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India's Coastal Security Construct – A Holistic Security Perspective

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Chapter 1

Contours of Coastal Security – An Introduction

The Coastal Security Construct in India has been shaped by two events – the Mumbai (then Bombay) blasts on 12 March 1993, in which shipment of arms and ammunition was accomplished through the sea route , and the fidayeen attack in Mumbai on 26 November 2008, where Lashkar-e-Taiba (LeT) used the sea route and landed on the shores of Mumbai by hijacking the Indian boat *Kuber*.[1] The attacks created mayhem, resulting in huge loss of life and property.

The expanse of the sea or the oceans, their fluidity, stealthy nature, an inadequate surveillance mechanism, limitations with regard to physical monitoring, blurred jurisdiction, complex legal framework within the maritime zones, the presence of a large amount of merchant and fishing traffic in the coastal waters and the porous coastline of India, are prominent reasons amongst many other factors which makes sea route a preferred mode for terrorists and other non-State actors. The proximity to economically unstable, politically volatile maritime neighbours and disputed or unsettled maritime boundaries makes the problem more acute.

India is a maritime nation and hence its dependence and proclivity in the maritime domain is uncontested. Its exceeding dependence on maritime trade, which is efficient, cheap and environment-friendly is hence natural. Approximately 95 per cent of the country's trade by

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[1] Ahmed Ali, "Yacht with guns & ammo found in Raigad: Mumbai's worst terror always came in from sea", *The Times of India*, 19 August 2022at https://timesofindia.indiatimes.com/city/mumbai/mumbais-worst-terror-always-came-in-from-sea/articleshow/93649441.cms (Accessed on 12 January 2024)

volume and 68 per cent by value is through maritime transportation.[2] Its vast coastline of 7516 km (the length of the coastline of India has been re-assesed as 11,098.81 km by National Hydrographic Organisation in coordination with Survey of India and has been accepted by the Coastal Protection and Development Advisory Committee in January 2024) comprises 12 major and around 200 minor ports and is home to around 260 million people who live in the coastal areas within 50 km of the sea coast.[3]

Maritime transport plays an important role in economic growth and has a definite role in setting the momentum for the nation's development. An increase of 15.6 per cent from 299.94 million tonnes of cargo (April to September 2020-21) to 346.87 million tonnes during April to September 2021-22 at India's 12 major ports, 15.1 per cent increase in overseas cargo handled at major ports (from 231.93 million tonnes to 267.03 million tonnes) and 17.4 per cent increase in coastal cargo (from 68.01 million tonnes to 79.84 million tonnes) during the same period, shows appreciable growth in India's maritime trade and its leaning towards trade through water bodies.[4] In 2021-22, the major and non-major ports in India handled around 1323.88 million metric tonnes (MMT) of total cargo throughput.[5] The rise in traffic handled at the non-major ports from 485.21 million tonnes in 2016-17 to 614.99 million tonnes in 2019-20,[6] shows the scope for growth. How efficiently India can develop and integrate these non-major ports will be crucial for further growth in maritime trade.

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[2] Ministry of ports, shipping and waterways at https://shipmin.gov.in/division/shipping (Accessed on 15 January 2024)

[3] Aparna Roy, "Making India's coastal infrastructure climate-resilient: Challenges and opportunities" , 12 August 2019 at https://www.orfonline.org/research/making-india-s-coastal-infrastructure-climate-resilient-challenges-and-opportunities (Accessed on 15 January 2024)

[4] "Cargo Traffic Handled at Major Ports during and up to September 2021" at https://shipmin.gov.in/sites/default/files/1%20Major%20Sept%202021.pdf (Accessed on 13 January 2024)

[5] *Annual Report 2022-23*, p.6 at https://shipmin.gov.in/sites/default/files/Annual%20Report%202022-23%20English.pdf (Accessed on 15 January 2024)

[6] *Annual Report 2020-21*, p.8 at https://shipmin.gov.in/sites/default/files/AnnualReport2021_0.pdf (Accessed on 14 January 2024)

In India, various ocean-led programmes are already underway. The flagship programme SAGARMALA which is intended to cut the logistics cost for EXIM and domestic trade[7] has now moved to the implementation stage. It envisages a port-led development under the themes – port modernization, connectivity enhancement, port-led industrialization and coastal community development. Similarly, Project MAUSAM by the Ministry of Culture assesses yet another maritime dimension by studying the role of monsoon winds, which facilitated sails boats to follow certain trade routes and resulted in the spread of traditions, culture and religion.[8] Realizing the importance and exponential growth opportunities in the maritime sector, Maritime India Vision – 2030, the long-term maritime plan has been launched. The plan, involving investment of over Rs 3 lakh crore, would generate 20 lakh jobs and unlock an annual revenue potential for major ports worth over Rs 20,000 crores.[9]

The oceans arguably matter to India more than ever before, for its economic and social well-being is so intrinsically linked to the oceans around it. The rules- based governance and security of India's ocean and maritime zones however, faces the risk of being challenged. The constant monitoring and surveillance of the vessels at sea, which includes huge merchant traffic and a large number of fishing vessels, is a big challenge. The limitations of electronic or space surveillance demands extensive human or the physical interface, which forms an imperative link in coastal security. The porous coastline of India and its topography has always been utilized by the adversaries to their advantage. The

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7 "The SAGARMALA" Vol.1, p.4, Ministry of Ports, Shipping and Waterways at https://www.shipmin.gov.in/sites/default/files/6642376426SagarmalaNewsletterFinal28122016.pdf (Accessed on 17 January 2024)

8 "Progress of Project MAUSAM", Press Information Bureau, Government of India, Ministry of Culture at https://pib.gov.in/PressReleseDetailm.aspx?PRID=1707000 (Accessed on 14 January 2024)

9 "Maritime Vision 2030 envisages Rs 3 lakh crore investment in port projects, 20 lakh jobs", *The Economic Times*, 2 March 2021 at https://economictimes.indiatimes.com/industry/transportation/shipping-/-transport/maritime-vision-2030-envisages-rs-3-lakh-cr-investment-in-port-projects-20-lakh-jobs/articleshow/81295056.cms (Accessed on 16 January 2024)

diverse topography of India's coastline includes beaches, islands (inhabited and uninhabited), forest, mangroves, rocks, creeks, sandbars, mudflats, inundated landscape, rivulets and estuaries. The diverse topography, lack of connectivity and the lack of any human activity, their remoteness and lack of desired monitoring and surveillance along the coastline, makes it porous and vulnerable at numerous stretches, which encourages covert activities. India shares maritime boundaries with seven countries – Bangladesh, Myanmar, Thailand, Indonesia, Sri Lanka, Maldives and Pakistan. India shares a territorial sea boundary with Bangladesh, Myanmar, Sri Lanka and Pakistan. The deltaic coast (west of Kori creek) of Kachchh, the areas of Gulf of Khambhat, the Gulf of Mannar, Palk Bay and the Sundarbans, have diverse topography with varied tidal effects, marine life and socio-economic conditions. The presence of a large number of fishing boats and the urge to cross over the International Maritime Boundary Line (IMBL) under the lure of having a better catch of fish makes these areas hotspots and vulnerable in terms of coastal security. Moreover, most of these areas carry the baggage of maritime boundary disputes and hence pose serious security threats.

The United Nations Convention on the Law of the Sea – UNCLOS 1982, promulgated after decades of negotiations, provided the comprehensive legal framework for the oceans. However, as the nations expanded their maritime zones, the issue of the maritime boundary between neighbouring countries came up. India has signed nine bilateral maritime agreements with countries like Indonesia, Maldives, Myanmar, Sri Lanka and Thailand and three trilateral maritime agreements.[10] It also accepted The Hague's Arbitration Tribunal on maritime delimitation with Bangladesh, resolving a forty-year old dispute.[11] The Indo-Pakistan

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[10] Rahul Roy-Chaudhury, "Trends in the Delimitation of India's Maritime Boundaries", *Strategic Analysis*, 15 July 2008 at https://www.tandfonline.com/doi/pdf/10.1080/09700169908458900 (Accessed on 13 January 2024)

[11] Sohini Bose, "Finding Solutions to Fishermen Transgressions in the India-Bangladesh Maritime Space",10 September 2021 at https://www.orfonline.org/research/finding-solutions-to-fishermen-transgressions-in-the-india-bangladesh-maritime-space (Accessed on 18 January 2024)

maritime dispute dates back to pre-independence (1908) and comprises two related issues – the resolution of the land boundary in Sir Creek (a 38-km long estuary in the marshes of the Rann of Kutch) of the Gujarat (India) and Sindh (Pakistan) provinces, as well as the delineation of the maritime boundary seaward within the territorial sea and beyond.[12] With Sri Lanka, the first maritime bilateral agreement was signed on 26 and 28 June 1974.[13] Subsequently, the agreement on the maritime boundary with Sri Lanka in the Gulf of Mannar and the Bay of Bengal and related matters was signed on 23 March 1976.[14] A supplementary agreement on the extension of the maritime boundary beyond position 13m in the Gulf of Mannar to the tri-junction point between India, Sri Lanka and Maldives, was signed on 22 November 1976 at Colombo, post the trilateral agreement on determination of the trijunction point between the three countries in July 1976.[15] Despite these agreements, the fishing boats from either side cross the IMBL and are often apprehended by the security agencies. In 2020 and 2021, a total of 74 and 159 Indian fishermen respectively, were arrested by Sri Lanka; however the bilateral Joint Working Group (JWG) mechanism and diplomatic efforts at the highest levels, which were institutionalized to address the issues of fishermen by the Government of India, secured the release of all the fishermen arrested in 2020 and 2021.[16]

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12 Rahul Roy-Chaudhury, no. 10.

13 "Agreement between Sri Lanka and India on the Boundary in Historic Waters between the two Countries and Related Matters", 26 and 28 June 1974 at https://www.un.org/depts/los/LEGISLATIONANDTREATIES/PDFFILES/TREATIES/LKA-IND1974BW.PDF (Accessed on 20 January 2024)

14 "Agreement between the Government of India and the Government of the Republic of Sri Lanka on the Maritime Boundary in the Gulf of Mannar and the Bay of Bengal", 23 March 1976 at https://www.mea.gov.in/portal/legaltreatiesdoc/lk76b1690.pdf (Accessed on 18 January 2024)

15 Ibid.

16 "Unstarred Question No.2460", Rajya Sabha, Ministry of External Affairs at https://www.mea.gov.in/rajya-sabha.htm?dtl/35028/QUESTION+NO2460+INDI- (Accessed on 18 January 2024)

The issue of coastal security is also linked to many external factors such as political turmoil, economic downturn, internal conflict and violence in the neighbouring nations. The inherent advantages of the sea route and the possibility of crossing over without detection, makes the sea a preferred route for such displaced people or refugees. In February 2021, the Indian Coast Guard had located a boat adrift in the Andaman Sea with 81 survivors and 8 casualties. The boat had sailed from Cox's Bazar, Bangladesh and was crowded with Rohingya refugees.[17] India does not have any domestic law on protection of refugees and is not a signatory to the 1951 Refugee Convention. Early 2022 witnessed numerous occasions where Sri Lankan refugees owing to the economic meltdown tried to migrate illegally to India.[18] Be it human trafficking, drug trafficking, or smuggling of precious metals, the motivation is financial gains; however, the possibility of these refugees falling prey to anti-national and terror activities is relatively high.

Similarly, the Illegal, Unreported and Unregulated (IUU) activities, piracy and armed robbery against ships, pose serious maritime and coastal security challenges and make the maritime domain more fragile. IUU fishing can transpire in the high seas as well as within the coastal waters having national jurisdiction and impact the economic well-being of people. It is widely agreed that the unlawful activities such as piracy and armed robbery against ships at sea, IUU, arms and drug trafficking, smuggling, etc. all have a high probability of transforming into maritime terrorism.

