FRONT AND CENTER OF
THE SOUTH CHINA SEA DISCUSSION

CARMEN A. LAGMAN, PH.D.

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WRITTEN BY
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 **+** **ADRI PUBLICATIONS**
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ABSTRACT

The Philippines' focus on the blue economy is probably the most valuable policy the country has engaged in to further boost maritime security. Building a blue economy is a comprehensive approach that requires the collaboration of government agencies, the private sector, civil society, and other organizations to balance economic development with the need for conservation and sustainable management of the oceans' resources. This paper argues that science is a mechanism to advance national security as scientific collaboration can be used as a diplomatic tool to foster peaceful relations, build confidence, and promote mutual understanding even amidst conflict. Indeed, a national security policy that highlights a nation's development plan is timely given the global call to promote a blue economy and to keep the oceans healthy. The West Philippine Sea rich in marine resources, where coral species was discovered and referred to as *Leptoseris kalayaanensis*, after the Kalayaan Group of Islands. The adoption of a National Security Policy that is anchored on the Philippine Development Plan helps the government delineate its priorities, e.g., the development of security and other infrastructure and programs, as it continues to address the persistent issue of competing claims over the South China Sea. As tensions in the West Philippine Sea escalate, collectively addressing issues such as managing fish stocks, reducing loss of biodiversity, preventing marine pollution, and extending humanitarian assistance in response to disasters without prejudice over territorial claims may be needed to build trust among participating agencies. Furthermore, the Philippines must increase its presence in the region not only through joint patrols and military exercises but also through activities related to sustainable fisheries, maritime transport, renewable energy, tourism, and waste management. These efforts may impact the environment, economy, and social welfare and improve security-related outcomes in the South China Sea. Addressing the needs of the country's blue economy requires cooperative and integrated approaches, emphasizing sustainable development, environmental protection, and adherence to international laws and norms. As such, the effort to build the blue economy in the West Philippine Sea places it at the front and center of the efforts to protect sovereignty.

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China claims a controversial ten-dash line area that encompasses the majority of the South China Sea and overlaps with the sovereign rights over the Exclusive Economic Zone (EEZ) of several Southeast Asian nations, including the Philippines, Vietnam, Malaysia, Brunei, and Indonesia. The contested area includes islets, rocks, mounds, and cays, which have been extensively built by China into islands that are now militarized. Three of these reefs – Subi Reef, Mischief Reef, and Fiery Cross Reef are within the Kalayaan Group of Islands (KIG), which are within the EEZ of the Philippines.

The persistent and pressing national security concern over territorial integrity, especially with China, hinders access to and development of the rich fishing grounds, potential oil and gas, and other marine sources and threatens access to vital trade and shipping routes. The Philippines frequently faces disputes with Chinese fishermen and authorities over resource use in the contested waters, which sometimes escalate into major diplomatic incidents. Disruptions in these waters can have substantial economic repercussions. There is significant domestic pressure on the Philippine government to assert its claims and protect its territorial sovereignty, often bringing the country into the center of the controversy.

The Philippine government's stance on the South China Sea issue has depended mainly on the priority an administration gives to maritime security and territorial integrity versus economic development. The actions the government has spanned

from legal action on the issue at the Permanent Court of Arbitration in the Hague, to a “pivot to China” policy for potential economic gain. The administration of President Ferdinand Marcos Jr. is perceived to be taking a balanced approach toward the territorial and sovereign rights of the Philippines in the South China Sea and the broader aspects of economic, trade, investment, and people-to-people ties with China and the Association of Southeast Asian Nations (ASEAN). It is also cultivating relations with a wider set of international partners, including the United States, Korea, Japan, Australia, and India.

As tensions in the West Philippine Sea escalate, the portion of the South China Sea within the EEZ of the Philippines, there may be a need to design initiatives that are consistent with the country’s recent focus toward adopting policies that align with the principles of the blue economy. The concept of a blue economy encompasses sustainable use of ocean resources for economic growth, improved livelihoods, and ocean ecosystem health and includes initiatives focusing on sustainable fisheries, maritime transport, renewable energy, tourism, and waste management.

Efforts to increase the presence of the Philippines through joint patrols and military exercises in the West Philippine Sea have been supplemented with efforts to pursue a blue economy in the country in general and in the West Philippine Sea region in particular. The Philippines has actively participated in discussions on non-security issues such as managing fish stocks, reducing loss of biodiversity, preventing marine pollution, and extending humanitarian assistance in response to disasters. It might be time to be involved in developing enterprises that address these needs and more and create greater presence of the Philippines in the contested area. By taking control of resources, there is the possibility of instituting better fisheries and natural resources management strategies and, at the same time, contributing to national development in the context of building a blue economy.

Many emerging areas for developing the Philippines’ presence need innovation to address technology impediments, information gaps, and training. Collaboration in these areas is a vehicle for national security and international development. Science provides the knowledge, tools, and innovations that promote technological advancement and contribute to economic and social development. As such, science is a mechanism to advance national security, especially when it helps secure food and energy security. Scientific collaboration

served as a diplomatic tool to foster peaceful relations, build confidence, and promote mutual understanding even amidst conflict.

Recalibrating Distance from the United States And China

The Philippines presents one of the more complex and dynamic strategies to address the South China Sea conflict in the region. With an abundance of direct encounters, the landmark approach of using a legal channel and balancing major powers will not be far within the mark to say that the South China Sea controversy significantly impacts the Philippines, more so than some other members of ASEAN. The Philippines is geographically one of the closest ASEAN countries to the contested areas in the South China Sea, particularly the Spratly Islands and Scarborough Shoal. This proximity results in more direct and frequent confrontations, which have had a significant impact on the Philippines both politically and in terms of public perception. With this, the country has to balance its security alliance with the United States and its growing economic relationship with China, often finding itself in a delicate diplomatic position.

Historically, Philippine leaders have oscillated between assertive and conciliatory approaches with China on the issue of overlapping EEZs in the South China Sea. Under different administrations, the Philippine policy on the South China Sea has alternated between challenging China's claims, as seen in the arbitration case filed in 2013 under the United Nations Convention on the Law of the Sea (UNCLOS) and seeking closer economic ties with China. This has complex implications for its diplomatic relations, national security, regional stability, domestic politics, and sovereignty. One may also observe that leaders who prioritize economic development lean toward pro-China policies, while those who give precedence to security and territorial integrity are inclined to align with the United States.

