# Securing India's Maritime Frontiers

India's MDA architecture has improved over the years, but significant hurdles persist. While coastal radar networks and warship patrols have been ramped up, coordination between multiple agencies and a lack of effective implementation still hampers the maritime security. As maritime trade grows and undersea threats intensify, ensuring the safety of the nation's vast coastline and sea lanes has become increasingly vital.

• **Commodore Anil Jai Singh**

*Indian soldier aiming his weapon towards The Taj Mahal Hotel in Mumbai during the 26/11 terrorist attack*

The November 26, 2008 Mumbai attacks exposed critical vulnerabilities in India's coastal security, prompting the government to undertake a comprehensive overhaul of the national maritime security framework. The immediate response focused on fortifying coastal security with a coordinated effort involving key stakeholders such as the Marine Police, Customs and Revenue authorities, and the fishing community. At the forefront of this initiative were the Indian Navy and the Coast Guard, with responsibilities clearly delineated and a command and control structure put in place. In the 16 years since, the security framework has made significant progress, though challenges remain. These issues stem less from deficiencies in the structure itself and more from the prevailing attitudes within some

implementing authorities.

The appointment of a National Maritime Security Coordinator (NMSC) was a critical step towards addressing these gaps, promising better coordination moving forward. Vice Admiral G. Ashok Kumar (Retired) was appointed as India's first NMSC on February 16, 2022. The NMSC is part of the National Security Council Secretariat (NSCS) and reports to the National Security Adviser (NSA). The NMSC's responsibilities include coordinating with stakeholders and agencies; coastal surveillance; addressing non-traditional threats to maritime security; balancing terrorism threats, and increasing the number of coastal radars and Automatic Identification System (AIS) on small boats.

The coastal security apparatus features an integrated coastal radar network designed to provide seamless coverage along India's extensive coastline. Although still a work in progress, this network has extended its surveillance reach to India's maritime neighbours, helping to foster regional cooperation in maritime security.

India, as a dominant maritime power in the Indian Ocean (IO) region, has firmly positioned itself as a responsible stakeholder in maintaining a free and open Indo-Pacific. Its proactive stance in ensuring a safe and secure maritime environment has established the nation as a preferred security partner in the region. However, with its large and porous coastline–spanning 7,516 kilometres and encompassing 12 major and over 200 non-major ports–the nation's maritime strength also presents vulnerabilities. The nation's Exclusive Economic Zone (EEZ), covering over 2 million square kilometres, presents both opportunities and challenges.

India's ambitious economic targets–envisioning a developed country status by 2047–depend heavily on maritime trade, with over 90 per cent of its trade by volume and 80 per cent of its energy imports travelling across the sea. As the nation approaches its goal of becoming a $5 trillion economy within the next few years and potentially a $10 trillion economy within a decade, the security of its Sea Lines of Communication (SLOC) will become increasingly critical. As part of this effort, the nation is expanding its port and coastal infrastructure, with deep-water transhipment ports in Vizinjham, Vadhavan, and the Nicobar Islands set to play pivotal roles. India's geographical position, sitting at the crossroads of critical sea lanes, offers it a strategic vantage point in the IO. With land resources depleting and a growing population to support, India's reliance on the sea for its future growth is inevitable. Ensuring maritime security is thus a strategic imperative.

**India's focus on Maritime Domain Awareness (MDA) stems from its need to safeguard its 7,516 km coastline and vital Sea Lines of Communication. The country has made strides in improving its coastal radar network, maritime patrols, and warship deployments, positioning itself as a reliable security partner in the Indo-Pacific**

India's maritime security strategy is closely linked to its SAGAR (Security and Growth for All in the Region) policy, articulated by Prime Minister Narendra Modi during his 2015 visit to Mauritius. This policy emphasises collaboration with India's maritime neighbours to enhance their capacity to secure their own maritime domains. Smaller neighbours with disproportionately large EEZs, such as Sri Lanka, the Maldives, and Seychelles, have benefited from Indian assistance, with India providing platforms, infrastructure, and personnel to support their coastal and EEZ surveillance efforts, as well as Search and Rescue (SAR) operations. This inclusive and collaborative approach underpins India's efforts to foster a robust regional Maritime Domain Awareness (MDA) capability.

India's naval forces are constantly engaged in mission-based deployments across the Indo-Pacific, with 12-15 warships patrolling the region at any given time. These deployments offer India critical situational awareness and enable it to respond swiftly to emerging crises. The Indian Navy's air assets, including long- and medium-range maritime patrol aircraft and rotary-wing platforms, are continuously monitoring vast expanses of the ocean.

*Indian Navy's frontline frigate, INS Tabar during her return leg from St Petersburg*

Beneath the surface, India's submarine fleet contributes valuable intelligence, enabling the Navy to better understand underwater environments and deploy resources efficiently.