The role of climate, rising sea level, frequent drought, extreme rainfall, frequent and intense cyclones, strong and recurrent heat waves and deteriorating food security situations leading to mass displacements,

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[17] "Indian coast guard rescue 81 Rohingya refugees adrift at sea, 8 dead", *The Hindustan Times,* 26 February 2021 at https://www.hindustantimes.com/india-news/indian-coast-guard-rescues-81-rohingya-refugees-adrift-at-sea-8-died-101614331929547.html (Accessed on 19 January 2024)

[18] "Displaced Sri Lankans Turn To India In Hordes Amid Country's Worst Financial Crisis", *Outlook*, 03 April 2022 at https://www.outlookindia.com/national/sri-lankans-arriving-in-india-amid-food-fuel-shortage-in-country-worst-financial-crisis-news-189831 (Accessed on 20 January 2024)

can no longer be ignored and need to be factored into the coastal security concept. Many of the coastal communities depend on the seas for their livelihood. The warming of the ocean and ocean acidification or extreme weather events diminish fish stocks and has an adverse impact on the coastal communities. Often, coastal poverty is a key driver of illicit maritime activity.

The term 'Coastal Security' comprises two words – Coastal and Security. Coastal implies both a seaward (maritime) dimension as well as a landward dimension.[19] Security in a very basic sense would mean freedom from threats. In general, security implies traditional, national security conceptions of security. It means threat of military action from another nation which endangers the core values of sovereignty, independence and territorial integrity along with the lives of ordinary citizens.[20]

However, the post - Cold War period saw a shift in focus from State-centric traditional security threats to those pertaining to non-military or Non-Traditional Security (NTS) from non-State actors. The maritime domain being a vast expanse, dynamic, multi-dimensional and difficult to monitor and regulate, is particularly susceptible to these threats. The Indian Ocean Region (IOR) in the last few decades has been vulnerable to threats from non-State entities. IOR security must therefore include NTS threats, defined as challenges to the survival of people and States that arise out of non-military sources. The NTS challenges include those correlated to natural disasters, environmental degradation and climate change, forced migration, food insecurity, energy insecurity, health, human trafficking, drug trafficking, piracy, terrorism etc. and require a comprehensive approach, as they are transnational and non-military in nature. The ever-changing and evolving nature of NTS threats also implies that security challenges must be continuously identified and monitored, Standard Operating Procedures (SOPs) be fine-tuned and

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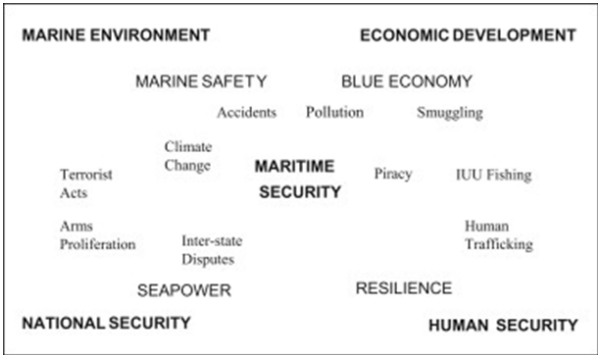
[19] Himadri Das, C*oastal Security: Policy Imperatives for India*, National Maritime Foundation, New Delhi, 2019, p. 12.

[20] NCERT, Chapter 7, Security in the Contemporary World , https://ncert.nic.in/ncerts/l/leps107.pdf

an all-inclusive approach be adopted by maritime security agencies and policy makers as per the exigencies.

There is no international consensus over the definition of Maritime Security. Christian Bueger in his widely recognized article "What is Maritime Security", has described maritime security as a latest buzzword in International Relations. Asserting that discussions on Maritime Security generally revolve around the threats which prevail in the maritime domain, viz., maritime terrorism, inter-State maritime disputes, trafficking of narcotics, people and illicit goods, piracy, illegal fishing, environmental crimes, or maritime accidents and disasters, he argues that defining maritime security as absence of these threats is not sufficient and hence such attempts are often criticized.[21] He has described maritime security as a web of relations between concepts such as sea power, marine safety, blue economy and human resilience. His graphic projection of maritime security as a matrix is shown below. The depiction describes the above concepts in the matrix comprising four domains viz. National Security, Marine Environment, Economic Development and Human Security.[22] Hence, maritime security for an actor is a function of what he includes and excludes in his concept of maritime security.[23]



Source: Christian Bueger, *Science Direct, What is maritime security?*

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[21] Christian Bueger, What is Maritime Security?, ResearchGate, March 2015 at https://www.researchgate.net/publication/270107474_What_is_maritime_security (Accessed on 21 January 2024)

[22] Ibid.

[23] Ibid.

Coastal Security despite being an important and relevant subject has no proper definition. However, attempts have been made to broadly describe and comprehend the term.[24] Coastal Security has been explained as protecting the country's coasts by securing the adjacent sea against the activities of non-State actors and criminal groups.[25] More recently, Coastal Security has been described as a subset of maritime security, focused on the coastal waters that entails the protection, preservation and promotion of peace, stability and security in coastal waters, against various threats.[26]

Coastal security in India is believed to have similar linkages to other concepts and dimensions of security as described by Christian Bueger for maritime security, albeit in the limited spatial context of the coast and nearshore waters.[27] Thus a holistic Coastal Security framework needs to encompass a wider set of challenges and threats such as maritime terrorism, human trafficking, drug trafficking, piracy and armed robbery against ships at sea, climate change and natural disasters, forced migration and threat to economic security and societal well-being.

Coastal Security in India has been gaining traction simply due to its relevance and being so intrinsically linked with India's national security, economic growth and hence the well-being of its citizens. The issue of sovereignty and sovereign rights in the maritime domain is complex and not linear as in the case of land borders; hence it needs a more comprehensive understanding. The high seas, which are almost 2.4 times the earth's terrestrial surface area, is beyond any firm jurisdiction of

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[24] Pushpita Das, *Coastal Security: The Indian Experience*, MP-IDSA Monograph Series, No. 22, 2013, p. 7.

[25] Ibid., p. 8.

[26] Himadri Das, *Coastal Dimension of Maritime Security, Marine Policing and Maritime Security in India: Evolving Dimensions*, National Maritime Foundation, New Delhi, 2022, p. 78.

[27] Himadri Das, *India @75: Reflections on the Homeland Dimensions of Maritime in India*, *Coastal Dimensions of Maritime Security*, National Maritime Foundation, New Delhi, 2022, pp. 49-50.

any one nation and hence anarchic in nature. The coasts are the interface between land and water having a mesh of riverine, estuaries and other water bodies with poor surveillance system. The coastline length of nine coastal states and four UTs are as below:

Sl. No.	State/UT	Length (in km)
1	Gujarat	1214.70
2	Maharashtra	652.60
3	Goa	101.00
4	Karnataka	280.00
5	Kerala	569.70
6	Tamil Nadu	906.90
7	Andhra Pradesh	973.70
8	Orissa	476.40
9	West Bengal	157.50
10	Daman & Diu	42.50
11	Puducherry	132.00
12	Lakshadweep	47.60
13	A&N Islands	1962.00
	Total	**7516.60**

Source : MHA Annual Report 2022-23.

Coastal security in India evolved in distinct phases. While the sea-borne illegal activities such as smuggling dominated the late 1960s and 1970s, the 1990s saw Low-Intensity Maritime Operations such as *Operation Tasha* in the Palk Bay.[28] *Operation Tasha,* which commenced in June 1990 in the Palk Bay, had many firsts to its credit; it was possibly the

[28] Himadri Das, C*oastal Security Policy Imperatives for India*, National Maritime Foundation, New Delhi, 2019, p. 61.

first formally conceptualized coastal security operation involving multiple agencies like the Indian Navy, Indian Coast Guard and the state police. It was also perhaps for the first time that the importance and necessity of close coast patrol was considered and hence patrolling of shallow waters was undertaken by hiring fishing trawlers, while the Indian Navy and Indian Coast Guard ships focused on the outer layers. The Operation also involved the state administration for coordination meetings and briefings. The coastal security construct was thus taking shape, though with many limitations and in the absence of a well-designed conceptual framework.[29]

A similar coastal security operation – *Operation Swan* was initiated post the Mumbai blasts in March 1993. The Operation was along the International Maritime Boundary Line (IMBL) the Gujarat and Maharashtra coasts, involving multiple stakeholders.[30] It adopted the similar mechanism of layered patrolling, with hired fishing trawlers being utilised for patrolling the shallow waters.

The National security architecture as a whole received a fillip post the Kargil conflict in 1999. The Kargil Review Committee (KRC) and the Group of Ministers Report recommended a series of measures to strengthen national security.[31] The Department of Border Management under the Ministry of Home Affairs (MHA) was set up subsequently in 2004.[32]

The vulnerability of India's coastline for criminal and anti-national activities led to the formulation of a comprehensive Coastal Security Scheme (CSS) Phase-I. CSS Phase – I with an outlay of Rs 646 crores

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29 Ibid., p. 62.

30 Ibid., p. 63.

31 "Group Of Ministers' Report On "Reforming The National Security System", PIB Archives, 23 May 2001 at https://archive.pib.gov.in/archive/releases98/lyr2001/rmay2001/23052001/r2305200110.html (Accessed on 21 January 2024)

32 Ministry of Home Affairs, Archives at https://www.mha.gov.in/sites/default/files/BM_II_Mandate_18062019.pdf (Accessed on 22 January 2024)

was initially approved for five years and was implemented from 2005-06.[33] It was extended by one year and was completed in March 2011. Post 26/11, the coastal security mechanism was holistically reviewed by the Government of India and several important measures were taken to strengthen coastal security. The coastal states and Union Territories were tasked with carrying out vulnerability analysis in consultation with the Indian Coast Guard, to project additional requirements for CSS Phase-II. CSS Phase -II was implemented with effect from April 2011 over a period of five years with a total financial outlay of Rs 1579.91 crores. The implementation of CSS Phase-II was completed in March 2020.[34] Some of the other significant steps to strengthen the coastal security construct included: training of Marine Police personnel by the ICG, setting up of a National Committee on Strengthening Maritime and Coastal Security (NCSMCS) under the chairmanship of the Cabinet Secretary, setting up of a professional training institute for Marine Police personnel at Okha , Gujarat, issue of biometric identity cards to all fishermen, registration of boats, setting up of four Joint Operation Centres by the Indian Navy and raising of the Sagar Prahari Bal with 80 Fast Interceptor Crafts (FICs).[35]

In recent years the coastal security construct has seen unprecedented development of infrastructure, strengthening of security agencies in terms of asset and manpower, enhanced interoperability, view conduct of numerous combined exercises such as Sea Vigil, Sagar Kavach, Sajag and improved coordination amongst the agencies. However, the evolving nature of coastal security implies that security agencies must keep reinvigorating and fine-tuning the existing mechanism as required. The contours of CSS Phase-III must be drawn now, to plug the gaps,

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[33] "Coastal Security Schemes", Ministry of Home Affairs at https://www.mha.gov.in/sites/default/files/BM_II_CostalSecurity_18062019.pdf(Accessed on 22 January 2024)

[34] Ibid.

[35] "Fast Interceptor boats for Sagar Prahari Bal", Ministry of Defence, 29 July 2009 at https://pib.gov.in/newsite/erelcontent.aspx?relid=51144 (Accessed on 24 January 2024)

and projects like NMDA must be fully implemented at an early date. Further, smart software to provide alerts on suspicious boats, mechanisms for a quick check of thousands of containers at ports, seamless flow of information, intelligence sharing and use of modern technology such as space monitoring and artificial intelligence, needs to be integrated into the existing structures.