Under the leadership of former President Gloria Macapagal-Arroyo (2000-2009), the Philippines-China relations were generally more cooperative and receptive to China's commercial incentives. The Arroyo administration was willing to engage in joint ventures and agreements, as evidenced by the signing of a Joint Marine Seismic Undertaking (JMSU) in 2005 with China and then later with Vietnam. The agreement allowed for the exploration of resources within the

Philippines' EEZ, which served as the administration's approach to de-escalating tensions and fostering cooperation in the South China Sea.

Furthermore, the Philippines signed a considerable number of bilateral agreements with China under former President Arroyo, surpassing those of any previous administrations. However, some of these agreements, like the JMSU and the Philippine National Broadband Network controversy, also referred to as the NBN-ZTE agreement, faced criticism and legal scrutiny for potentially compromising Philippine sovereignty over its marine resources (Esmaguél 2018).

Late President Benigno Aquino III, who served as the President of the Philippines from 2010 to 2016, had a different stance on the South China Sea conflict. It was characterized by a more assertive approach towards upholding the country's territorial claims and sovereignty. Under his leadership, the Philippines took a significant step by filing and later winning the arbitration case against China's territorial claims in the South China Sea at the Permanent Court of Arbitration in The Hague. In 2013, this move marked a shift towards a more legalistic and international approach to cross-boundary disputes.

The Aquino administration was a pivotal period in the South China Sea conflict, particularly for the Philippines. His administration's decision to seek international arbitration brought significant attention to the issue and set a legal precedent in maritime disputes. His approach represented a clear stand on upholding international law and defending the Philippines' territorial and maritime rights. President Aquino sought to internationalize the South China Sea issue, moving it beyond a regional ASEAN matter. He actively engaged with international partners and allies to garner support for the Philippines' position and highlight the broader implications of the dispute for international law and maritime security.

President Aquino III's successor, Rodrigo R. Duterte (2016-2022), was sworn into the presidency on June 30, 2016, a few weeks before the South China Sea Arbitration ruling was released on July 12, 2016. He had a nuanced response to the South China Sea arbitration ruling. While the international community saw the ruling as a significant legal victory for the Philippines, former President Duterte articulated a willingness to set it aside in favor of direct negotiations with China. He adopted a pragmatic and conciliatory approach, for he was skeptical about the utility of the arbitration ruling. He expressed his desire to avoid any confrontation since he had doubts about the enforceability and the practical benefits it could bring to the Philippines.

The Duterte administration focused on strengthening economic relations with China, believing that a 'pivot to China' policy would bring more tangible benefits in the form of infrastructure investments and economic deals. He distanced himself from alliances with the United States when he initially decided to terminate the Visiting Forces Agreement (VFA) with the United States in February 2020. This agreement was crucial as it outlined the guidelines for American military personnel in the Philippines and was a significant aspect of the security alliance between Washington and Manila. However, former President Duterte later reversed this decision and decided to keep the VFA in place. His administration faced internal contradictions and lacked a unified voice on the South China Sea issue (Benar News 2021). Towards the end of his presidency, the infrastructure financing from China was not as expected. His conciliatory stance toward China remained as he pushed for re-establishing relations with the United States (De Castro 2022).

After two decades of long-drawn conflict, the administration of President Ferdinand Marcos Jr. is perceived as a recalibration of the US-Philippines and US-China relationship following the "pivot to China" of his predecessor (Rabena 2023) and the "assertive legal approach" of President Aquino III. At his second State of the Nation Address (SONA), he declared a foreign policy where the Philippines is independent and flexible, and the country is "a friend to all and an enemy of none," a stance that avoids over-dependence on one superpower (Philippine Star 2023).

An important initiative that the Marcos Jr. administration is undertaking is its focus on national security. National security refers to the protection of a nation's citizens, economy, and institutions from external and internal threats. This concept encompasses a broad range of concerns, including military strength, diplomacy, economic power, environmental stewardship, and other means to protect and enhance the well-being of the nation and its citizens. The exact interpretation and prioritization of these aspects can vary greatly depending on the country and its specific context. A review of Marcos Jr.'s national security policy underlines the link between national security and economic development. The NSP 2023-2028 document states:

"The new NSP seeks to improve national security governance aimed at effectively addressing security threats while at the same time providing

the enabling environment for sustainable and inclusive economic and human development. Berthed on a vision of a free, resilient, peaceful, and prosperous Philippines, the new NSP complements the medium-term Philippine Development Plan 2023-2028 as well as contributes to the realization of the long-term national dream of a “Matatag, Maginhawa at Panatag na Buhay” by the year 2040.” (National Security Council 2023)

The tone of the document departs from the previous NSP (National Security Council 2017), which has focused on threats internally and from globalization. The main aspects of the former NSP were: (1) quelling internal rebellion, (2) equipping citizens to adapt to the security challenges of ASEAN integration, and (3) the pursuit of an independent foreign policy that strengthens national identity, addressing both internal and external threats to security in the light of global interconnectivity.

The translation of national security policy in the maritime sector includes elements of environmental protection, marine safety, management of the fisheries and other natural resources, law enforcement, naval operations, counterterrorism, and deterrence (AMTI 2021). This extends beyond the need to safeguard marine vessels, given the archipelagic nature of the country and its historical experience.

A security analyst has suggested that the Marcos administration should identify a hierarchy of national interests and define the intended outcome of pursuing an independent foreign policy (Vicedo 2023). A Philippine national security strategy would become highly relevant. It would be a whole-of-government strategy map that includes a communications tool that sets expectations in foreign relations with like-minded states such as the United States, Australia, Korea, India, and Japan.

Recalibrating to a Blue Economy: A Revised Security and Development Strategy

A national security policy that highlights a nation’s development plan is timely given the global call to promote a blue economy and to keep the oceans healthy. The policy, when applied to the West Philippine Sea, encourages collective efforts for non-security issues such as managing fish stocks, reducing loss of biodiversity,

preventing marine pollution, and extending humanitarian assistance in response to disasters, which are all programs that can build trust among participating agencies, impact the environment, economy, and social welfare, and improve security-related outcomes. Addressing these non-security issues requires cooperative and integrated approaches, emphasizing sustainable development, environmental protection, and adherence to international laws and norms.

