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The Way that Marine Security has Changed Over Time: A Detailed Study

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ABSTRACT

The evolution of marine security protocols over time demonstrates the ways in which measures have evolved to preserve the maritime realm. In the past, the main concerns were keeping trade routes safe for ships and safeguarding maritime areas against pirate attacks. States began to bolster their fleets in order to safeguard their rights and ensure the safety of their vessels as trade and transportation increased. Over who controlled certain areas of the sea, there were several battles and confrontations between the states.

Keywords: *Maritime, Organisation, Securities, Threats.*

I. INTRODUCTION

The introduction of steam-powered ships and other developments in the marine sector in the 19th and 20th centuries enhanced security and made it possible to move people and products across great oceanic distances more quickly and effectively. It got more and more entwined with geopolitical rivalry, resulting in disputes and strains over resources and territory control. These days, as international trade expands and more goods are moved around, the difficulties get much more complex. These days, maritime security encompasses more than just port and ship protection. It permits fair and secure access for everybody while guaranteeing the health of the waters.

(A) The difficulties of maintaining maritime security

Ensuring the safety of activities conducted in maritime areas requires addressing the difficulties associated with maintaining their security. Maintaining the security of the oceans against dangers including piracy, terrorism, and illegal activity calls for strong strategies that include increased surveillance, international cooperation, and the imposition of strict laws. Collaboration between nations, governments, organisations, and corporate parties is crucial to addressing this complex potential harm. This entails improving the port's capacity for patrol and surveillance, bolstering cooperation across continents, and encouraging the application of pertinent agreements and legal frameworks. Effective maritime security measures, such as

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routine inspections and screens to reduce threats, depend on cooperation between port authorities and ship operators.

II. ORGANISATIONS AND BOARDS FOR MARITIME SECURITY

In India, multiple ministries or departments are in charge of marine security. A number of ministry departments and agencies worked together on it. In India, the maritime domain is handled by four ministries. They are as follows:

1. Defence Ministry
2. Home Affairs Ministry
3. Fisheries Ministry and
4. The Department of Transportation
5. Additional major participants are:
 - Foreign Affairs Ministry
 - Information Technology and Communication Ministry

(A) Sea Border Protection Forces

Our sea boundaries are guarded by the Indian Coast Guard, Border Security Force (which protects the Rann of Kutch), and Central Industrial Force of Security (CISF). The main ports' security is managed by CISF. State governments, including those of India's island territories with coastal regions, use the agencies listed below:

1. **Forces:** State marine home guards, such as those in Tamil Nadu; State marine police
 - a. Committees for state coastal security
 - b. Committees for district coastal security
2. **Agency intelligence**
 - a. National Institute for Technical Research.
 - b. Wing for Research and Analysis
 - c. Bureau of Intelligence
 - d. Bureau of Narcotics Control
 - e. Revenue Intelligence Directorate
 - f. Defence Intelligence Agency
 - g. Navy Intelligence Directorate

3. Organisations dedicated to research and development

- a. Indian Space Research Establishment
 - b. Organisation for Defence Research and Development
 - c. National Centre of Excellence for Internal Security Technology (NCETIS),
Bombay, IIT
4. The Ministry of Home Affairs' Land Ports Authority of India (LPAI)
 5. Ministry of Finance, Central Board of Excise & Customs
 6. National Maritime and Coastal Security Strengthening Committee (NCSMCS)
 7. Planning at the National Marine Police Training Institute (MPTI)
 8. Planning for the Central Marine Police Force

(B) Indian Coast Guard

The Indian Coast Guard (ICG) is in charge of keeping territorial and coastal waters secure. The Coast Guard Act officially formed it on August 18, 1978. The Exclusive Economic Zone—do you recall? The ICG is in charge of surveillance over the 2 million square kilometres of India's Exclusive Economic Zone by sea. Additionally, ICG oversees the general cooperation between federal and state entities in issues of coastline security.

(C) Indian Navy

The Indian Navy is another major organisation in charge of maritime security. The idea of guaranteeing secure waters forms the foundation of the Indian Navy's new maritime communication channels like sea. The Indian Maritime Security Strategy is based on two main principles. The first is the increase in threat sources, kinds, and intensities. Secondly, to furnish "freedom to use the seas" to further the interests of India as a nation, it is essential to guarantee that the seas are still safe.