India's coastline has been vulnerable to several sea-borne threats and challenges, which arise due to the long and porous coastline, its topography, unsettled and disputed maritime boundaries, presence of vital installations, presence of large number of fishing boats operating close to the coast, huge merchant traffic, etc.

Coastal security is a subset of maritime security and is dynamic in nature; it is a process that will continue to evolve. The inherent nature of coastal security therefore demands that it be revisited and recalibrated as many times as possible. Yet, it has often been overlooked and scant literature exists on this very relevant and emerging subject. This monograph attempts to study coastal security in a more comprehensive manner. It describes various threats and challenges, which the Indian coastline faces today, and the response mechanism that has evolved over the decades. The aim is to visualise India's coastal security construct from a new perspective and provide a fresh, futuristic and comprehensive outlook so that it acts as an enabler to India's overarching maritime vision.

Chapter 2

Non-Traditional Dimensions of Coastal Security

In general, the discourse on security competes against each other. The competition is to gain legitimacy and in turn rewrite the discourse itself. The nations during the Cold War were preoccupied with the traditional notion of 'Security', which primarily meant defence of territory. The shift in the notion of security beyond purely military security was witnessed after the end of Cold War. The newly conceived concept of security was more accommodative and included various other issues such as political, economic, energy, human, environmental, etc., all of which impacted the international system. These non-military threats have the potential to exacerbate existing tensions and spiral out of control to become territorial or military threats. Hence, the lines between traditional military issues and non-traditional security threats are being blurred. The non-traditional threats have gained prominence recently in the security dialogues amongst the policy makers, academia and the public.

The purview of maritime security comprises of traditional and non-traditional security. While the traditional security threat would mean a State-on-State conflict, the NTS threat covers maritime terrorism, piracy and armed robbery, human trafficking, drugs and arms trafficking, climate change, natural disasters etc. The coastal security being a subset of maritime security has the same elements or threats, but is limited to coastal waters.

The recent trend indicates a steady rise in non-traditional coastal security threats. These threats being transnational in nature require comprehensive

political, social and regional responses. The sub-conventional threats and challenges to India's coastal security originating from or at sea are discussed below:

Maritime Terrorism

Though there is no internationally accepted definition of maritime terrorism, the Maritime Co-operation Working Group of the Council for Security and Co-operation in the Asia-Pacific (CSCAP) definition encompasses the following:

1. Within the marine environment;

2. Used against vessels or fixed platforms at sea or in port, or against any one of their passengers or personnel; and

3. Against coastal facilities or settlements, including tourist resorts.[36]

Going by the statistics, the total number of cases of maritime terrorism is minuscule compared to the cases of other acts of terrorism.[37] The reasons for this can mainly attributed to the fact that terrorism at sea requires high degree of mariner's skill, training and ability to adapt to marine environment. The underwater activity would require specialised capability and precision. However, the advantages of operating in the maritime domain such as stealth, vast expanse, largely unregulated nature, ambiguity in jurisdiction, ease in mixing with normal merchant and fishing traffic and hence not getting detected have resulted in sporadic cases of maritime terrorism. Some of the major incidents of sea-based terrorism leading to mass casualties or disruption in global economy include the attack on cruise ship Santa Maria in 1961[38], hijacking of cruise ship *Achille Lauro* by the members of the Palestine

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[36] Peter Chalk, "Introduction", *The Maritime Dimension of International Security*, RAND Corporation, 2008, p. 3 at https://www.rand.org/pubs/monographs/MG697.html (Accessed on 25 January 2024)

[37] Ibid.

[38] Prabhakaran Paleri, *Maritime Security The Unlawful Dimension*, p. 252.

Liberation Front (PLF) in the Mediterranean on 07 October 1985[39], suicide attack on the *USS Cole* (berthed at the port of Aden, Yemen for refueling) on 12 October 2000, [40] *MT Limburg*, a French double hull oil tanker carrying crude oil getting hit by an explosive-laden dinghy on 06 October 2002, leading to a fire onboard and oil spill of nearly 90,000 barrels in the Gulf of Aden, resulting in huge financial losses[41] and the 27 February 2004 blast on board *SuperFerry 14* by the Abu Sayyaf Group (ASG), claiming 116 lives (often referred as world's deadliest maritime terrorist attack). The blast, initially believed to be an accident, was later revealed to be an act perpetrated by terrorists.[42]

In recent years, cases of underwater attacks, drone attacks and attacks by Waterborne Improvised Explosive Devices (WBIED) have also been reported, indicating the technological prowess of the terrorists/ non-State actors. The fear and possibility of terrorists using nuclear, chemical or biological material in future is not unfounded. The terror attack on the US on 11 September 2001 (9/11) and the Mumbai attack in 26 November 2008 (26/11) shows that the forces behind terror attacks are innovative in ideas and precise in planning. Often the element of surprise is delivered by the change in the modus operandi.

Post the Mumbai blasts in 1993 and 26/11, the maritime zones of India and its coastline has remained susceptible in recent times as there

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[39] Richard Pallardy, "Achille Lauro hijacking", Britannica, https://www.britannica.com/event/Achille-Lauro-hijacking (Accessed on 25 January 2024)

[40] CNN, "*USS Cole* Bombing Fast Facts", CNN at https://edition.cnn.com/2013/09/18/world/meast/uss-cole-bombing-fast-facts/index.html (Accessed on 24 January 2024)

[41] Fire on French Tanker Off Yemen Raises Terrorism Fears, *The New York Times* at https://www.nytimes.com/2002/10/07/world/fire-on-french-tanker-off-yemen-raises-terrorism-fears.html https://edition.cnn.com/2013/09/18/world/meast/uss-cole-bombing-fast-facts/index.html (Accessed on 25 January 2024)

[42] "Superferry14: The world's deadliest terrorist attack at sea", Safety4Sea at https://safety4sea.com/cm-superferry14-the-worlds-deadliest-terrorist-attack-at-sea/ (Accessed on 25 January 2024)

have been cases of interceptions and apprehensions of suspicious boats by the Indian Coast Guard. The interception of terror boat near the India-Pakistan maritime boundary on the night of 31 December 2014[43] is a reminder that the maritime security of India continues to be prone to threats. In March 2021, a Sri Lankan fishing boat *Ravihansi*' was apprehended with heroin worth Rs 3000 crores, five AK-47 rifles and 1000 live rounds, off Minicoy Islands.[44]

Piracy and Armed Robbery against Ships at Sea

Today, around 90 per cent of the world's trade is through the international shipping industry. Shipping is the lifeline of the global economy. With the growing efficiency of shipping, seaborne trade continues to grow. There are more than 50,000 merchant ships trading internationally which are manned by over a million seafarers from different parts of the world. Ships are high-value assets carrying billion tonnes of goods each year. The total value of the annual world shipping trade is estimated to have reached more than US$ 11 trillion in 2022. Maritime trade volumes saw a dip by 0.4 per cent in 2022 but are expected to rebound by 2.4 per cent in 2023 and more than 2 per cent growth through 2028.[45]

One of the major challenges to maritime trade and maritime security is piracy and armed robbery at sea. It has a direct impact on the nation's economy as well the potential to undermine a nation's ability to trade. Piracy and armed robbery at sea is not a modern-day phenomenon and can be traced back to even ancient times, impacting almost all seafaring civilisations.

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[43] 4 feared killed as explosives-laden Pakistan vessel sinks off Gujarat, *The Hindu*, 02 January 2015 at https://www.thehindu.com/news/national/explosivesladen-pakistan-vessel-sinks-off-gujarat/article6748641.ece (Accessed on 27 January 2024)

[44] "Indian Coast Guard Recovers Drugs Worth Rs 3000 Crore from Sri Lankan Boat", NDTV, 25 March 2021 at https://www.ndtv.com/india-news/coast-guard-recovers-rs-3000-cr-worth-heroin-firearms-ammunition-from-sri-lankan-vessel-2398951 (Accessed on 27 January 2024)

[45] "Review of Maritime Transport 2023", UNCTAD at https://unctad.org/publication/review-maritime-transport-2023 (Accessed on 28 January 2024)

Piracy, in modern times is defined in accordance with the United Nations Convention on the Law of the Sea (UNCLOS 82), Article 101, as:[46]

1. "Piracy" means any of the following acts:

   (a) Any illegal act of violence or detention, or any act of depredation, committed for private ends by the crew or the passengers of a private ship or a private aircraft, and directed:

      (i) On the high seas, against another ship, or against persons or property on board such ship

      (ii) Against a ship, persons or property in a place outside the jurisdiction of any State

   (b) Any act of voluntary participation in the operation of a ship or of an aircraft with knowledge of facts making it a pirate ship or aircraft

   (c) Any act of inciting or of intentionally facilitating an act described in subparagraph (a) or (b).

Armed Robbery Against Ships, defined in accordance with the Code of Practice for the Investigation of Crimes of Piracy and Armed Robbery against Ships of the International Maritime Organisation (IMO) Assembly Resolution A.1025 (26) means any of the following acts:[47]

(a) Any illegal act of violence or detention, or any act of depredation, or threat thereof, other than an act of "piracy", committed for private ends and directed against a ship, or against persons or

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[46] "Legal Framework for the Repression of Piracy Under UNCLOS", United Nations, Oceans and Law of the Sea, 9 September 2010 at https://www.un.org/depts/los/piracy/piracy_legal_framework.htm (Accessed on 28 January 2024)

[47] "Piracy and Armed Robbery against Ships", International Maritime Organisation at https://www.imo.org/en/OurWork/Security/Pages/PiracyArmedRobberydefault.aspx (Accessed on 28 January 2024)

property on board such ship, within a State's internal waters, archipelagic waters and territorial sea (in Coastal State's jurisdiction)

(b) Any act of inciting or of intentionally facilitating an act described above.

Economic growth of nations at present largely relies on Sea Lines of Communication (SLOCs). The provisions of effective maritime security, maritime confidence building measures and cooperation frameworks are therefore imperative.

The Indian Ocean Region arguably remains a region with unprecedented maritime security threats and challenges. The region is prone to piracy and armed robbery against the ships due to the factors mentioned below:

a) Presence of heavy commercial traffic in the region: The third largest ocean is knit together by trade routes and commands control of major SLOCs, thus is lifeline to international trade and transport.

b) Congested maritime chokepoints: The region has some prominent choke points such as Strait of Hormuz, Bab-el-Mandeb, Suez Canal and Straits of Malacca and Singapore.

c) Tendency of shipping company to operate with bare minimum crew as a cost cutting measure.

d) Lack of capacity as well as capabilities for taking measures towards maritime security.

e) Inadequate port security including patrol of anchorage areas and lax coastal security. Most of the cases of petty thefts are reported while the vessels are anchored.

f) Often the Master of the ship and ship owners have been found to be reluctant to raise the alarm about petty thefts/attacks due to fear that it may lead to investigations/interrogation resulting in the ship being kept at the port till the procedures are completed. The magnitude of loss by reporting such incidents far outweighs the cost of items lost such as ropes, paint drums, loose deck fittings etc.

g) Growing nexus between pirates and armed robbers with people involved in other crimes such as drug trafficking, arms smuggling and proliferation, human trafficking, IUU etc.

h) Crisis and conflicts in the region.

i) Lack of regional cooperation mechanisms.