Part of a way to operationalize the aspirations for a blue economy is evident with the passing of House Bill (HB) 9662, also known as the Blue Economy Act, by the House of Representatives on its third and final reading on December 12, 2023. The House Bill, authored by Cong. Francisco Benitez of the 3rd District of Negros Occidental, seeks to promote stewardship and sustainable development of marine wealth within the maritime domains of the Philippines, including its EEZ. HB 9662 will institutionalize the crafting of a comprehensive framework for the sustainable development of marine and coastal resources and strengthen inter-agency, cross-sectoral, and multi-stakeholder coordination. Rep. Benitez has said,

“After all, national security is not only about border control but also pollution control; not only about territorial integrity but also environmental integrity, not only about military security but also food security.”
(Guadalquiver 2023)

The Philippines in the Current Conflict in the South China Sea

President Marcos Jr. has called for the need to establish a new way of addressing the South China Sea security issue, even as traditional methods of diplomacy have been restored. What is needed, he says, is a “paradigm shift” to where countries feel they are more involved in the situation (Reuters 2023).

Philippines-China relations were severely tested in 2023 by encounters between coast guards and fishermen in the South China Sea, where the two states have overlapping claims. From June 2022, when President Ferdinand Marcos Jr took office, the Philippines has lodged over 130 diplomatic protests against China for incursion into its EEZ (Cupin 2023). The more widely publicized protests lodged by the Philippines involved China’s use of military-grade lasers, water cannons that damaged their vessels, long-range acoustic devices, dangerous maneuvers

and even ramming of Philippine boats by China Coast Guard (Benar News 2023).

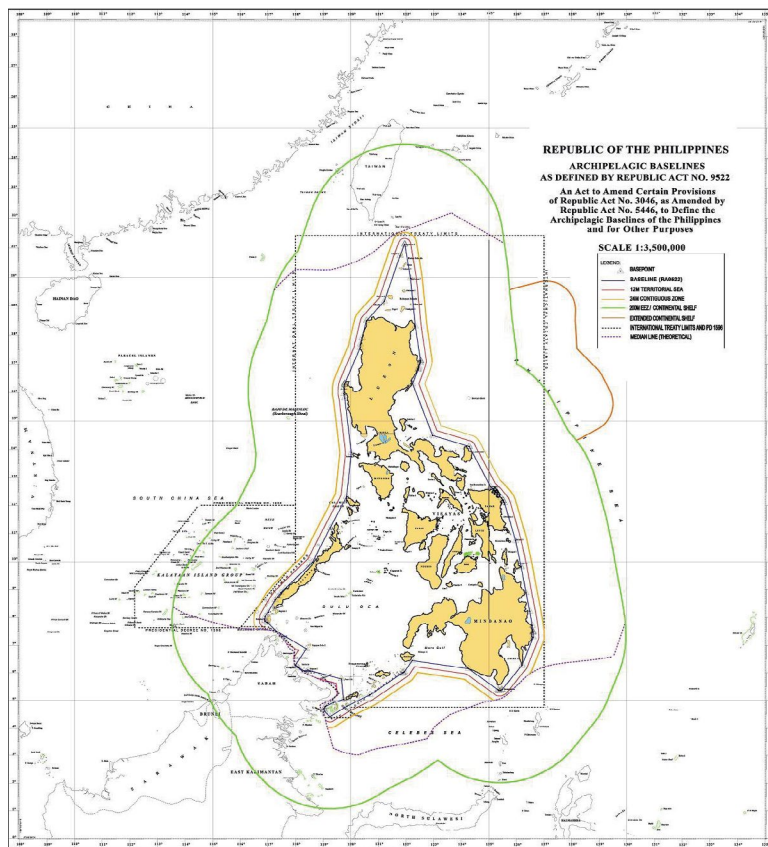
On September 26, 2023, the Philippine Coast Guard removed floating barriers placed by China that hindered Filipino fishermen's access to their traditional fishing grounds and posed navigation hazards at Bajo de Masinloc. China protested and maintained that the area is situated within China's inherent territory (Gomez 2023). The encounters between the Philippines and China in 2023 have become more frequent and forceful. The precarious situation is made even more unstable by the presence of high-power armaments within the reclaimed islands of China and the Freedom of Navigation Operations (FONOPS) with the United States, modernization of the Philippine military capabilities, and joint patrols with Australia and forming and strengthening alliances.

Territorial Seas vs. Exclusive Economic Zones

The process of defining boundaries of jurisdiction and sovereign rights has been laid out by the UNCLOS, which may well be the single most important international convention to affect fisheries. UNCLOS replaced the free-for-all access to marine resources with a system where coastal states had "sovereign rights for the purpose of exploring and exploiting, conserving, and managing resources" within their EEZ (UNCLOS, 1982). The 321 articles and nine annexes of the UNCLOS cover almost all human uses of the sea—exploration and exploitation, navigation and overflight, conservation, pollution, and shipping. This document provides guidelines for the behavior of states in defining maritime zones, drawing boundaries, assigning legal duties and responsibilities, and settling disputes. For the fisheries and energy sectors, the convention has spurred investments substantially, increasing the production from capture fisheries in the mid-1990s.

The term "territorial seas" refers to areas up to 12 nautical miles or 22.2 km in breadth from shore. A coastal state exercises sovereignty over its territorial sea, the airspace above it, and the seabed and subsoil beneath. Foreign flag ships may transit through the territorial sea subject to regulations of the coastal state and in conformity with the UNCLOS and rules of international law. EEZ, on the other hand, are areas 200 nautical miles or 370 km beyond the shore where states have jurisdiction and responsibilities over natural resources, economic activities, marine research, and environmental protection. A state has exclusive rights to explore and

Figure 1 . Philippine Maritime Claims About Archipelagic Baselines



Source : IILSS. 2021. International Institute for Law of the Sea Studies. May 1.
<https://iilss.net/philippines-maritime-claims-about-archipelagic-baselines>

use marine resources, including energy production from water and wind.

The EEZ defines sovereign rights, not ownership of any maritime area and features such as rocks and islands. Other states have freedom of navigation and overflight, and other internationally lawful uses of the sea related to these freedoms, such as those associated with the operation of ships, aircraft, and submarine cables and pipelines. It is important to note the differences between these two lines drawn on the water, for they confer different entitlements based on the guidelines set by UNCLOS. Figure 1 presents the various boundaries drawn around the Philippine archipelago.

The West Philippine Sea was a name officially adopted by the country to refer to the coastal waters westward of the Philippines within its EEZ. All government documents, maps, and communications were to use the term from September 2012 based on and Administrative Order (AO) 29 issued by former President Benigno S. Aquino. Though no exact coordinates of the boundaries were established, AO 29 declared the Luzon Sea together with Bajo de Masinloc, which is otherwise known as the Scarborough Shoal, and the Kalayaan Island Group (KIG), which is the area claimed by the Philippines within the highly contentious Spratly Islands, as part of the West Philippine Sea. The naming of the WPS was for national mapping purposes (Government of the Philippines Gazette, 2012) and was also a move to declare the country's legitimate claim over the area that was previously called the South China Sea (Heydarian, 2011).