Frequent bilateral and multilateral exercises, along with coordinated patrols involving both regional and extra-regional navies, have enhanced India's ability to share information and foster interoperability in the maritime domain. Such initiatives are vital for ensuring safety and adherence to established maritime laws and conventions.

Technological advancements in space, cyber, and autonomous systems–along with the application of artificial intelligence, quantum communication, and advanced surveillance technologies–are expected to further bolster India's MDA capabilities. These innovations will allow the country to remain ahead of both traditional and non-traditional threats emerging in the maritime domain.

Institutionally, India has established robust mechanisms to enhance its MDA efforts, such as the Information Fusion Centre for the Indian Ocean Region (IOR-IFC) and the Information Management and Analysis Centre (IMAC), both based near the national capital. In 2021, the Prime Minister launched 'Sagarmanthan,' a real-time vessel-tracking system named Mercantile Marine Domain Awareness Centre (MMDAC), and there are ongoing proposals to establish a National Maritime Domain Awareness Centre (NMDAC). These initiatives reflect India's long-term vision for maritime security and its commitment to enhancing awareness across its vast maritime frontiers.

While much of the focus in MDA tends to be on military dimensions, it is essential to recognise that non-military challenges also pose significant risks to maritime security. Global trade relies heavily on the oceans, yet regulatory oversight of maritime activities is limited compared to the heavily monitored airspace. The AIS, which tracks vessels over 20 meters in length or displacing over 300 tonnes, has improved monitoring at sea. However, smaller vessels often remain undetected, and even larger ships involved in illegal activities can 'go dark' by turning off their AIS transponders–a tactic frequently employed by China's fishing fleets in foreign EEZs.

The IOR-IFC maintains white shipping agreements with over 25 countries and organisations, collecting and analysing data to detect anomalies in ship movements. With observers from more than a dozen countries stationed at the IOR-IFC, regional MDA capabilities have been significantly enhanced. Improved coordination with similar centres across the Indo-Pacific will be vital in upholding the rules-based order at sea. Although the high seas are generally treated as global commons, open for use by all, this has led to a lack of regulation in comparison to terrestrial borders or airspace. The principle of 'Mare Liberum,' or 'Freedom of the Seas,' written by Dutch jurist Hugo Grotius in 1609, remains the guiding framework for maritime law. Recent efforts, such as the United Nations Convention on the Law of the Sea (UNCLOS), which established a global framework for ocean governance, are pushing to address gaps in ocean regulation, particularly concerning areas beyond national jurisdictions. The June 2023 UNCLOS Agreement on Marine Biodiversity in these areas, known as the 'High Seas Treaty,' marks a significant step towards ensuring sustainable use of marine resources.

**Underwater security, a crucial yet often overlooked area in India's maritime strategy, faces growing threats. As the country leans more on offshore resources and undersea cables, addressing undersea domain vulnerabilities remains a challenge, especially with hostile foreign activities in the Indian Ocean**

## Undersea Domain Awareness

When it comes to MDA, much attention is given to surface-level activities, but the undersea domain remains largely overlooked. With the world increasingly turning to the sea for resources through Blue Economy initiatives, it is crucial to understand the depths of the ocean and what they offer. Undersea exploration, resource extraction, seabed mapping, and the study of acoustic dynamics–driven by environmental conditions that vary significantly from place to place–are

*A recent naval exercise involved seamless integration of two Aircraft Carriers INS Vikramaditya and the indigenously built INS Vikrant- along with a diverse fleet of ships, submarines and aircraft, showcasing India's technological expertise in the maritime domain*

key components of UDA. This often-overlooked aspect is vital for national security and resource management.

Subsea infrastructure, such as undersea cables and pipelines, plays an essential role in global connectivity, with over 90 per cent of the world's internet traffic travelling through these cables. These critical infrastructures are increasingly vulnerable to both natural and man-made disruptions. Recent events like the Nord Stream pipeline damage and incidents involving undersea cable disruptions underscore the importance of protecting undersea assets. Countries with little regard for ethical constraints, such as China, have frequently targeted critical infrastructure as a means of asserting power. Protecting these vital undersea assets will be a growing challenge, as threats can arise from various, often unpredictable sources.

Militarily, UDA plays a crucial role in submarine operations, sea-based deterrence, and undersea warfare. China's persistent deployment of research vessels in the IO, for instance, is widely seen as a means of collecting oceanographic data to support future submarine operations as part of its broader maritime strategy.

## Takeaways

The subject of MDA is vast and multifaceted, much like the oceans themselves. As traditional, non-traditional, and transnational threats to maritime security continue to evolve, MDA has emerged as a cornerstone of 21st-century maritime strategy. For a maritime nation like India, maintaining robust MDA capabilities is no longer optional– it is a strategic imperative that will determine the country's ability to secure its future. ■

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