Regional Cooperation Constructs

Transnational maritime security threats such as piracy and armed robbery against ships cannot be dealt with by any single nation or agency. The sea being a vast domain, no nation can claim to have adequate resources and manpower to cover the entire area of its interest at all times. Regional cooperation is therefore imperative to control the problem of piracy and armed robbery against ships.

Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia (ReCAAP)

The Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia (ReCAAP), a regional government-to-government agreement entered into force on 4 September 2006 with 10 Asian countries as the Contracting Parties, and an Information Sharing Centre (ISC) was established in Singapore, on 29 November 2006.[48] It publishes various weekly, monthly, quarterly, half yearly, annual and special Reports, warnings, alerts, advisories, updates, news releases, as well as guidebooks for the benefit of mariners.

The IMO has also been publishing Incident Reports on Piracy and Armed Robbery Against Ships since 1982. From July 2002, onwards its monthly and annual piracy and armed robbery Reports separately specify the reported acts or attempts of piracy and armed robbery against ships. The monthly reports include names and descriptions of the ship that has been attacked, the position of the ship, date and time

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[48] "About ReCAAP Information Sharing Centre" at https://www.recaap.org/about_ReCAAP-ISC (Accessed on 30 January 2024)

of incidents, effect on the ship's crew and cargo and action by the crew and law enforcement agencies. This is followed up by a comprehensive annual report.[49]

A first of its kind in the world was the case of hijacked Japanese vessel MV Alondra Rainbow. The vessel was successfully identified and located by the ICG in an operation codenamed 'Operation Nelson'. MV Alondra Rainbow with 17 crew members was hijacked by pirates on 27 October 1999. The ICG located MV Mega Rama, a similar suspicious vessel off the Kerala coast. On investigation and after establishing the identity, the vessel was pursued and brought under control by the Indian Navy and the ICG and brought to Mumbai on 21 November 1999.[50]

The Government of India has entrusted the ICG with the responsibility for sharing of information on piracy to member countries and the ReCAAP Information Sharing Centre (ISC), Singapore. Further, the Indian Coast Guard Maritime Rescue Coordination Centre (MRCC) Mumbai serves as the Focal Point India under the ReCAAP and the Director General Indian Coast Guard has been designated as the Indian Governor to the ReCAAP. In order to understand recent trends and situation of maritime piracy and armed robbery against ships in Asia, exchange experiences, formulate best practices and a collaborative approach of contracting parties, ICG organised the 15th edition of Capacity Building Senior Officers' Meeting (CBSOM-2023) along with ReCAAP between 11 and 15 December 2023 at Gandhinagar, Gujarat.[51] Earlier ICG had co-hosted Capacity Building workshops in India with

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[49] International Maritime Organisation, "Piracy and Armed Robbery against Ships" at https://www.imo.org/en/OurWork/Security/Pages/PiracyArmedRobberydefault.aspx (Accessed on 30 January 2024)

[50] Prabhakaran Paleri, *Maritime Security: The Unlawful Dimension*, Magnum Books Pvt Limited, New Delhi, 2010, pp. 92-93.

[51] "Indian Coast Guard organises 15th Capacity Building Senior Officers' Meeting in Gujarat to strengthen international & regional cooperation to combat maritime piracy" Press Information Bureau, 12 December 2023 at https://pib.gov.in/PressReleseDetail.aspx?PRID=1985395#:~:text=The%20Indian%20Coast%20Guard%20(ICG,December%2011%20to%2015%2C%202023. (Accessed on 29 January 2024)

ReCAAP ISC in 2011, 2017 and 2019.[52] The high-level ICG delegation participated in the 18th edition of the annual Governing Council Meeting (GCM) held between 12 and 15 March 2024 at Singapore. The apex body deals with policy matters, information sharing and capacity building issues to ensure safety and security of seafarers and to safeguard maritime trade routes in the region.[53]

Figure 1 below shows the number of incidents of Piracy versus Armed Robbery Against Ships at sea in Asia for the period 2007-2023. The analysis of ReCAAP annual reports shows that there has been no incident of abduction of crew in the Asia region since 2021 (in 2019, two incidents of abduction of crew and in 2020, one such incident was reported in the waters off Eastern Sabah, Malaysia). Also, since 2021, there has been only one incident of piracy in 2022. The number of incidents reported for India were five in 2019, 2021, 2022 and 2023, whereas nine incidents were reported in 2020.[54]

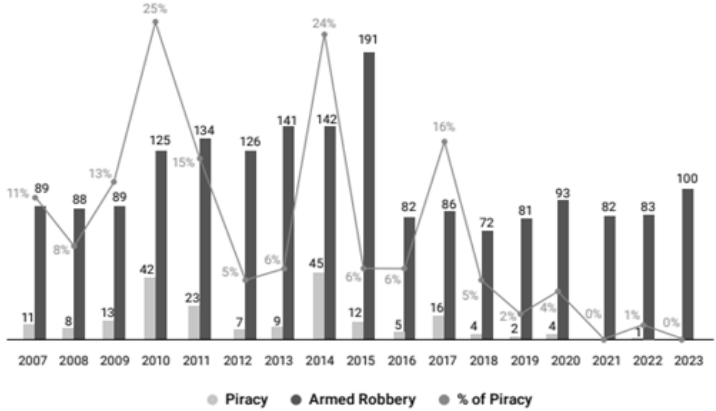

Fig. 1 - Number of incidents of piracy versus ARAS for the period of 2007-2023.

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52 Ibid.

53 "Director General Indian Coast Guard Attending 18th Governing Council Meeting of Piracy Agreement (ReCAAP) at Information Sharing Centre, Singapore", Indian Coast Guard Press Brief, 13 March 2024 at https://indiancoastguard.gov.in/WriteReadData/Tender/20240315115028788672 9PRESSBRIEF-ITEC.pdf (Accessed on 04 April 2024)

54 ReCAAP Information Sharing Centre at https://www.recaap.org/reports (Accessed on 31 January 2024)

In Asia, as per the ReCAAP reports, on an average, there have been 88 incidents of armed robbery against ships and 1.4 incidents of piracy in the last five years since 2019.[55] In Indian waters since 2021, only five cases per year have been reported. All incidents reported were petty thefts at ports anchorage such as Kandla, Haldia and Kakinada. The perpetrators involved in these incidents were unarmed and the ship's crew did not suffer any injuries. In addition, since 2017, less than 10 incidents annually have been reported from India, most of them being petty thefts where the ship's crew did not suffer any harm or injury and there had been no use of arms.[56]

Though the presumed convergence between maritime terrorism and piracy remains highly questionable due to lack of credible evidence, the speculation of a tactical nexus emerging between piracy and terrorism has remained. The speculation stems from the possibility that in order to overcome operational constraints in sea-based capabilities, the extremist groups may work in conjunction with or subcontract missions to criminal gangs and syndicates.[57]

In the realm of maritime piracy, the High Risk Area (HRA) is an issue of significance. The vulnerable areas known as HRA are more prone to piracy or hijacking of ships at sea and are also characterized by the areas having high economic consequences. In 2008, the eastern limit of piracy HRA in the Indian Ocean region was designated as 65 degrees East longitude. However, in 2010, this eastern HRA limit was shifted to east of 78-degree East longitude by the industry body known as the Round Table which is headquartered in London.[58]

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55 "Piracy and Armed Robbery against Ships in Asia", *Annual Report 2023* at https://www.recaap.org/resources/ck/files/reports/annual/ReCAAP%20ISC%20Annual%20Report%202023.pdf (Accessed on 31 January 2024)

56 Ibid.

57 Peter Chalk, "The Maritime Dimension of International Security" at https://www.rand.org/content/dam/rand/pubs/monographs/2008/RAND_MG697.sum.pdf (Accessed on 01 February 2024)

58 "India's maritime security concerns addressed: High risk area with respect to piracy in Arabian sea revised", *The Economic Times*, 12 July 2018 at https://economictimes.indiatimes.com/news/defence/indias-maritime-security-concerns-addressed-high-risk-area-with-respect-to-piracy-in-arabian-sea-revised/articleshow/49278525.cms?from=mdr (Accessed on 02 February 2024)

The shifting of the HRA line so close to the Indian coastline (about 35 nm from the baseline), led to insurance providers increasing the Additional War Risk Premium (AWRP) on merchant ships carrying Indian EXIM (export-import) cargo, while plying in the HRA, resulting in additional financial burden on Indian EXIM trade and the Indian consumer. It also raised India's security and safety concerns as the merchant traffic came close to the Indian coastline in order to escape the extra burden of the AWRP. This also resulted in proliferation of positioning of armed security guards on board merchant vessels. The Privately Contracted Armed Security Personnel (PCASP) are employed from Private Maritime Security Companies (PMSC), which also employ vessels as Floating Armouries (FAs) to support the PCASP. In the absence of proper regulations, these FAs, PCASPs and Vessel Protection Detachments (VPD) pose serious security risks and complex legal issues. The Maritime Safety Committee (MSC) of the International Maritime Organisation, considers positioning of PCASP as an individual decision, subject to the law of flag and neither endorses nor condemns it.[59] The lack of adequate regulations and ambiguity over the legal status of PCASP has led to incidents such as "Enrica Lexie" and that of *MV Seaman Guard Ohio*.

The HRA has been shifted back to 65 degrees east longitude with effect from 01 December 2015 owing to consistent and intense efforts of the Government of India in various global maritime forums such as the IMO Council meeting in July 2015 and the International Maritime Organisation and the Contact Group on Piracy off the Coast of Somalia (CGPCS).[60]

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[59] "Private Armed Security", International Maritime Organisation at https://www.imo.org/en/OurWork/Security/Pages/Private-Armed-Security.aspx (Accessed on 02 February 2024)

[60] "Re-Drawal of the High Risk Area in the Indian Ocean - Major Gain for India on Global Maritime Stage, to Save About Rs. 1500 crore per Annum for Merchant Ships", Press Information Bureau, 9 October 2015 at https://pib.gov.in/newsite/PrintRelease.aspx?relid=128577(Accessed on 02 February 2024)

The piracy and armed robbery against ships at sea seems to be a waxing and waning phenomenon when measured over a long period. It has several impacts on global, national and human security. Maritime piracy has the potential to disrupt sea-borne trade, sea transportation, fisheries, and economic well-being of the region, energy security and human security. It can also disrupt the undersea domain operations such as deep-sea mining and submarine cables, which are the backbone of modern-day high-speed communication. The direct economic impact of piracy can be in terms of cargo theft, fraud, and delay in arrival/ departure of ships and increased insurance premiums. In addition, the safety of seafarers often causes psychological distress to the individual and their family members. Often a neglected aspect while factoring the threats emanating due to piracy is its potential to cause major environmental disasters. The piracy attack or the armed robberies at sea, if happening in restricted waters like channels or in dense traffic, even jeopardises the navigational safety of the ship. At times the vessel under attack continues to remain underway while its crew are harmed. The collision or grounding of heavily laden oil tankers in such situations can cause irreparable damage to the environment because of oil pollution at sea. The damage to marine life, fisheries, coastline and long-term impact on tourism can be substantial.

Privately Contracted Armed Security Personnel (PCASP) and Private Maritime Security Companies (PMSCs)

The merchant vessels began hiring Privately Contracted Armed Security Personnel (PCASP) on board for their protection, while transiting through the areas such as Gulf of Aden, which were heavily affected by piracy and armed robbery. These PCASPs possessed firearms. The PCASP's presence on board is however a complex legal issue which is compounded by the non-existence of standard procedures for their employment and operation. Nations have differing positions with respect to employment and utility of PCASP while the shipping industry is global in nature with multiple stakeholders.