The Philippines has established its presence in two reefs and seven islands in the area covering an aggregate area of 79 ha. The islands are named Kota, Lawak, Likas, Pag-asa, Panata, Parola and Patag, and the reefs are Ayungin and Rizal (Municipality of Kalayaan, 2023). A Human Settlement Program (HSP) of 2002 to KIG was instrumental in bringing in 80 families into the Pag-asa Island, as part of the effort of the local government of KIG to populate four potentially habitable islands, the largest of which is the Pag-asa Island. HSP2, a follow-up program to HSP, is part of the 10-year Kalayaan Strategic Development Plan and Action Plan (SDPAP) has been initiated and signed into legislation in June 2021 through Resolution No. 91-014 of 2021 by the Office of the Sangguniang Bayan of the Municipality of Kalayaan. The efforts to settle the islands are part of the mission to uphold sovereignty and Philippine patrimony in the KIG. The Municipality of Kalayaan is a Class 5 municipality with 198 people, according to a 2018 survey.

Marine Resources in the West Philippine Sea

Biodiversity is the cornerstone of the economy of many countries, forming the basis of agriculture, fisheries, forestry, and tourism. Biodiversity provides humans food and clean water, regulates climates, floods wastes and diseases, supports soil formation and nutrient cycling, and has recreational and aesthetic benefits. Apart from this, many pharmaceutical products from marine biodiversity still await discovery. Conservation is not just a matter of protecting nature and its habitats,

but is intrinsically linked to human health, prosperity, and survival.

The Philippines is one of the 18 megadiverse countries of the world, a list which includes Indonesia, Brazil, Australia, and Madagascar (Williams et al., 2001). The number of species of fish and invertebrates in the country has earned the Philippines the title of “the center of the center of marine biodiversity” not just because of the number of species present but because many are endemic, which means they have may not be found elsewhere (Carpenter and Springer, 2005). The Philippines has reported 468 species of scleractinian corals, 1,755 reef-associated fishes, 648 species of mollusks, 19 species of seagrass, and 820 species of algae, among other marine taxa (Biodiversity Management Bureau (BMB) Department of Environment and Natural Resources (DENR, 2016).

In 2015, the California Academy of Sciences conducted an expedition to study biodiversity along the Verde Island Passage and adjacent areas in Batangas. The Verde Island Passage separates the island of Luzon from Mindoro and connects the South China Sea to Tayabas Bay. They discovered over 100 new marine species of fish and invertebrates (California Academy of Science, 2015), a number that is very high compared to expeditions in other areas. More species are expected to be found as more people seek to document the diversity of living resources in the country including in the West Philippine Sea, for it is a largely understudied area. A new species of coral was discovered and referred to as *Leptoseris kalayaanensis*, named after the Kalayaan Group of Islands (KIG) (Licuanan & Aliño, 2009). The discovery of *L. kalayaanensis* does not come as a surprise to the Philippines, given that much of its biodiversity and hidden potential for human use are largely unknown.

The West Philippine Sea is a very productive fisheries area. Local fishers from the Zambales, Pangasinan, and Palawan have been fishing in the KIG and the Bajo de Masinloc for decades. Though the cost of travel to the distant reefs is high, fishers continue to seek their livelihood from fishing grounds in the KIG and Bajo de Masinloc for the value of the catch compensates for the investment of both time and petrol. This is not surprising given the richness of fisheries resources in these areas. A recent study (Arceo et al., 2020) reports that fish yield may be as high as 17.6 mt/ km²/yr in KIG and 30.99 6 mt/ km²/yr in Bajo de Masinloc. This value is comparable to the yield of 15-20 mt/ km²/ year (Alcala and Russ, 2002) from well-managed reefs, such as those in Apo and Sumilon Islands in the Bohol Sea. Bumphead parrot fish, giant clams, and marine turtles are also found in the

reefs of the KIG. These are some species that are only found in relatively well-managed reefs (Mora et al., 2016; Hughes et al., 2013), indicating that the reefs are less decimated than their coastal counterparts. It is no wonder that the relatively abundant fisheries in the areas within the EEZ of the Philippines are targets of other fishing vessels (Baker, Reese and Harnagel 2016).

What is the Blue Economy?

The term “blue economy” is defined by the World Bank as the “sustainable use of ocean resources for economic growth, improved livelihoods, and jobs while preserving the health of ocean ecosystem”. The Philippines’ focus on the blue economy is the most valuable policy that the Philippines has engaged in to help in maritime security. This is focused on developing programs for renewable energy, fisheries, maritime transport, tourism, and waste management. The blue economy approach focuses on the efforts of national agencies, the local government, civil society, the private sector, and the academe in building the blue economy. The effort to build such an economy in the West Philippine Sea places it at the front and center of the efforts to protect sovereignty. With the blue economy, maritime security is placed in the context of a larger development plan. As such, the leadership of the country will be under less pressure to decide between prioritizing national security and ensuring investments in the Philippine economy in the West Philippine Sea, as they are both components of building a blue economy.

The oceans are a major driver of economic growth, jobs, and innovation. It was expected to provide economic opportunities in the future (Gratham Institute of Climate Change and the Environment 2023). Elevating the plight of the oceans was timely at the Rio+20 Summit. The term came into use after the 2012 UN Conference on Sustainable Development to connect and highlight the focus on the oceans and relate this to the “green economy” theme. This conference was characterized by deeper discussions on the issues of ocean acidification and sea-level rise, overfishing and marine biodiversity loss, a growing consensus regarding the conservation and development potential of the high seas, and interest from some countries in territorializing more ocean space (Silver 2015).

Prior to 2012, the role of the oceans was not highlighted separate from land-

based resources in the discussions on renewable and non-renewable resources. The framework for the Sustainable Development Goals (SDGs) eventually underscored the role of ocean and water resources and their use in maritime shipping, fishing and aquaculture, coastal tourism, renewable energy, water desalination, undersea cabling, seabed extractive industries and deep-sea mining, marine genetic resources, and biotechnology.