(D) International Ship and Port Facility Security Code (ISPS)

A comprehensive set of rules and principles for the security of ships and port facilities is known as the International Ship and Port Facility Security Code, or ISPS. The International Maritime Organisation develops it. They imposed stringent controls on maritime security and safety following 9/11. The code can be found in the International Maritime Safety Convention (SOLAS). There are 148 signers in total. This code's objective is to create a uniform framework for international ships and ports. Consequently, governments can effectively assess risks and mitigate risks to the security level and implement the code's recommended security measures.

Ten small ports are operating under this code as of 2004, when it was adopted in India.

III. INDIAN-LED PROJECTS

1. SAGAR

To celebrate the island nation's Independence Day, Indian Prime Minister Modi spoke to the National Assembly of Mauritius on March 12, 2015.² Curiously, Modi did not address the Mauritius National Assembly on that particular day when he talked about SAGAR. He took this action in honour of the Offshore Patrol Vessel (OPV) *Barracuda*, an Indian-built vessel now serving the National Coast Guard of Mauritius. In addition to providing logistical support for search and rescue missions, Mauritius would employ this OPV to enforce laws against illegal fishing, drug trafficking, smuggling, and piracy within its vast exclusive economic zone (EEZ).

The original was the OPV CGS *Barracuda* warship ever constructed for export in India, adhering to the particular design specifications of the purchasing nation, in this instance being Mauritius. Garden Reach Ship Builders and Engineers Limited (GRSE), a defence PSU (Public Sector Undertaking) in Kolkata, India, constructed it.³ The ship's ultimate location, Mauritius, showed The island country's geostrategic significance within the Indian Ocean and marked the start of a new phase in Indian defence sector sales. More than forty littoral republics in the Indian Ocean are home to around 40% of all people on the planet. Two thirds of oil exports worldwide, one-third of global large freight, and half of global traffic in containers all pass via the IOR. Additionally, these seas handle 90% of the energy imports into India and amount of trade. For these reasons, peace and security in the Ocean of India are essential to both financial prosperity and social harmony of the majority of countries worldwide, including India.

The abbreviation SAGAR, which translates to "sea" in Hindi and stands for "security and growth for all in the region," is India's outlook for the region of the Indian Ocean. In line with this vision, India would take all necessary precautions to protect its islands and mainland as well as its objectives. Additionally, India will endeavour to guarantee a stable, safe, and secure IOR.

The Prime Minister did not provide specifics, but it is assumed that these concerns encompass

² Ministry of External Affairs, Government of India, Address by Prime Minister to the National Assembly of Mauritius, 12 march 2015, http://mea.gov.in/Speeches-Statements.htm?dtl/24908/Address_by_Prime_Minister_to_the_National_Assembly_of_Mauritius_March_12_2015

³ <https://maritimeindia.org/revisiting-sagar-indias-template-for-cooperation-in-the-indian-ocean-region/>

Indian security energy supplies, maritime assets and resources, shipping, fishing, seaborne trade, and Indian nationals employed abroad. India's maritime security is also affected by global instability because of the seamless interconnectedness in the marine sector. SAGAR states that India aims to strengthen relations with its neighbours in the sea on an economic and security level and support the development of their marine security capacities. India would work with them to develop their capacities, construct infrastructure, exchange information, and monitor the coast.⁴

Secondly, India thinks that regional peace can only be achieved by group, cooperative, and collaborative efforts. In this regard, organisations such as the Maldives-India-Sri Lanka trilateral, formed in 2013, and the Indian Ocean Naval Symposium (IONS), a 2008-founded initiative that unites 35 navies in the area, are significant. Such methods bolster countermeasures against natural disasters and actors who are not state actors involved in terrorism, theft, among other offences. India also aspires to a cooperative future and an integrated strategy, which will lead to sustainable growth for the entire area. India believes that in this particular setting, IORA, the Indian Ocean Rim Association, is essential.

According to the Indian Prime Minister, the blue wheel or chakra on the country's flag symbolises the promise of the Ocean Economy or Blue Revolution, underscoring the significance and importance of the "Blue Economy" for India. The countries along the coast bear the major accountability for preserving the Indian Ocean's wealth, stability, and peace. This was the final point made by Modi. India participates in capacity building, capability upgrading, economic ties, dialogue, visits, and naval drills with other countries who have vested pursuits throughout the area. India, according to Prime Minister Modi, is a country that values respect for worldwide marine conventions and guidelines followed by all nations, as well as the amicable settlement of maritime disputes. Therefore, SAGAR was an inclusive vision that prioritised respect for international maritime norms and collaboration in the domains of politics, business, and safety.