The IMO's Maritime Safety Committee (MSC) position on the issue of PCASP is:

a) The carrying and use of firearms for personal protection or protection of a ship is strongly discouraged.

b) Flag States should strongly discourage the carrying and use of firearms by seafarers for personal protection or for the protection of a ship.

c) The current position of tacitly acknowledging that the deployment of armed security personnel on board ships, has become an accepted industry and flag State practice in certain circumstances.[61]

The MSC, while accepting that having the PCASP on board is an individual decision subject to the law of Flag States, has reiterated its stand that it neither endorses nor condemns the use of PCASP on board merchant ships. It acknowledged the fact that PCASP has become an accepted industry but recommended that use of PCASP should not be considered as an alternate to other measures such as Best Management Practices (BMP) and accepted that the carriage of armed personnel was an individual decision subject to the law of Flag States.

The IMO has over the years formulated guidelines and recommendations on sovereignty, jurisdiction, liability, etc., which includes guidance to ship owners, ship operators, ship masters and Private Maritime Security Companies (PMSCs), on matters related to use of force, and recommendation to the governments of coastal and port states on matters of carriage of PCASP, firearms and security equipment.

The deployment of PCASP however, is associated with its own set of problems. It has an adverse impact on social dynamics and human rights. At times, PCASPs resort to use of force leading to civilian

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[61] "Private Armed Security", International Maritime Organisation at https://www.imo.org/en/OurWork/Security/Pages/Private-Armed-Security.aspx (Accessed on 03 February 2024)

casualties. The possibilities of the PCASP associating with personnel engaged in other criminal activities such as drugs or arms trafficking cannot be overruled. The lack of standard guidelines and ambiguity in acceptable use of force, rules of engagement and liability clause are issues, which continue to mire the employment of PCASP.

Drug Trafficking

Oceans around the world, though extensively used for carriage of goods and cargo, also serve as mediums for movement of illicit substances. Further, the increasing inclination to use the seas for such unlawful activities is primarily based on advantages offered by sea routes over land routes, in terms of both quantity that can be carried and lesser likelihood of apprehension. The Indian Ocean (70.56 million sq. km) is a strategic maritime space, which has lately been reinvigorating its inter-connectedness and economic vitality and the region is often involved in illicit and unlawful activities, which is attributed to its proximity to the Golden or more appropriately Death Triangle and Golden or Death Crescent. The issue of illicit movement of unlawful substances is a more poignant security concern in this region.

The cultivation of opium and poppy in the region is closely linked to poverty, instability, insecurity, lack of governance and bad state of economy. As per the UNODC- 2023 Report, poppy cultivation in Myanmar has been expanding and has become more productive. With an estimated opium production of 1080 tonnes, Myanmar has now become the world's largest producer of opium ahead of Afghanistan (which produced nearly 330 tonnes).[62] In 2023, the opiate economy of Myanmar was estimated to be between US$ 1-2.5 billion, accounting nearly 2-4 per cent of the national GDP in 2022.[63] The poppy cultivation

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[62] Nicholas Young, "Myanmar overtakes Afghanistan as top opium producer", BBC, 12 December 2023 at https://www.bbc.com/news/world-asia-67688413 (Accessed on 04 February 2024)

[63] "Southeast Asia Opium Survey 2023: Cultivation, Production, and Implications", United Nations Office on Drugs and Crime at https://www.unodc.org/roseap/uploads/documents/Publications/2023/Southeast_Asia_Opium_Survey_2023.pdf (Accessed on 04 February 2024)

in Lao PDR has however remained stable for a couple of years.[64] The prevalence of illicit drugs is a major concern to India due to its geographical proximity to Myanmar.

The traditional route for drug smuggling from Afghanistan has been the land route (Balkan Route). However, recently a "Southern Route" – a southward sea route facilitating flow of drugs from Afghanistan to locations in Asia, Africa, Central and Western Europe and Oceania – has emerged.[65]

This route on the western Indian Ocean, with Yemen and East Africa coast, is also known as "hash highway" and the "smack track".[66]

India is also one of the largest industrial producers of pharmaceutical and chemical substances. Some of these precursor chemicals are now being diverted out to various parts of the world legally and illegally for manufacturing illicit drugs.[67] The synthetic drugs are cheap and their easy and fast production has transformed the illicit drug market. High-speed internet and digital connectivity has also revolutionized the drugs market, supply chains and accessibility of drugs.

In India, the Narcotic Drugs and Psychotropic Substances (NDPS) Act, 1985 was enacted so that India complies with international obligations in accordance with Article 47 of the Constitution of India. Article 47 states that, "The State shall endeavour to bring about prohibition of the consumption, except for medicinal purposes, of intoxicating drinks and of drugs which are injurious to health."[68]

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64 Ibid

65 Himadri Das, *Maritime Perspectives 2022: Coastal Dimensions of Maritime Security*, National Maritime Foundation, New Delhi, 2022, p. 182.

66 Ibid.

67 *Annual Report 2020*, Narcotics Control Bureau, Ministry of Home Affairs at https://narcoticsindia.nic.in/Publication/2020.pdf (Accessed on 05 February 2024)

68 "Smuggling in India Report 2022-23", Directorate of Revenue Intelligence at https://dri.nic.in/main/smug2023 (Accessed on 04 February 2024); *DRI Annual Report, 2022-23*, p. 100.

Globally, the challenge of drug trafficking is addressed through three major UN Conventions:

a) Single Convention on Narcotic Drugs 1961.

b) Convention on Psychotropic Substances 1971.

c) Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances 1988.

India is a signatory to all these three Conventions. In addition, during India's G20 presidency in 2023, the international cooperation for tackling challanges in drug trafficking were incorporated in the G20 New Delhi Leaders' Declaration. [69]

Regional efforts have been undertaken by various multilateral organizations functioning in the region. The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC), which is an ensemble of seven States (five South Asian and two Southeast Asian) in the Bay of Bengal Region, has 'Counter Terrorism and Transnational Crime' as one of its priority sectors, which is led by India. This sector includes a 'Sub-Group on Narcotics Drugs, Psychotropic Substances and Precursor Chemicals' (SGNDPSPC), which has been taking some constructive steps towards developing a common legal and institutional framework in the BIMSTEC region for countering these crimes. A two-day "Conference on Combating Drug Trafficking" in New Delhi was held in February 2020 for BIMSTEC partner nations to discuss best practices and new ideas to combat threats associated with the drug menace in the region.[70] Similarly, under the 'Maritime Safety and Security' priority area, IORA studies traditional and non-traditional safety and security challenges encircling the IOR. Illicit drug trafficking too forms part of this focus area,

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[69] Ibid.

[70] "Two-day 'Conference on Combating Drug Trafficking' for BIMSTEC Partner Nations concludes in New Delhi", Press Information Bureau, 15 February 2020 at https://pib.gov.in/newsite/PrintRelease.aspx?relid=199348 (Accessed on 06 February 2024)

where regional cooperation has become increasingly important to ensure the safety and security of vital trade routes, in particular, the choke points.

The ramifications of drug smuggling are worrisome, for these routes could very well be used for smuggling in weapons as well as terrorists into the country. The use of technology such as dark net and deliveries through courier have posed new challenges to the law enforcement agencies.

Maritime anti-smuggling operations in India involve multiple Central and state agencies like the Indian Navy, Indian Coast Guard, Marine Police, DRI, NCB, Narco Coordination Centre (NCORD) and its sub-ordinate offices, Multi-Agency Centre (MAC)/ Subsidiary MAC, etc.

Human Trafficking through the Seas

The South Asian region is known to have a significant share in global human trafficking. The reason for such large-scale human trafficking can be attributed to the persistence of conflicts, frequent natural disasters, political instability, poor living conditions, poverty and lure of employment. The trends indicate that human trafficking is taking the shape of organised maritime crime and at the same time, is growing rapidly. The demand for low-wage labourers drives the business. Often, cases of human trafficking are linked with vulnerable individuals being trapped in fraud, deception and sexual abuse. One of the biggest concerns in the region is large-scale migration of displaced Rohingyas in the Bay of Bengal Region. The ethnic clashes in 2012, resulted in more than a million Rohingyas fleeing and being forced to live in camps within Myanmar. Many of them tried to escape by sea. The cases of Rohingyas being rescued by the marine agencies are frequent. The abysmal state of hundreds of Rohingyas cramped in a boat and having to spend days at sea describes the ruthlessness of the trafficking networks. Climate is another driver for such illegal migration. This region is densely populated and highly vulnerable to climate change. It witnesses cyclones more frequently compared to the Arabian Sea, and therefore has seen human migration induced by climate change and natural disasters, a trend likely to get exacerbated in the future.

The United Nations High Commissioner for Refugees (UNHCR) and the International Organisation for Migration (IOM) are actively engaged in combating human trafficking in the region. The enormity of the problem makes regional cooperation and combined efforts a necessity in order to combat it. The Bali Process is one such endeavour to respond to the issue, which brings together the 45-member states, member organisations such as UN Refugee Agency (UNHCR), International Organisation for Migration (IOM), UNODC, the International Labour Organisation (ILO) and the 18 observer States and nine observer organisations.[71]

The other effective regional mechanism engaged to tackle the issue in the region are BIMSTEC and IORA.

The human trafficking is estimated to be high profit business having annual turnaround of approximately 150 billion USD. [72] The victims of human trafficking are of all age groups including women and children, hence more concrete measures in the form of policy formulation, law enforcement, cooperation and regular dialogue must be encouraged to combat issue of human trafficking.

Further, taking cognisance that these migrants are vulnerable to other forms of abuses and crimes such as drug trafficking and maritime terrorism, cooperation amongst the member states in the region needs to be further strengthened.

Critical Coastal Infrastructure Protection

The protection of critical infrastructure along the coastline or offshore has become a serious concern for India in view of the increase in the malevolent threat by the non-State actors. These activities, in simple terms, are acts of maritime terrorism. The physical protection of such

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[71] "Bali Process Members", The Bali Process at https://www.baliprocess.net/bali-process-members/ (Accessed on 07 February 2024)

[72] "Trafficking in Persons", The Bali Process at https://www.baliprocess.net/trafficking-in-persons/ (Accessed on 08 February 2024)

critical offshore infrastructure along with those on the coastline is therefore a crucial aspect of the coastal security mechanism. In India, the critical sectors along the coast constitute nuclear plants, space units, defence units, ports, industries, oil handling and storage facilities, among others. Around 56 per cent of India's oil reserves are offshore; hence, the protection of infrastructure associated with the exploration and production of this indigenous offshore oil and its transportation to the coast is critical to ensure India's "Security of Energy".

Along India's west coast, ten Offshore Development Areas (ODAs) are engaged in offshore oil production. Some of these well-known ODAs are Mumbai High North, Heera, Panna, Neelam, Mukta, Tapti, Mumbai High South, etc. Similarly, on the east coast, ODAs are located in the Krishna Godavari, Mahanadi and Cauvery basins.