Habitats are Under Complex Natural and Man-made Stresses

The oceans, which cover 71% of the Earth's surface, contain 80% of living resources and generate 50% of life-giving oxygen. The value of the services the oceans provide to humankind will remain extremely underappreciated until there is limited fish to eat or oxygen to inhale. The carbon dioxide that organisms exhale from the burning of fossil fuels is one of many greenhouse gases that cause global warming. Greenhouse gases released into the atmosphere form a "blanket" around the Earth, which prevents heat from escaping the planet. Oceans are warming because they absorb 90% of the heat trapped on Earth. Even with the high capacity of water to absorb heat and the volume of the oceans globally, sea surface temperatures continue to rise. Temperatures have reached a record high in 2023 and continue to climb. (Cheng et al., 2024)

The weather patterns and seasonality of winds, rain, and waves, and the climates are largely driven by sea surface temperatures. Climate change is impacting the intensity and frequency of typhoons in the South China Sea. Warmer sea surface temperatures provide more energy for typhoons, leading to stronger storms. This means that while the overall number of typhoons might not increase significantly, the proportion of high-intensity storms is likely to rise. These stronger typhoons can cause more severe wind damage, heavier rainfall, and higher storm surges, posing greater risks to coastal communities and ecosystems in the region. Climate change also contributes to sea-level rise, which exacerbates the impact of storm surges.

Category 5 super typhoon Rai, locally named 'Odette,' was the strongest typhoon to enter the Philippines. It barreled through 9 landfalls in the central Philippine islands on December 16, 2022, eventually exiting through the West Philippine Sea through the province of Palawan. The damage to infrastructure

and agriculture was estimated at PHP28 billion. (Philippine News Agency 2022) Odette was one of 18 typhoons that hit the Philippines in 2022.

In exchange for serving as the largest carbon sink sequestering greenhouse gases generated by human activity and mitigating global warming by absorbing most of the heat trapped close to the Earth, the oceans are dumped with toxic marine pollutants, run-off from agriculture, wastes from other human activities, and microplastics. Some pollutants may be outright dangerous, but others, like microplastics, are an emerging threat to food security and human health (De la Torre 2020). The current impact reflects the volume of plastic pollution in the open ocean.

Without exception, the South China Sea is gravely in danger from pollution. On May 1, 2023, a fire broke out on a Gabon-registered ship, Pablo, as it was passing through the South China Sea after offloading cargo in China (Straits Times 2023). The ship can carry about 700,000 barrels of crude oil, and the disaster could have been worse had the tanker been full. Debris and oil from the vessel were washing up to Indonesia's coast. From 2015 to 2019, a total of 632 oil slicks were detected in the north South China Sea. Fifty-seven were from platform sources, and 490 were from ships. Half of the slicks had areas $<1.7 \text{ km}^2$. The average area of the detected slicks was 4.8 km^2 . (Hong et al., 2022)

Dredging and reclamation activities are probably the gravest threats that alter marine environments the most, as sediment is moved from the seafloor to the reef area. Reefs have been destroyed outright to serve as foundations for new islands, causing extensive and long-term damage (McManus, 2017). The effects of dredging extend further than the point of dredging itself, for the sediment is carried over kilometers beyond the source. Previous reports indicate that the effects of dredging extend to areas up to 6 km further than the dredged point. Recovery is slower, if not absent, for areas where dredging and reclamation have occurred (Mora et al., 2016).

Within the Philippine EEZ, Mischief Reef and Subi Reef have been taken over by Chinese outposts. The environmental damage from island reclamation has been extensive, with over $\sim 11.6 \text{ km}^2$ or 26.9% of reef area in the region being lost for a gain of $\sim 10.7 \text{ km}^2$ of land. Land area has increased over 500% times (Mora et al., 2016). The damage may be greater because of boat access lanes through some of these atolls. The South China Sea Arbitration ruling, specifically addressing island reclamation, highlighted that China's extensive land reclamation and

construction of artificial islands caused severe harm to the coral reef environment. The tribunal found that such activities violated the Philippines' sovereign rights in its exclusive economic zone.

The Shared Fisheries are Declining

Against the backdrop of over three decades of tension, the unsustainable extraction of fisheries resources and the degradation of the marine environment have continued in the disputed areas. The overlap in claims of coastal states over the 3.477 million km² of the South China Sea has been an issue of fisheries disagreements among China, Vietnam, Indonesia, Malaysia, and the Philippines. Unresolved accountability issues due to boundary disputes have allowed illegal, unregulated, and unreported (IUU) fishing—a general term used to refer to poaching, fishing for endangered species, fishing against closures/fishing bans, and fishing with prohibitive gears and identified as the major threat to the sustainability of fisheries resources.

Based on the IUU Fishing Index, China, Taiwan, Vietnam, the Philippines, Indonesia, and Malaysia rank 1st, 2nd, 4th, 6th, 7th, and 12th, respectively, in Asia's list of states with the highest IUU Fishing Index scores. IUU Fishing Index scores are a means to compare the degree of exposure and effective effort to combat IUU fishing. China, Taiwan, and Vietnam figure prominently in the top five positions in the global rankings. (Macfadyen et al., 2019)

IUU fishing is driven by the demand for fish exceeding the supply of fish. The main issue is weak fishing regulations among the region's many countries, together with a lack of cooperation on management among these countries (DeRidder and Nindang 2018). Violations are committed by a wide range of fishers, including small-scale fishermen, large-scale commercial fishing vessels, trawlers, purse seiners, and many others that not only deplete the fisheries but destroy marine habitats.

The continued loss of fish due to IUU fishing has major consequences on food security in the region. Teh et al. (2017) estimate that the South China Sea contributes 11 to 17 million tons of fisheries catch, and 12 to 22 billion in fisheries landed value annually. Over 3.7 million people may have their livelihoods at risk with the continued decline in the fisheries in this region (Somalia and Cheung 2015). The expectation is that spatial and temporal patterns for fishing will

change, and productivity and total fish catch will decline as species move to other areas on a large scale in response to rising sea surface temperatures. The effects of climate change are expected to aggravate the existing resource conflict. (Plinsky et al., 2018)

Over 26 million tons of fish, valued at USD10 to USD23 billion, are harvested illegally. A commentary reports that 64% of Southeast Asia's total fisheries are at risk. IUU adds to the overexploitation of fish stocks, causes substantial damage to the marine ecology, and the eventual inability of the fish population to recover. Most of all, IUU fishing creates difficulties for legal fishermen by providing certain advantages to illegal fishermen and increasing unfair competition in the market (Kundu, *The Diplomat* 2019). Though IUU fishing may come from local fishers, more are from incursions from foreign fleets. To date, the need for greater participation, private sector investment, and diversification of fishing technology, monitoring capability, and harmonized legislation.

In addition to food and fish demand, the growing urbanization has escalated spending in power among the South China Sea claimants. Rising incomes have increased the demand for fine and elegant decor, pieces of jewelry, and trinkets carved from giant clams, turtle shells, and corals. The demand has made poaching of the endangered species lucrative for fishers, providing incentives for illegal activity (Zhang, 2018).