2. IONS

The term "Indian Ocean Naval Symposium" (IONS) describes a biannual series of gatherings. The many coastal states around the Indian Ocean get together for these sessions. As part of the sessions, a forum is arranged to promote collaboration with regard to marine security. Other goals include fostering cordial ties between the various member governments and talking about various marine issues in the region. Four sub-regions comprise the 24 member states of the

⁴ Ibid

International Organisation of Navigation (IONS): South Asian, West Asian, South-East Asian and Australian, and East African.

Like A security framework for the entire Indian Ocean region is provided by the Western Pacific Naval Symposium and the Indian Ocean Naval Symposium. In order to preserve goodwill among themselves regarding the operations in the Indian Ocean, the member states' navy and maritime security agencies have voluntarily taken up this project. With the initial goal in mind, the Naval Symposium in the Indian Ocean acts as an organisation that additionally facilitates the planning of lectures, essay competitions, and other activities.

Taking into account India's threefold goals for the Indian Ocean area, it has been determined that IONS is an endeavour that is greatly needed:

- to improve and deepen The Indian Ocean's connections with Indian region's coastline states
- to demonstrate the ability of the Indian Navy to leadership in this regard while working
- towards being a company that offers network security
- to realise India's goal of having a steady, law-based marine boundary in the Indian Ocean region

Additionally, the Indian aim to expand its power from the Malaccan Straits to Hormuz can be greatly aided by the IONS. India undoubtedly wants to use the IONS to offset China's influence.

2018's 6th edition of the IONS took place in Tehran, the Iranian capital, from April 22 to April 25. The meeting was attended by the different member states. Nonetheless, there were more states present at this gathering. This edition of the IONS also included participation from the states around the coast of the Caspian Sea. At this event, the Iranian Navy officially assumed the chairmanship of IONS. The International Maritime Organisation (IONS) consists of 32 foreign navies. Of them, eight are observers and the remaining twenty-four are members. There have been seven IONS editions as of 2021. The eighth edition of the meetings, the Indian Ocean Naval Symposium 2022, will take place in Thailand.

IV. MARITIME ZONES

According to the Law of the Sea Convention of 1982, customary international law establishes a baseline from which the contiguous zone and territorial sea, EEZ, and, in certain situations, the measurement of the continental shelf. Nautical charts from NOAA officially show the limits of these areas. The most recent chart edition's boundaries are the ones that matter for an explanation of the Three Nautical Mile Line, the Natural Resource Boundary, and the several maritime zones of the United States. The boundaries of these maritime zones separating coastal

States are determined by international accords that countries have signed. Get in touch with the US Department of State for the official explanation of the country's maritime borders.

Baseline

The low-water line along the coast, as shown on large-scale charts officially recognised by the coastal State, is generally considered the typical baseline. Certain situations call for different guidelines when establishing the baseline, including those involving roadsteads, strongly indented coastlines, ports, bays, mouths of rivers, and fringing reefs. The U.S. baselines are the mean of the lower low tides as shown on the largest-scale NOAA nautical charts, in accordance with these guidelines. Normal baselines in the United States are ambulatory and dynamic, changing with the accretion and erosion of the coastline.

Inside Waters

The waters on the landward side of the baseline, from which the territorial sea's width is determined, are known as internal (or inland) waters. Subject to the right of entrance for vessels in distress, the coastal state has complete sovereignty over its internal waters, just as it would if they were a part of its land area. It is also able to bar foreign flag vessels from entering its internal seas. In internal seas, the right of innocent passage is not applicable. Without the coastal state's consent, ships and planes are not permitted to enter or exceed internal waters. Rivers, harbours, lagoons, some bays and canals, and lakes, including the Great Lakes, are a few examples of internal waters.