The responsibility of defence of offshore assets rests with the Flag Officer Defence Advisory Group (FODAG) of the Indian Navy. He is also the advisor to the Government of India on matters of offshore defence. In India, offshore security involves multiple agencies and organisations; thus, coordination between the ministries, stakeholders and various agencies is crucial. In order to identify peacetime threats to offshore installations, such as terrorism and sabotage, and to ensure efficient and effective functioning of offshore security mechanism, an Offshore Security Coordination Committee (OSCC) was constituted in 1978. The OSCC is the apex body to formulate policy plans on offshore security. The Director General Indian Coast Guard has been assigned the responsibility of Chairman of the Offshore Security Coordination Committee.[73]

Recently, on 01 September 2023, the 135th OSCC meeting was held with all stakeholders at Ahmedabad to review the preparedness and effectiveness of the security of India's offshore installations. The key

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[73] Indian Coast Guard at https://indiancoastguard.gov.in/content/1718_3_MaritimeSurveillance.aspx#:~:text=The%20OSCC%20develops%20contingency%20plans,DGICG%20Vice%20Admiral%20VA%20Kamath. (Accessed on 08 February 2024)

issues highlighted were the government's initiatives on opening a considerable part of EEZ, the expansion of exploration and production activities to achieve self-sufficiency in the energy sector and the need for focused and sustained offshore security efforts. [74] In addition, the Chief of Staff of the Western Naval Command and the Eastern Naval Command of the Indian Navy also meet with the stakeholders once in six months during Regional Contingency Committee meetings. The Indian Navy also conducts a contingency-based simulated emergency exercise *Prasthan* every six months, in which various drills such as anti-hijacking, combating fire, structural damage from intentional or inadvertent collision, and bomb disposal procedures are practised.[75]

What looks like a normal security mechanism and procedure is actually extremely difficult and challenging at sea. The UNCLOS stipulates a safety zone of 500 metres around oil rigs. As per Article 60, Para 5 of the UNCLOS: "The breadth of the safety zones shall be determined by the coastal State, taking into account applicable international standards. Such zones shall be designed to ensure that they are reasonably related to the nature and function of the artificial islands, installations or structures, and shall not exceed a distance of 500 metres around them, measured from each point of their outer edge, except as authorized by generally accepted international standards or as recommended by the competent international organization. Due notice shall be given of the extent of safety zones." [76] The average speed of an Indian fishing

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[74] "Offshore Security Coordination Committee holds its 135th meeting in Ahmedabad; Takes stock of the offshore security preparedness across the country", Press Information Bureau, 1 September 2023 at https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1954153(Accessed on 09 February 2024)

[75] Pradeep Chauhan, 'Physical Protection of India's Critical Maritime Infrastructure", in Pradeep Chauhan, Debesh Lahiri, Raghvendra Kumar (eds). *Maritime Perspectives 2022: Non-Traditional Dimensions of Maritime Security*, National Maritime Foundation, New Delhi, 2022, pp. 234-235.

[76] "United Nations Convention on the Law of the Sea" at https://www.un.org/depts/los/convention_agreements/texts/unclos/part5.htm (Accessed on 10 February 2024)

boat is 6-7 knots (Kts); therefore, a fishing boat operating just at the periphery of safety zone would take less than three minutes to reach close to the installation. Fishing activity around the oil platforms therefore severely jeopardizes safety. The reaction time of three minutes makes the task daunting for the maritime security forces. A suitable domestic legal framework and sensitizing the fishermen therefore, are options that can help in improving safety and security of these assets.

Illegal, Unreported and Unregulated (IUU) Fishing

The broad activities comprising Illegal, unreported and unregulated (IUU) fishing as per the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU) by the Food and Agriculture Organisation (FAO) of the United Nations are as mentioned below:[77]

Illegal fishing

- National or foreign vessels fishing in waters under the jurisdiction of a State, without the permission of that State, or in contravention of its laws and regulations;
- Vessels engaged in fishing and flying the flag of States that are parties to a relevant regional fisheries management organisation but operating in contravention of the conservation and management measures adopted by that organisation and by which the States are bound, or relevant provisions of the applicable international law; or
- In violation of national laws or international obligations, including those undertaken by cooperating States to a relevant regional fisheries management organization.[78]

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[77] "Illegal, Unreported and Unregulated (IUU) fishing", Food and Agriculture Organisation of the United Nations at https://www.fao.org/iuu-fishing/background/what-is-iuu-fishing/en/(Accessed on 10 February 2024)

[78] Ibid.

Unreported fishing

- Fishing that has not been reported, or has been misreported, to the relevant national authority, in contravention of national laws and regulations; or

- Fishing undertaken in the area of competence of a relevant regional fisheries management organisation, which have not been reported or have been misreported, in contravention of the reporting procedures of that organisation.[79]

Unregulated fishing

- Fishing in the area of application of a relevant regional fisheries management organization that are conducted by vessels without nationality, or by those flying the flag of a State not party to that organization, or by a fishing entity, in a manner that is not consistent with or contravenes the conservation and management measures of that organization; or

- Fishing in areas or for fish stocks in relation to which there are no applicable conservation or management measures and where such fishing activities are conducted in a manner inconsistent with State responsibilities for the conservation of living marine resources under international law.[80]

These three components, Illegal, Unregulated and Unreported, are not necessarily mutually exclusive. For example, a fishing boat engaged in illegal fishing is bound to hide its catch; its activity therefore becomes Unreported fishing as well. It is very likely that such a vessel may also not adhere to the conservation and management measures; therefore the activity can also be labelled as Unregulated fishing. Nations must come together on the issue of IUU fishing, as it is an impediment for long-term conservation and sustainability. At the same time, it is also detrimental to the morale of the responsible and honest fishermen.

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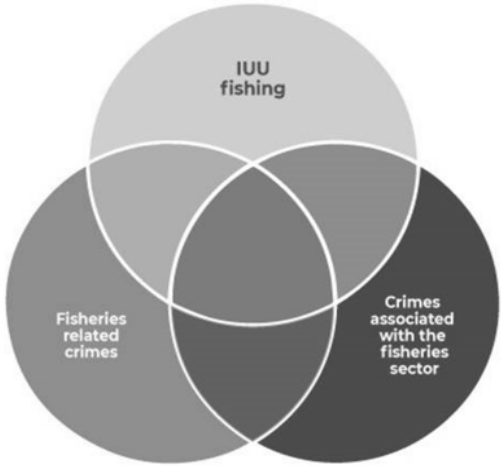
[79] Ibid.

[80] Ibid.

The IUU also threatens marine biodiversity and the livelihood of those dependent on fisheries.[81]

IUU fishing is accountable for the loss of 11 to 26 million tonnes of fish each year valued at around US $10-23 billion and is responsible for depleting fish stocks of already over-exploited areas.[82] The risk of conflict arising out of the decline in the fisheries resources is therefore increasing. The fishing vessels engaged in IUU fishing can be utilized for smuggling of arms and drugs and hence have the potential to upset the maritime and coastal security situation. Such relationships have been established earlier in Somalia where the links between IUU fishing and transnational crimes has been substantiated.[83] Economic insecurity is often the driver of physical insecurity. The Food and Agriculture Organization of the United Nations has demonstrated the links between IUU fishing and crimes in the fishing sector as depicted below.



Source: Illegal, Unprotected and Unregulated (IUU) fishing at https://www.fao.org/iuu-fishing/background/links-crimes/en/ (Accessed on 11 February 2024)

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[81] Ibid.

[82] "International Day for the Fight against Illegal, Unreported and Unregulated Fishing", United Nations, 5 June 2024 at https://www.un.org/en/observances/end-illegal-fishing-day (Accessed on 11 February 2024)

[83] *Stable Seas*, p. 59.

There seem to be close linkages between IUU fishing and crimes in the fisheries sector (fisheries-related crimes such as fraud in documentation including forged licences, money laundering, etc.) and crimes associated with the fisheries sector (such as drugs, arms and human trafficking, piracy and armed robbery at sea, etc.)

In India there are more than 2,50,000 registered fishing vessels, 1278 Fish Landing Centres (FLCs) and over 3000 marine fishing villages. The safety and security of these fishing boats and fishermen is a daunting task in view of the presence of such large number fishing vessels at sea. Efficient and effective fisheries Monitoring, Control and Surveillance (MCS) measures are thus imperative not only for the fisheries industry but also for coastal security. In India, the fisheries MCS are aimed at promoting sustainable management of fisheries resources as well as the coastal security mechanism. While the Monitoring and Control element of MCS is linked to the conservation and sustainability component, the surveillance element essentially is connected to law enforcement and coastal security. The delinking of the security component from fisheries MCS may prove to be a grave mistake. It is well known that in the 26 November 2008 attack on Mumbai, LeT terrorists hijacked an Indian fishing boat to sneak in and reach the shores of Mumbai.[84] The surveillance component of MCS is therefore the most critical element from the coastal security point of view. The MCS activities comprise shore-based activities as well as action required to be taken while the vessel is out at sea. At the shore, MCS would include registration, licensing, record keeping, whereas at sea it would mean tracking the vessel through transponders or Vessel Monitoring Systems (VMS) and investigation by maritime security agencies. Some of the initiatives taken towards strengthening the fisheries MCS in India are:

1. The launch of the scheme for issuance of biometric Marine Fisheries Identity Cards (MFID) in 2009. The MFID cards and

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[84] "15 years of 26/11: Remembering the horrors of Mumbai terror attacks", *Business Standard*, 26 November 2023 at https://www.business-standard.com/india-news/15-years-of-26-11-remembering-the-horrors-of-mumbai-terror-attacks-123112600047_1.html (Accessed on 12 February 2024)

QR- coded PVC Aadhaar cards issued by the Government of India facilitates easy identification of fishermen at sea by the law enforcement and security agencies. As on March 2023 biometric identity cards have been issued to 19,16,781 fishermen and QR-coded PVC Aadhaar cards to 12,40,869 fishermen.[85]

2. The ReALCraft project originally developed for Kerala under the Kerala Marine Fisheries Regulation Act (KMFRA) in 2008, was implemented for all nine coastal states and four Union Territories by the Government of India in March 2011[86] .

3. Delegation of powers to the fisheries department of the coastal states and Union Territories in 2014 for registration, survey and certification of fishing boats, irrespective of their size or length. The decentralisation was aimed at strengthening the maritime administrations of the states/Union Territories and to provide the fishermen ease of doing business. Earlier, fishing boats above 20 meters in length were registered by Mercantile Marine Departments, which comes under the DG Shipping. [87]

4. The Kochi based Central Marine Fisheries Research Institute (CMFRI) developed a database of all fish landing centres along the Indian coasts with their GIS (geographic information system) location and types of fishing activity in 2017. The information

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[85] "Government of India issues biometric identity cards and QR Coded PVC Aadhaar cards to fishermen to facilitate them to get financial and technical support under various schemes of Government of India as well as for identification of fishermen at sea by the coastal security agencies", Press Information Bureau, 24 March 2023 at https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1910405 (Accessed on 12 February 2024)

[86] "Registration and Licensing of Fishing Craft Handbook" at https://fishcraft.nic.in/web/new/index/ReALCraft_Booklet.pdf (Accessed on 13 February 2024)

[87] "Delegation of Powers to States for Registration, Survey and Certification of Fishing Vessels", Press Information Bureau, 29 August 2014 at https://pib.gov.in/newsite/PrintRelease.aspx?relid=109172 (Accessed on 13 February 2024)

was collected on 1,278 landing centres of all maritime states (Gujarat-129, Maharashtra-149, Goa-34, Karnataka-93, Kerala-201, Tamil Nadu-359, Andhra Pradesh- 204, Orissa-54 and West Bengal-55). The GIS-based database is crucial for ensuring the safety of fishermen at sea, the coastal security construct as well as for disaster management agencies during disasters.[88]

In India, as per the Registration And Licensing of Fishing Craft 'ReALCRaft' data of May 2024, a total of 2,50,514 RCs and 189586 LCs have been issued. ReALCRaft is web-enabled solution under open source technology.[89] It is an online application system for vessel registration under the Merchant Shipping Act and procuring the license certificate under the Marine Fisheries Regulation Act for fishing vessels operating along the Indian coast.[90] ReALCRaft facilitates the security agencies, citizens and concerned Government bodies to track the status of any registered vessel through the internet or through SMS. The objective of ReALCRaft is to create a national database for fishing vessels by bringing all the Indian fishing vessels under one umbrella. It also helps in regulating the movements of fishing vessels, preventing IUU fishing and strengthening the coastal security construct.[91] The services provided by ReALCRaft are online submission of vessel registrations, licenses and renewals, transfers of ownership, e-payments, catch details by integrating with SAGARA, security agencies solution etc.