Moving Forward With Building A Blue Economy

Among the ways that the Philippines can promote its blue economy is through 1) habitat protection and fisheries management, 2) marine peace parks, 3) fisheries policies, 4) the protection of the Biodiversity Beyond National Jurisdiction, and 5) regional fisheries management organizations.

Habitat Protection and Fisheries Management

For almost four decades, the importance of declaring reefs that had multiple claimants as common marine protected areas (MPA) was advocated. These MPAs can then be designated as Marine Peace Parks. The establishment of Regional

Fishery Management Organizations (RFMO) has also been suggested, which is an international body made up of countries that share a practical and/ or financial interest in managing and conserving fish stocks in a region (PEW 2012) resulting in the protection of marine habitats and the management of fisheries and other living resources. Integrating fisheries management and habitat degradation into discussions on maritime disputes underscores the interdependence of environmental sustainability, economic stability, and regional cooperation. They highlight the necessity of holistic approaches to maritime governance that prioritizes both human and ecological well-being.

Marine Peace Parks

Establishing the Spratly Islands as a Marine Park as part of a series of MPAs in the region was proposed in the 1990s (McManus 1994). A regional study among researchers has suggested mesoscale transboundary units of management (Ablan et al., 2002) and the establishment of an MPA network where these units converge along the Spratly Islands in the center regions of the South China Sea. By definition, 'marine protected areas' is the term that refers to fishing habitats where extractive activities are prohibited. Marine peace parks refer to MPA networks that will require agreements on protection without prejudice of claims.

Consensus on which habitats and areas are to be designated as protected is a multi-country discussion, especially militarized zones. Multi-country research efforts to inform the decision have been the subject of scientific collaborations in the past. Biophysical models of ocean circulation patterns were developed and compared by a team of researchers (Sprintall, Gordon and Flammert 2012) A multi-site and multi-country study that used natural genetic tags to assess population connectivity was conducted with participation from Malaysia, Indonesia, Vietnam, the Philippines, among other countries.(Ablan et al., 2002) Suggestions that include oil and gas exploration have also been put forth. (Poling et al., 2018) Thus, it can be said that there is scientific, legal, and political information to support this proposal. If properly developed, this will result in reduced pressure on fisheries resources and less incidence of encounters at sea. The challenge, however, would be in securing an agreement without the need to settle the question of sovereignty and jurisdiction.

Rationalizing Fisheries Policies

Fisheries policies generally designate fishing zones where specific sizes of boats and gears may operate. The zones correspond to the natural requirements of the biology and ecology of fish species. In the Philippines, fishing zones are designated as the municipal fisheries where near-fishers with smaller boats < 3 GT operate and commercial fisheries areas further offshore 15 km beyond the high-water mark where the bigger boats bigger than 3 GT are found. Demersal and habitat-associated species such as groupers, snappers, and rabbitfish are species that are caught in near-shore municipal fisheries, while pelagic species such as tuna, mackerel, slip mouths are found. Some species such as the trevally may traverse these boundaries (Philippine Department of Agriculture 1998). The fisheries areas remain connected biologically and ecologically because of cross-over species such as the trevallies and barracuda, pre-settlement stages. (i.e. eggs, larvae and juveniles and other developmental stages of the fish)

Another practical option for collaboration would be to have mechanisms to monitor stocks, and to establish catch limits and protection zones. Disparity in fisheries policies will inevitably lead to conflict. Within the South China Sea, coastal states have different policies for aspects of fishing such as fishing zones, allowable gears and even fishing closures.

Examples of differences in fisheries management in the region are found in Table 1. For fishers who adhere to their own regulations, the presence of another group of fishers conducting activities that they are not allowed to engage in can serve as fuel for conflict. The second group of fishers are aware of a different set of regulations and the activity to them is allowed. There is much room for listing and harmonizing fisheries regulations. Learning more about the discrepancies and the context of the regulations would be valuable at present and in the future.

A possible strategy for cooperation may involve rationalizing fisheries management for a species. High diversity of species caught and fishing methods, fisheries management collaboration may also need to agree on relevant species to focus initial multi-country efforts and demonstrate successful collaboration. Recent discussions at the ASEAN Regional Plan of Action (RPOA) have identified the skip jack tuna (*Katsuwonus pelamis*) and similar small tuna as the common regionally available species.

Table 1 . Differences in Designations of Fishing Zones and Fishing Gear Across Coastal States in ASEAN

Country	Fishing Zone 1	Fishing Zone 2	Fishing Zone 3	Fishing Zone 4
Brunei Darussalam	Shore to 3 nm. Small-scale/ artisanal	3-20 nm Industrial: trawlers <350 HP engine and purse seiners < 20m LOA	20 to 45 nm Industrial: trawlers with 350-550 HP engine and purse seiners with 20-30 m overall length	45 nm to EEZ limit Industrial: purse seiners >30 m LOA
Cambodia	Shore to 20m depth Coastal small-scale with/without engine (5 HP to 50 HP engine)	20 m to EEZ limit Commercial: >50 HP		
Indonesia	Shore to 3 nm Small-scale: vessels <5 GT/10 HP engine	Small-scale: vessels <25 GT/50 HP engine	7 to 12 nm Industrial: vessels <100 GT/200HP engine	>12 nm Industrial: vessels >100GT/200HP engine
Malaysia	5nm Traditional: artisanal, owner-operated vessels engine 5 nm	5 nm to 12 nm Commercial: owner-operated trawlers and purse seines of <40 GT	12 nm to 30 nm Commercial: trawlers and purse seines of >40 GT, wholly owned and operated by Malaysian fishers	30 nm to EEZ Commercial: deep sea fishing vessels >70 GT
Myanmar	Southern area; shore to 10 nm Coastal: vessels < 30 feet or engine <12 HP	Outer limit of Zone I to EEZ Industrial: vessels >30 feet or engine >12 HP		
Philippines	Municipal: vessels <3 GT or fishing not requiring the use of fishing vessels	15km to EEZ limit Commercial: Small-scale - passive or active gear and vessels 3.1 GT to 20 GT Medium-scale active gear and vessels 20.1GT to 150 GT Large-scale -active gear and vessels of > 150 GT		
Thailand	Shore to 12 nm Small-scale: vessels <5 GT operating	12 nm to EEZ limit Large-scale: vessels >5 GT		
Vietnam	Northern Southern areas: shoreline to 30 m depth Central area: shore to 50 m depth Small-scale, vessels with no engine or <40 HP engine	Limit of Zone I to EEZ limit Large-scale: engine >40 HP		