Sea Territorial

Any coastal state that is 12 nautical miles (nm) or more seaward from its baselines may claim a territorial sea. The coastal state is sovereign over its sea area, the sky overhead, and the seafloor and subsurface below it. Subject to laws and regulations implemented by the coastal State that are in compliance with the Law of the Sea Convention and other international legal standards pertaining to such passage, foreign-flagged ships enjoy the right of innocent passage while transiting the territorial sea. 1988 saw the US assert its territorial claims over a 12-nm area.

Zone of Contiguity

Every coastal state may claim a continuous zone that stretches seaward for up to 24 nautical miles from its baselines and is next to or outside of its territorial sea. A coastal State may exercise the control required in its contiguous zone to deter violations of its customs, fiscal, immigration, and sanitary laws and regulations within its territory or territorial sea, as well as to penalise violations of those laws and regulations committed there. Additionally, a coastal

state may assume that the removal of historical and archaeological artefacts from the contiguous zone's seabed without that state's permission is illegal in order to curb the trafficking in such items.

The United States declared a continuous zone in 1972 that stretched from three to twelve miles offshore in accordance with the UN Territorial Sea and Contiguous Zone Convention of 1958. President Clinton declared a contiguous zone extending from 12 to 24 nautical miles offshore in 1999 (Presidential Proclamation No. 7219, 64 Fed. Reg. 48701 (Aug. 2, 1999)), in accordance with Article 33 of the Law of the Sea Convention. This was eleven years after President Reagan had expanded the U.S. territorial sea to 12 miles.

Exclusive Economic Zone

Up to 200 nautical miles (or out to a maritime boundary with another coastal State) seaward from its baselines, each coastal state may claim an Exclusive Economic Zone (EEZ) that lies outside and adjacent to its territorial sea. A coastal state has the following rights within its Exclusive Economic Zone (EEZ):

- (a) Sovereignty with regard to investigating, using, protecting, and conserving natural resources (living or non-living) of the seabed, subsoil, and superjacent waters;
- (b) Jurisdiction as stipulated by international law with regard to the creation and use of artificial islands, installations, and structures; marine scientific research; and the preservation of the environment;
- (c) Additional obligations and rights stipulated by international law.

Line of Three Nautical Miles

Because it is still utilised in some federal statutes, the Three Nautical Mile Line—measured from the territorial sea baseline and originally recognised as the outer boundary of the United States territorial sea—remains on NOAA nautical charts. Secretary of State Thomas Jefferson's letter to certain foreign ministers on November 8, 1793, may contain the earliest declaration of the United States' Three Nautical Mile territorial sea. It stated that a provisional territorial sea would be established, extending a "distance of one sea-league or three geographical miles from the sea shores" (cannon shot rule). Also refer to U.S. Department of State Geographic Bulletin No. 3 (Apr. 1965), which reiterates the long-standing stance that the United States' Territorial Sea and many other maritime nations involved with three nautical miles granted for freedom of navigation.

Continental Shelf

The seafloor and subsoil of the submarine areas that extend beyond a coastal state's territorial sea throughout the natural extension of its land territory to the outer edge of the continental margin, or up to 200 nautical miles from its baselines in cases where the outer edge of the continental margin does not extend that far, are considered the state's continental shelf. A maritime boundary with another coastal State may also serve as a limit on the size of the continental shelf.

The outer boundaries of a coastal state's continental shelf are established in compliance with Article 76 of the Law of the Sea Convention when the coastal state's continental margin reaches beyond 200 nm from its baselines. The Extended continental shelf is a term used to describe the area of a coastal state's continental shelf that extends beyond the 200 nm limit.

For the purposes of exploration and resource exploitation, as well as other uses mentioned in the Law of the Sea Convention, a coastal State has exclusive jurisdiction and sovereign rights over its continental shelf. Combined with living organisms from sedentary species—that is, organisms that, at harvestable stage, are either immobile on or under the seabed or unable to move except in constant physical contact with the seabed or subsoil—the natural resources of the continental shelf are made up of minerals and other non-living resources found in the seabed and subsoil.

Elevated Waters

All areas of the ocean that are not a part of a state's territorial sea, internal waters, exclusive economic zone, or archipelagic waters are collectively referred to as the high seas.

V. NAVIGATING LEGAL WATERS: POLICIES AND PROCEDURES

It is critical that both the shipping business and sailors comprehend maritime legislation. This guarantees law-abiding and secure passage over public seas. Their judgements and actions are guided by their knowledge of these frameworks and rules to guarantee conformity at all times.