Many other technology-based initiatives have been implemented to strengthen the fisheries MCS and in turn, coastal security. The Distress

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88 "CMFRI behind the significant GIS-based development", *The Deccan Chronicle*, 24 April 2017at https://www.deccanchronicle.com/nation/in-other-news/240417/cmfri-behind-the-significant-gis-based-development.html (Accessed on 14 February 2024)

89 ReALCraft, Registration and Licensing of Fishing Craft, Department of Fisheries at https://fishcraft.nic.in/web/new/index/ (Accessed on 15 February 2024)

90 Ibid.

91 ReALCraft Brochure at https://fishcraft.nic.in/web/new/index/ReALCraft_Brochure.pdf (Accessed on 14 February 2024)

Alert Transponders (DATs) developed by ISRO have been in use since 2010. The ISRO has now developed a second-generation DAT (DAT-SG) which helps the fishing boats to send emergency messages from sea and receive acknowledgement in real time basis through advanced satellite communication and navigation systems. These messages are received at the Indian Mission Control Centre (INMCC) and decoded for the identity and location of the fishing boat prior to being forwarded to Maritime Rescue Co-ordination Centres (MRCCs) of the Indian Coast Guard (ICG). The messages about cyclones, tsunamis or other emergencies can also be sent to the fishermen at sea. DAT-SG can be connected to mobile phones using Bluetooth. The web-based system 'SAGARMITRA' at the INMCC maintains the database of the registered DAT-SGs which aids MRCCs to get the real time information related to the fishing boat in distress.

Similarly, Navigation with Indian Constellation (NavIC), a regional navigation satellite system consisting of a constellation of seven satellites and a network of ground stations, provides standard position service for civilian use and restrictive service for strategic use.[92] The GAGAN-(GPS-Aided Geo Augmented Navigation) enabled Mariners Instrument for Navigation and Information (GEMINI) launched by the Indian National Centre for Ocean Information Services (INCOIS) and the Airport Authority of India (AAI) in 2019 provides the fishermen seamless information related to emergencies and disasters. The GEMINI is based on the GAGAN satellite system developed by ISRO.[93]

For Sub-20 metre fishing boats, a pilot project was undertaken for two-way communication transponders. After successful trials, around 3.5 lakh transponders are to be provided free to the fishermen in a

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[92] "Satellite Navigation Services," Indian Space Research Organisation, Department of Space at https://www.isro.gov.in/SatelliteNavigationServices.html (Accessed on 16 February 2024)

[93] "New satellite-based GEMINI system to warn deep sea fishermen of upcoming disasters", *The Indian Express*, 10 October 2019 at https://indianexpress.com/article/technology/science/new-satellite-based-gemini-system-to-warn-deep-sea-fishermen-of-upcoming-disasters-6062528/ (Accessed on 16 February 2024)

phased manner, to strengthen the coastal security mechanism. These transponders would facilitate tracking of the sub-20 metre boats and provide for two-way communication from the sea. The project would be implemented under the Pradhan Mantri Matsya Sampada Yojana (PMMSY), and the state Department of Fisheries and the Centre, along with the National Security Council, shall coordinate the implementation of the project.[94]

The legal framework for fisheries is being overhauled to add teeth. The earlier Marine Fisheries (Regulation and Management) Bill 2019, after consultations with stakeholders, has been renamed as the Draft Indian Marine Fisheries Bill, 2021[95] by the Department of Fisheries, Government of India. At the state and Union Territory level also actions have been initiated and the process is underway. For example, in 2020, Gujarat amended its Gujarat Fisheries Act 2003. The new Act has added provisions related to fisheries' monitoring and security aspects.[96]

The fisheries MCS measures largely undertaken in India after 26/11 have been developed to address the existing gaps and revamp the coastal security architecture. The much needed integration of the fisheries sector will provide robust fisheries MCS, while legal measures to strengthen maritime security agencies, are also underway.

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[94] "Centre to provide 3.5 lakh free transponders made by ISRO to fishermen for security, business promotion", *The Economic Times*, 27 May 2023 at https://economictimes.indiatimes.com/news/india/centre-to-provide-3-5-lakh-free-transponders-made-by-isro-to-fishermen-for-security-business-promotion/articleshow/100553611.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst (Accessed on 17 February 2024)

[95] "The Draft Indian Marine Fisheries Bill, 2021", Department of Fisheries, Government of India at https://dof.gov.in/documents/office-orders/draft-indian-marine-fisheries-bill-2021-latest-version-after-stakeholders (Accessed on 17 February 2024)

[96] "Gujarat Assembly passes bill to penalise outside fishermen entering its waters", *The Times of India*, 25 September 2020 at https://timesofindia.indiatimes.com/city/ahmedabad/gujarat-assembly-passes-bill-to-penalise-outside-fishermen-entering-its-waters/articleshow/78315742.cms (Accessed on 18 February 2024)

Climate Change and Coastal Security imperatives

In the absence of a universally accepted definition coastal security has continued to be mainly contextual and an elusive concept. It is linked to the health of the coastal environment and ecosystem. In a wider framework, it is an integral component linked to maritime security and ocean governance.

The oceans are the next economic frontier affecting food and economic security. Oceans are our greatest ally against climate change. Oceans absorb about one-fourth of all carbon dioxide emissions and 90 per cent of the excess heat generated by these emissions. They also act as the lungs of the planet by generating 50 per cent of the oxygen required by us.[97] However, increased anthropogenic activities have led to the warming of oceans and ocean pollution and acidification. This has resulted in the rise in sea level, creation and expansion of dead zones (areas having low oxygen levels) in the oceans, collapse of fisheries, eutrophication, decrease in the ocean's ability to absorb carbon dioxide and increase in frequency as well as intensity of cyclones.

The oceans are a source of renewable and clean energy. Off-shore wind energy and tidal energy have a critical role in India's transition to Blue Economy. The success of India's economic growth hinges on India's capability to transform from its present exploitative 'Brown Economy Model' to a resilient 'Blue Economy Model'. The oceans also hold promise for mineral resources; the Rare Earth Elements (REEs), have tourism potential, provide for leisure and adventure activities, and maritime transport is the backbone of the globalised market. While India has taken many forward steps in this direction, recently during India's G20 presidency, 'Blue Economy' was included as a priority agenda in the Environment and Climate Sustainability Working Group. The "Chennai High-Level Principles for a Sustainable

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[97] "The ocean – the world's greatest ally against climate change" at https://www.un.org/en/climatechange/science/climate-issues/ocean#:~:text=The%20ocean%20generates%2050%20percent,heat%20generated%20by%20these%20emissions. (Accessed on 18 February 2024)

and Resilient Blue/Ocean-Based Economy", was also unanimously adopted by the G20 members in July 2023.[98]

In 2015, the United Nations Member States adopted 17 Sustainable Development Goals (SDGs). The SDGs, to be achieved by 2030, provide a global blueprint for peace and prosperity of people and the planet. SDG 14, Life Below Water deals with the conservation and sustainable use of the oceans, seas and marine resources for sustainable development.

The fate of India's Blue Economy initiative depends on the health of its oceans, its capacity, the capability to harness the oceans' potential, and the security of its coastline and critical coastal infrastructure along the coast, including the ports. In the wake of the rise in sea level and frequent cyclones, the need to focus on resilient ports, jetties and port infrastructure is greater than ever before. The rise in sea level and increase in frequency and intensity of cyclones pose serious threat to the littoral States in the Indian Ocean Region (IOR). The damage during the severe cyclonic storms due to storm surges especially during the high tides, can be enormous. The rising sea levels pose existential threats for some small islands in the IOR. The rising sea levels have a cascading effect, resulting in the loss of the coastal ecosystem, flooding and salinization of groundwater which enhances the risks to livelihood, food and water security and human displacement. Experts predict that the rising sea levels will submerge nearly 17 per cent of Bangladesh by 2050, resulting in displacement of around 20 million people.[99] Climate change and natural disasters can therefore lead to large-scale migration via the sea route from the littorals in the IOR and can pose serious security concerns for India.

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[98] "Environment and Climate Sustainability Ministers' Meeting", Press Information Bureau, 22 August 2023 at https://static.pib.gov.in/WriteReadData/specificdocs/documents/2023/aug/doc2023822242301.pdf (Accessed on 19 February 2024)

[99] "Bangladesh: A Country Underwater, a Culture on the Move", NRDC, 13 September 2018 at https://www.nrdc.org/stories/bangladesh-country-underwater-culture-move#:~:text=Climate%20experts%20predict%20that%20by,roughly%20the%20size%20of%20Iowa. (Accessed on 20 February 2024)

Climate change and warming of oceans has also resulted in extreme weather systems and an erratic monsoon pattern affecting India. The cyclone *Biparjoy* in 2023, in its run of 2525 km before hitting the Gujarat coast, changed tracks nine times, giving forecasters a difficult time to predict the path and landfall. With a life of 13 days and three hours (depression to depression), it was the longest duration cyclone in the northern Indian Ocean since 1977.[100] The extreme events have risky repercussions at sea, as the chances of collision in bad weather and low visibility conditions increase manifold. Collisions at sea between heavily laden large vessels, specially carrying oil and oil products such as VLCCs or the ships carrying dangerous cargo, can be catastrophic. The oil spills at sea have a spontaneous harmful impact as well as a long-term impact on marine life, marine ecosystem and the health of the local population. The economic impact is also huge in terms of its bearing on tourism, and the livelihood – especially of small fishermen – is impaired, as the small country boats cannot venture out at sea for weeks. These socio-economic impacts of maritime disasters, fisheries and livelihood of coastal populace are inextricably linked to the efficacy of the coastal security construct.

The coastal security paradigm, which has evolved over the years, now encompasses a wide range of threats including those induced by climate change. Coastal security is linked with marine environment protection, biodiversity protection and holistic maritime governance. In India, maritime law enforcement agencies such as Indian Coast Guard have been assigned duties of protection and preservation of the marine environment. The Indian Coast Guard, through the Coast Guard Act of 1978, is entrusted with the responsibility to "take measures as are necessary to preserve and protect the maritime environment and to prevent and control maritime pollution" as well as "collection of scientific data at sea".

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[100] "*Biparjoy* longest duration cyclone since 1977: IMD", *The Hindu*, 26 June 2023 at https://www.thehindu.com/news/national/biparjoy-longest-duration-cyclone-since-1977-imd/article67011917.ece (Accessed on 19 February 2024)

India being a party to the UNCLOS has the obligation to protect and preserve the marine environment. The ICG is designated as the Central Coordinating Authority for combating oil spills in Indian waters and undertaking oil spill prevention and control, through the Office Memorandum of the Ministry of Defence dated 07 March 1986 and further, by amendment to the Government of India (Allocation of Business) Rules, 1961 through the Gazette notification dated 12 December 2002. In 1996, the ICG promulgated a detailed National Oil Spill Disaster Contingency Plan (NOS-DCP) for responding to oil spills in India's maritime zones. The NOS-DCP is updated at regular intervals to keep it relevant and meaningful as per changing regulations.