HP – Horsepower LOA – Overall length GT – Gross tonnage

Source: Ablan-Lagman, M.C.A. and Garces, L.R. 2005. *Exclusive Economic Zones and the Management of Fisheries in the South China Sea. A Sea Change: The Exclusive Economic Zone and Governance Institutions for Living Marine Resources*, 136–149. doi:10.1007/1-4020-3133-5_9

Protecting Biodiversity Beyond National Jurisdiction

To access resources in areas beyond the EEZs of any country and below the continental shelves into the deep sea, the Biodiversity Beyond National Boundaries Agreement (BBNJ) was forged. By October 2023, 80 country representatives have already signed. Multilateral discussions on this agreement began as early as 2004 with an ad hoc open-ended Informal Working Group by the United Nations General Assembly in 2004. This working group was tasked with examining gaps in the existing international legal framework, particularly under the UNCLOS, and exploring the need for a new international instrument on the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction.

Regional Fisheries Management Organizations

Regional Fisheries Management Organizations (RFMOs) regulate the fishing activities of states in every region of the world (Sovacool 2009). In other areas of the globe, RFMOs are said to be effective means of regulating IUU fishing as they are open to both the countries in the region, referred to as “coastal states” and countries which may have interests in the fisheries in the area. The latter are referred to as “distant water fishing nations.” There are two types of RFMOs: 1) those that focus on the management of highly migratory stocks, mainly tuna, and 2) those that manage other pelagic or demersal fish stocks.

The Indian Ocean Tuna Commission (IOTC) and the Western and Central Pacific Fisheries Commission (WCPFC) are some examples of the former, while the Southern Pacific Regional Fisheries Management Organization (SPRFMO) and the General Fisheries Commission for the Mediterranean (GFCM) are examples of the latter. There are about 18 RFMOs created as local and regional agreements listed previously. There are also at least 22 international treaties that aim to protect fish stocks globally. Unfortunately, no RFMO currently exists in the South China Sea.

RFMOs focus on the resources that are within national boundaries issues. They will have more focused IUU fishing regulations for the registration of distant water fleets and fishing operations of coastal states. In theory, pushing for an RFMO

mechanism may not have as many hurdles as the strategy to implement no-take zones because of the need to define national boundaries is less of an imperative. RFMOs may operate by determining the total allowable catch of fishery resources in a particular area and implement standard policies for the fisheries resource in focus without prejudice of territorial claims or sovereignty issues. This will, however, require agreements, negotiations, a structure, and financing. There are inevitable delays in regional agreements and prolonged discussions. The experience with the ASEAN-China Declaration of Conduct in the South China Sea (DOC), which was signed in 2002 and finally moved forward to the Code of Conduct in the South China Sea (COC), is a case in point. The document in 2023 is at the stage on how discussions will proceed.

Enterprise Development and Greater Presence of the Fisheries Sector in the West Philippine Sea

Enterprise development offers a pathway to addressing maritime disputes through a blue economy strategy. It is a forward-looking approach to managing conflicts through cooperation focusing on sustainable economic development. It may attract support and investment from organizations interested in promoting sustainable development and peace and may serve as incentives for cooperation.

Participation in Fisheries

The percentage of protein from fish in Southeast Asia diets ranges from 7% to 22%. This is twice, if not thrice, the population of the United States, the United Kingdom, Europe, and even Australia. It is not far within the mark to assume that fish resources are of greater importance here than elsewhere. Fish and fisheries resources form a greater part of culture, economics, and foreign relations here than in other areas of the world (Baker, Reese and Harnagel 2016).

The total economic activity in the broader economy that is supported by the fisheries is estimated at USD66.7 billion, aside from providing 10% to 12 % of the total global fish production (L. Teh, A. Witter and W. Cheung, et al. 2017). With the exception of Brunei, the other coastal states are among the top fish-producing

states globally. China and Indonesia are ranked 1st and 3rd in global production, respectively. Vietnam is 7th, the Philippines is 12th followed by Thailand in 13th place. Malaysia and Taiwan are ranked 16th and 23rd, respectively (Food and Agriculture Organization 2020).

Fisheries yield in the WPS areas is much higher than 5 to 10 mt/ km²/yr (Campos 2000). The fact that spearfishing is practiced and even preferred by traditional fishers in the WPS areas reflects the high quality of fish in the catch. Arceo (2020) estimates fisheries yield of 61,556-90,850 mt/yr, equivalent to 11% to 16% of the total annual Philippine marine fisheries production. If one considers the report that 70% to 95% of fish stocks have been depleted from 1950 in the wider South China Sea area, and that catch rates have declined 66% to 67% over the last 20 years (Poling 2019), then the fishers' resources in the West Philippine Sea are still abundant.

Unfortunately, the Philippines' fishing industry is characterized by a large number of small-scale fishers with limited technology, equipment, and financial resources to optimize and expand their operations into deeper and more distant fishing grounds in the West Philippine Sea. With more security assets deployed in the contested area (PhilSTAR 2021), joint drills like 'Balikatan' (Crace 2023) and joint patrols with other nations (USNI News 2023), fishers may have greater security and confidence to catch fish in the area. This may be more impactful if the fishers with bigger boats move to the area. The building of new shelter ports in Lawak Island in the KIG where the government is investing PHP800 million to build a port that is designed to provide shelter for fishing boats (see discussion on the section on Maritime Transport).

Establishment of Tourism

Amidst the challenges of geopolitical dynamics, the province of Palawan established tourism in the West Philippine Sea. The aim was to leverage the region's natural beauty and cultural heritage, promoting sustainable and responsible tourism that benefits both the environment and local communities.

On March 19, 2023, the maiden voyage of the "Great Kalayaan Expedition" set sail and brought tourists onboard to five stops – Ulugan Bay in Puerto Princesa, Lawak Island, Patag Island, Likas Island, and Pag-asa Island in the KIG. The

cruise is a seven-day and six-night opportunity to experience the unique marine biodiversity in Ulugan Bay, the bird sanctuary in Lawak Island, and the turtle sanctuary in Likas Island and enjoy recreational activities, including snorkeling, diving, and sports fishing. The operators charge a total fee of PHP120,000 per person.

The effort is very similar to the enterprises Malaysia, China, and Vietnam offer to tour reefs and islands in the Spratly and Paracel Islands. According to former Supreme Court Justice Antonio Carpio, the effort to develop the KIG as a tourist destination is a good way to establish sovereignty claims (Talosig-Bartolome 2023).