1. The implications of UNCLOS on maritime security

The legal framework governing the use and management of the seas is established by the United Nations Convention on the Law of the Sea (UNCLOS), an international treaty. UNCLOS is a set of laws and regulations pertaining to marine boundaries, rights of navigation, jurisdiction over oceanic assets, environmental protection, and scientific research. It was adopted in 1982 and came into force in 1994. The accord is regarded as a cornerstone of marine law since it offers an extensive foundation for global regulation of activities pertaining to the

ocean. 168 nations have ratified UNCLOS, sometimes known as "The Law of the Sea Convention."

2. The International Maritime Organization's functions

The International marine Organisation, or IMO for short, is essential to advancing environmental preservation, safety, and security in the marine industry. The IMO was created in 1948 as a specialised agency of the UN and is in charge of establishing guidelines and rules for the shipping sector. It reduces hazards and negative effects on the marine environment while ensuring the efficient and seamless flow of global maritime trade.

VI. UNDERWATER DOMAIN AWARENESS

India's broad maritime interests, which span the enormous Indian Ocean Region (IOR), continue to depend on Underwater Domain Awareness (UDA). According to some, UDA is a complex amalgam of tactics, regulations, and technologies intended to monitor everything beneath the surface of the ocean. Significantly, India's marine interests encompass far more than just economic factors; these also include goals for regional stability, environmental sustainability, and national security.

The Indian Ocean is frequently referred to as the "Indian lifeline" since it transports a significant amount of trade and about 80% of the country's petroleum imports, which keeps India anchored in terms of both economic expansion and energy security. Therefore, it is impossible to overstate the significance of UDA in India. A robust UDA framework that takes into account the evolving nature of maritime risks and issues is crucial. By keeping an eye on marine activity in India, UDA enables authorities to identify potential security threats and react quickly to emerging emergencies. India's maritime security environment is evolving as a result of a growing awareness of the significance of its maritime environment from a strategic standpoint. India understands the need for underwater surveillance capabilities because it has a large coastline and extensive strategic interests in the Indian Ocean.

In light of this, India has made the development and use of Unmanned Underwater Vehicles (UUVs) a key policy. These cutting-edge technologies include Autonomous Underwater Vehicles (AUVs) and Remotely Operated Underwater Vehicles (ROUVs). With their superior sensors and cameras, AUVs and ROUVs enable India to obtain crucial data on submerged activities like ship movements or any possible threat. Additionally, collaborations between public organisations like the Defence Research & Development Organisation (DRDO) and private businesses like Larsen & Toubro (L&T) demonstrate India's coordinated attempts to strengthen its marine security infrastructure. India has demonstrated its dedication to adopting

cutting-edge technologies to enhance its underwater defensive capabilities with the advent of UUVs such as MAYA, AMOGH, and ADAMYA. In addition to offering ADAMYA previously unheard-of endurance and operational depth, it is a significant advancement, giving the Indian Navy exceptional versatility in underwater surveillance and the most effective reconnaissance equipment for missions underwater.

An important development in India's marine security architecture is the launch of the Integrated Underwater Harbour Defence and Surveillance System (IUHDSS) at Naval Jetty Port Blair. By protecting important naval installations from potential maritime attacks, this cutting-edge security tool—which can detect, identify, and monitor threats on the surface as well as underwater—improves their safety. India's choice to fit sonobuoys to its MQ-9B Sea Guardian drones is a sign that the country is keeping up with the rapidly evolving marine environment and expanding its surveillance capabilities globally. In order to find submarines and other underwater objects, sonobuoys are essential. India has a vast network of naval bases, dockyards, air stations, underwater listening posts, coastal surveillance radar systems, and forward operating bases that make up its maritime security infrastructure. These are positioned assets give India the ability to monitor any threat coming from the sea and act quickly to provide secure waterways. In addition, India has created laws and rules to control maritime operations and guarantee efficient UDA in the face of infrastructural expansion and technology breakthroughs. The Indian Coast Guard Act of 1978, the Indian Maritime Zones Act of 1976, the Territorial Waters, Continental Shelf, and Exclusive Economic Zone Act are a few of the laws that strengthen India's maritime security architecture by establishing the legal foundation for maritime enforcement and monitoring.