Aquaculture Development

Coastal states in the South China Sea are major producers of aquaculture species. China accounts for 60% of global fish production from aquaculture. Vietnam, Indonesia, and the Philippines are consistently in the list of top producers of fish, prawns, shrimps, and algae in aquaculture. The extent of bilateral agreements in aquaculture between China, the Philippines, and Vietnam may be an interesting point of discussion (Zhou 2018).

In the light of reduced fishing capacity to fish in the South China Sea, a pivot to aquaculture in the Philippines has preserved many industries and linkages developed through decades of capture fishing. Aquaculture is labor intensive; thus, it may offer labor potential for displaced fishers (Hall 2021). Demand for fish continues to grow domestically. In 2021, each Filipino consumed 34.28 kg/yr (SEAFDEC 2022).

The use of ocean cages has allowed the expansion of aquaculture into offshore areas, where there is more space compared to crowded coastal zones. Environmental impact is also less for deep water currents which may disperse waste more effectively. In general, water quality is better offshore, compared to nearshore areas, where the environment more closely resembles wild conditions, leading to improved fish welfare and better quality of produce. The development of offshore cages for aquaculture has spurred innovations in marine technology, including automation, remote monitoring and environmentally friendly cage designs (Sievers et al., 2021). The enterprise may also focus on high-value species

to ensure a better return on investments. These species have been difficult to culture, given the water quality in the coastal areas.

Explore Renewable Energy

The oceans, given their immense size, are largely untapped sources of renewable energy, including wind, waves, tidal, thermal energy conversion, and offshore solar power. The energy generated is a relatively clean and sustainable alternative to fossil fuels, reducing greenhouse gas emissions and combating climate change. Developing renewable energy from the ocean diversifies the country's sources of energy, enhancing energy security. These will also provide a reliable and sustainable energy source to remote island communities, reducing their reliance on expensive and limited diesel generators. New innovations to improve efficiency, storage, and transmission of energy are in the offing. (Quirapas and Taeihagh 2021).

The most significant energy generation project in the West Philippine Sea is the Malampaya Deep Water Gas-to-Power project located off the coast of Palawan. Malampaya supplies a substantial portion of Luzon's energy needs. The field, however, is expected to be depleted in the near future. The need to seek alternatives and explore renewable energy resources is a national imperative (Talavera 2023).

Invest in Maritime Transport

A wide variety of maritime transport enterprises exists in the South China Sea, given its strategic and economic importance as the route connecting the Pacific and Indian Oceans. These enterprises are of importance to global trade, regional economics, and local livelihood.

The Philippines is a significant source of seafarers globally and provides a range of maritime services, including ship repair and maintenance. It has a substantial shipping industry that operates within the South China Sea, involving cargo, container, and inter-island transport. Manila is a key hub for shipping routes that traverse the South China Sea. As part of the 2024 Maritime Transportation

Infrastructure Program, the Philippines has allocated PHP800 million to build new shelter ports in the KIG, particularly in Lawak Island. The facility is designed to provide shelter for fishing boats and will include anchorages, access channels, breakwaters, and jetties, among other structures, to offer protection and refuge (Magan 2024).

Waste Management as a New Industry

Given the strategic importance and ecological sensitivity of the South China Sea, the successful development of waste management enterprises in this region may serve as a model for sustainable development in similarly complex and sensitive regions. The Philippines, Malaysia, China, Indonesia, Vietnam, and Thailand are all in the Top 10 list of countries that release the most plastics into the ocean (Ritchie, Sambroska and Roser 2023).

Though efforts to reduce single-use plastics and the development of eco-friendly packaging are on the rise, the problem of plastic debris will continue. Enterprise development may be in the area of collecting marine debris and the development of waste for energy projects. Service-oriented enterprises that provide environmental impact assessments waste management consulting including feed optimization and waste treatment systems in aquaculture are possible enterprises that are largely unexplored.

Strengthen Inter-agency, Cross-sectoral and Multi-stakeholder Coordination

House Bill (HB) 9662, also known as the Blue Economy Act, seeks to promote stewardship and sustainable development of marine wealth within the maritime domains of the Philippines, including its EEZ. The bill has highlighted the need to strengthen coordination for the management of the marine environment. This is a welcome initiative considering the current fragmented operations due to inter-agency, multi-stakeholder, and cross-sectoral complexities. There are diverse and often competing interests among various sectors and stakeholders, especially when they conflict with conservation efforts.

Marine governance in the country involves national and regional offices of the

Department of Environment and Natural Resources-Biodiversity Management Bureau (DENR-BMB), Department of Agriculture- Bureau of Fisheries and Aquatic Resources (DA-BFAR), Department of Tourism (DOT) and Department of Transportation (DOTr) as well as the local government unit, and various ad hoc committees such as the Protected Areas Management Board (PAMB) and the Palawan Council for Sustainable Development (PCSD). The numerous agencies can lead to inconsistencies in marine management practices and confusion when seeking to establish fisheries development projects. More recently, for example, the BFAR has adopted the use of Fisheries Management Areas (FMAs), the boundaries of which are wider than the boundaries of a region. Resources, including funding, technology, and skilled personnel, are limited, hindering their ability to implement management measures effectively. Coordination may alleviate some of the resource limitations.

Partnerships for Science, Technology, Innovation, and Investments

The areas suggested for enterprise development have challenges for their implementation, primarily in the areas of investment and technological innovations. Increased participation in the fisheries sector, for example, will require technology, training, and bigger vessels. For aquaculture, there were challenges for automation, remote monitoring, and cage designs. Renewable energy enterprises need innovation related to energy transfer efficiency, storage, and transmission. The process of developing or transferring technology may be a mechanism for collaboration especially where technologies already exist.

In other instances, there may be opportunities for private and public sector partnerships as the allocation of the government is already part of the national budget.

Conclusion

Having a National Security Policy that is explicitly anchored on the Philippine Development Plan presents the priorities of the government as it continues to address the persistent issue of competing claims over the South China Sea. By

adopting the goals of building a blue economy in the West Philippines Sea, the Philippines has started to invest in developing infrastructure and programs to increase presence both in the form of security and non-security measures. Increased deployment of assets, more frequent joint military exercises, and joint patrols have been observed. At the same time, the development of tourism and infrastructure is in progress to establish a presence by way of developing enterprises. There are science, technology, training, innovation, and investment needs that have been identified in this paper, and there may be many others. Many of these may be addressed through local and international partnerships. The aim is to obtain better security outcomes and, at the same time, contribute to national development.

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