India's commitment to international maritime governance and cooperation is further demonstrated by its observance of certain treaties and agreements. India is a responsible partner in the surrounding seas because of its strong cooperation with other nations to promote maritime awareness, which fosters stability and security in the region.

(A) India's Challenges

India has numerous obstacles in its efforts to improve maritime security by strengthening its UDA capabilities. As India increases its capacity for UDA, it needs resources to conduct surveillance efficiently, including expert personnel, cash, and state-of-the-art equipment. In addition, the job of keeping an eye on such wide maritime borders is difficult given the expansive Exclusive Economic Zone (EEZ) and 7,500 km of coastline. Furthermore, India's present heavy dependence on foreign technology for undersea monitoring equipment raises the

possibility of delays and incompatibilities. Additionally, the nation's efforts to maintain maritime security are complicated by geopolitical tensions, as evidenced by the instances in which Chinese submarines have infiltrated the Indian Ocean region. Underwater topography and seasonal monsoons can also complicate monitoring operations, but the effectiveness of collaboration is hampered by a lack of coordination amongst the institutions in charge of maritime security.

Maritime Domain Awareness (MDA) gained significant importance in India's strategic security debate following the 26/11 Mumbai attack. Although the primary goal of maritime diplomacy (MDA) is to guarantee maritime administration for security purposes, there are other possible advantages. Opportunities in environmental management and the blue economy are among them; these support comprehensive and sustainable maritime development.

Despite its potential, UDA is still limited to the ocean's surface because of unique acoustic needs and difficulties associated with tropical conditions. Such advances could be achieved by modelling and simulation (M&S), but they need experimental validations and resource-intensive digital transformations. Fragmented marine government precludes the success of military maritime strategies.

(B) Prospects for India

India's marine security stance is strengthened and its maritime diplomacy has the opportunity to blossom with the improvement of UDA in maritime security. India's diplomatic objectives depend on enhanced UDA capabilities, as the following points out:

The first benefit of the successful creation of sophisticated UDA systems is an increase in situational awareness, which is essential for comprehending the dynamics of the Indian Ocean region's maritime domain. This knowledge is crucial for promoting fruitful discussions about each nation's maritime zone with neighbours and other external entities. Moreover, proactive management of marine matters and conflict avoidance through early detection of possible threats or accidents underwater are some advantages of cutting-edge UDA technology. India's improved UDA capabilities are also beneficial for improving security alliances at sea with foreign countries. India can foster confidence and collaboration with them to strengthen their naval operations, leading to stronger diplomatic ties and joint solutions to shared maritime issues. Better UDA also promotes increased information exchange among regional and international players in the industry, supporting transparency and initiatives aimed at fostering confidence. Building diplomatic relations and fostering collaboration on common marine interests are the results of exchanging information regarding underwater activities, dangers to

the maritime realm, and environmental issues.

India might use improved UDA capabilities to assist safeguard important waterways because it is a significant investor in maritime trade routes. By safeguarding commercial shipping lanes from potential threats, India improves its standing diplomatically and demonstrates its dependability as a maritime player, winning the respect of trading partners.

VII. CONCLUSION

India uses the UDA to monitor and safeguard marine habitats, demonstrating its commitment to sustainable development in the maritime sector and as a steward of the environment. By using this proactive approach, nations can use diplomatic channels to mobilise support from around the world in their battle against marine pollution, the effects of climate change, and biodiversity conservation.

Better UDA also makes it easier for Search and Rescue (SAR) organisations to collaborate and coordinate across agencies more effectively at sea, which enables India to provide neighbouring states with emergency aid during trying times. India's diplomatic ties within the SAR are improved by this goodwill that results from collaborative engagement.

Additionally, projects pertaining to ocean governance and scientific collaboration can benefit from India's investments in UDA technology and research. India can collaborate with other countries on joint projects that will advance diplomatic relations and contribute scientific knowledge by pooling data and expertise in underwater exploration and research. India can empower states with the capacity to improve their own marine domain knowledge, fortifying ties and fostering regional security cooperation, by providing assistance to partner nations with skill-building and training programs for their maritime security services.

Finally, India may advocate for a rules-based maritime system in diplomatic circles by abiding by international marine laws and regulations. India displays its commitment to diplomacy with its UDA capabilities, which are capable of overseeing and enforcing adherence to maritime regulations towards the region's security and stability.