Maritime law enforcement is an integral part of the holistic coastal security mechanism. The protection of Marine Protected Areas (MPAs) and endangered species such as Olive Ridley Turtles has been a responsibility of the Indian Coast Guard, Indian Navy and personnel form state police and forest department. The ICG conducts an annual operation called 'Operation Olivia' in coordination with the state police, the fisheries and forest department, along the Orissa coast to enforce protection measures as stipulated for the conservation and protection of the Olive Ridley Turtle. The state marine police (SMP) was raised in all coastal states and Union Territories of India, after the report and recommendation of the Government of India in 2001 (GoM Report 2001). These SMPs along with state fisheries and forest officials also carry out sea and beach patrol for protection of MPAs, biodiversity and law enforcement along the coast of their states. These patrolling efforts provide an added layer of security and complement the overall coastal security mechanism.

The correlation between climate change and security is emphasised by the fact that the "National Security, Military and Intelligence Panel (NSMIP)", comprising national security, military and intelligence experts, after having analysed the world through the lens of the US Geographic Combatant Command, concluded that, "Even at scenarios of low warming, each region of the world will face severe risks to national and global security in the next three decades. Higher levels of warming will pose catastrophic and likely irreversible, global security risks over

the course of the 21st century."[101] The panel is the first of its kind to analyse security implications of two future warming scenarios by a panel of security professionals. The Report highlights risks in the INDOPACOM and states that in the near-term, 1-2°C warming scenario, the region will face the risk of water scarcity in some areas and heavy precipitation in others, posing risks to the security infrastructure, social stability, and tensions between regional powers. For medium-to-long term warming scenario of 2-4+°C, the region is likely to face devastating rise in sea level threatening its megacities, infrastructure, and populations, and the resulting displacement and securitization of state borders.[102]

In the IOR, regional cooperation frameworks such as IORA, IONS and BIMSTEC therefore should be leveraged to focus on issues related to climate change, loss of livelihood, socio-economic impact, large-scale migration etc., as these are linked to coastal security.

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[101] "A Security Threat Assessment of Global Climate Change", The Centre for Climate and Security at https://climateandsecurity.org/a-security-threat-assessment-of-global-climate-change/ (Accessed on 21 February 2024)

[102] Ibid.

Chapter 3

Coastal Security Construct

The coastal security construct in India rests on five pillars, the Physical Layer of Security , Electronic Surveillance, Space-based Surveillance, the Coordinating Bodies (apex level and below) and International Cooperation.

Physical Layer of Coastal Security

The physical layer of the coastal security construct in India involves multiple central and state agencies. Some of the main stakeholders in this construct are central ministries such as the Ministry of Defence, Ministry of Home Affairs, Ministry of External Affairs, Ministry of Shipping and Ministry of Fisheries, Animal Husbandry & Dairying, state/UT departments (Home, Fisheries, Forest and Ports), security agencies (Army, Navy, Air Force, Coast Guard, BSF, NSG, CISF, Marine Police, state/Union Territory police), State Maritime Boards, Customs, Port Trusts, DG Shipping, DRI, ATS, Central and state Intelligence agencies, marine sectors (Shipping, Fisheries, Ports, Tourism and Energy), community of fishermen and the coastal population. Some of the departments/ agencies that are more directly involved in the coastal security construct are discussed below:

Department of Border Management

The Group of Ministers (GOM) was set up in April 2000 to review the national security system in its entirety and in particular to consider the recommendations of the Kargil Review Committee (KRC). Its Report in 2001 recommended a comprehensive systemic overhaul of the country's security and intelligence apparatus in keeping with the technological revolution and the need for integrated management structures. It had set up four task forces, one each on Intelligence

Apparatus, Internal Security, Border Management and Management of Defence.[103]

Accepting the Group of Ministers' recommendations 2001, the Department of Border Management was created in 2004 under the Ministry of Home Affairs (MHA). The Department of Border Management has two divisions. The Border Management-II (BM-II) division under the Department of Border Management deals with matters relating to coastal security. The Coastal Security Section of the BM-II division deals with the matters relating to strengthening of coastal policing, surveillance and patrolling of coastal areas, particularly shallow areas close to the coast, implementation of the Coastal Security Scheme in 13 coastal states and Union Territories, financial assistance for creation of infrastructure related to coastal security in the coastal states/Union Territories, a Secretariat for the National Committee on Strengthening Maritime and Coastal Security against Threats from the Sea (NCSMCS), Parliamentary matters/VIP references/RTIs, complaints related to the implementation of the Coastal Security Scheme, in the 13 coastal states/ Union Territories and the National Academy of Coastal Policing.[104]

Indian Navy

The essence of all navies is their military character. The *raison d'etre* of navies is to ensure that no hostile maritime power degrades national security and interests. The Indian Navy has multiple roles ranging from high-intensity war-fighting to humanitarian assistance and disaster relief operations. The four main roles envisaged for the Indian Navy are Military, Diplomacy, Constabulary and Benign.[105]

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[103] "Group of Ministers' Report on "Reforming the National Security System", PIB, 23 May 2001 at https://archive.pib.gov.in/archive/releases98/lyr2001/rmay2001/23052001/r2305200110.html (Accessed on 22 February 2024)

[104] "BM-II Division Work Allocation", Ministry of Home Affairs at https://www.mha.gov.in/sites/default/files/2022-11/BM_IIWorkallocation_01092022%5B1%5D.pdf (Accessed on 22 February 2024)

[105] "Role of Navy", Indian Navy at https://www.indiannavy.nic.in/content/role-navy (Accessed on 23 February 2024)

The Constabulary role objectives of the Indian Navy constitute Coastal and Offshore Security, Security of Exclusive Economic Zone (EEZ) and maintaining Good Order at Sea. The Indian Navy is designated as the authority responsible for overall maritime security, including coastal and offshore security.[106] The naval Commanders-in-Chief have also been designated as Commanders-in-Chief, Coastal Defence.

Indian Coast Guard (ICG)

The Indian Coast Guard came into being on 01 February 1977 and the Coast Guard Act was passed by parliament on 19 August 1978. The ICG's benign roles constitute humanitarian operations, search and rescue, international cooperation and assisting the scientific community, while the Constabulary role includes maritime surveillance, coastal security and anti-smuggling and narcotics control (ASNC).[107]

In 2009 the Indian Coast Guard was additionally designated as the authority responsible for coastal security in territorial waters, including areas to be patrolled by the coastal police. In addition, the ICG was also given the responsibility for overall coordination between central and state agencies in matters relating to Coastal Security.[108] From a modest beginning in 1977, the ICG now has 152 ships and 78 aircraft and is in the process of achieving force levels of 200 surface platforms and 100 aircraft by 2030. It has to its credit seizure of weapons, contraband, and narcotics worth Rs 15,343 crores since its inception, with Rs 478 crores seized in 2023 alone. [109]

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[106] "Coastal Security Scheme", Ministry of Home Affairs at https://www.mha.gov.in/sites/default/files/2022-08/BM_II_CostalSecurity_18062019%5B1%5D.pdf (Accessed on 23 February 2024)

[107] "Maritime Surveillance", Indian Coast Guard at https://indiancoastguard.gov.in/content/1718_3_MaritimeSurveillance.aspx (Accessed on 24 February 2024)

[108] "Coastal Security", Indian Coast Guard at https://indiancoastguard.gov.in/content/1727_3_CosstalSecurity.aspx (Accessed on 25 February 2024)

[109] "Indian Coast Guard celebrates 48th Raising Day", PIB at https://pib.gov.in/PressReleaseIframePage.aspx?PRID=2001583 (Accessed on 24 February 2024)

Border Security Force (BSF)

The BSF was raised on 01 December 1965 and is deployed on the Indo-Pakistan and Indo-Bangladesh borders.

For border guarding on the international borders in Jammu, Punjab, Rajasthan and Gujarat, the BSF has established the Border Outposts (BOPs)[110]. The BSF deploys its water wing to guard the Sir Creek area, a riverine border. The BSF water wing also guards the riverine borders along the Bay of Bengal, the Brahmaputra River and other small riverine areas.[111]

The BSF's water wing has floating BOPs, which act as mother ships and have long endurance to stay in deep waters for prolonged durations. The small patrol boats for patrolling the riverine borders are launched from these floating BOPs.[112]

State Marine Police/Coastal Police

The state marine police or coastal police come under the respective states/ Union Territories. In accordance with the recommendations of the Group of Ministers on reforming the overall national security apparatus, the Coastal Security Scheme (CSS) was formulated to strengthen the coastal security construct. The CSS addressed the critical gap in the policing of the Coast and close coastal waters. The establishment of coastal police stations and the coastal police provided for the following:[113]

1. Additional line of defence to the coastline.
2. Prevention of intrusion of militants and anti-national elements through the sea.

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[110] Sanjiv Krishan Sood, Inderjeet Singh, Monojit Das, BSF: The Eyes and Ears of India, 2022, p. 36.

[111] Ibid., p. 37.

[112] Ibid., p. 62.

[113] "Objectives of Coastal Police", Government of Kerala, Coastal Police at https://coastal.keralapolice.gov.in/about (Accessed on 26 February 2024)

3. Prevention of smuggling of arms / ammunition, explosives, narcotic substances through the sea.

4. Prevention of human trafficking through the sea.

5. Prevention of collusion between fishermen and smugglers or militants.

6. Obtaining community participation in coastal security.

7. Intelligence gathering.

8. To coordinate with agencies like the Indian Navy, the Indian Coast Guard, state police, the Fisheries Department and Customs, etc.

9. To assist the district administration in disaster management.

10. To handle law & order situations such as clashes between communities / groups both onshore / offshore.

11. To enforce fisheries related law of the State.

12. To coordinate on environment issues like oil-spills and pollution.

13. To protect maritime interests.

Phase-I of the Coastal Security Scheme was steered by the MHA. CSS-1 was formulated keeping in mind the vulnerability of the Indian coastline. The Scheme, based on perspective plans by coastal states and Union Territories, was approved in January 2005 for implementation in five years, commencing 2005-06. The Scheme was completed in March 2011 after getting extended by one year. During its implementation various measures such as setting up of coastal police stations, procurement of boats, vehicles, infrastructure build-up, creation of checkposts, outposts, etc. were undertaken. CSS-Phase I had an outlay of Rs 646 crores with Rs 495 crores and Rs 151 crores, for meeting non-recurring and recurring expenditure respectively, for six years. Towards improving infrastructure, a total of 73 coastal police stations (CPS), 97 checkposts, 58 outposts and 30 barracks were constructed in the coastal states/ Union Territories. The coastal police was equipped with 204 boats (procured centrally by the Ministry of

Home Affairs), 153 four wheelers, 312 motorcycles and 10 Rigid inflatable boats. In addition, an amount of Rs 10 lakhs per CPS was provided for computers and equipment, etc.[114]

Subsequently after the Mumbai incident on 26/11, the Government of India carefully reviewed the coastal security arrangement. A vulnerability/gap analysis was carried out by the coastal states/Union Territories in consultation with Indian Coast Guard to formulate phase II of the CSS. CSS-II was implemented in April 2011 with a total financial outlay of Rs 1579.91 crores (Rs 1154.91 crores for non-recurring expenditure and Rs 425 crores for recurring expenditure).[115] Initially envisaged for five years, the scheme was completed in March 2020. Under CSS Phase-II, the coastal states/Union Territories were provided funds for construction of 131 CPS, 60 jetties, ten Marine Operational Centres and procurement of 131 four wheelers and 242 motorcycles. Post the implementation of CSS-II, all the sanctioned 131 CPS and ten Marine Operational Centres are functional, construction has been completed for 35 jetties, procurement of 131 four wheelers and 242 motorcycles has also been completed.[116]

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[114] "Coastal Security", Lok Sabha Secretariat, November 2013 at https://loksabhadocs.nic.in/Refinput/New_Reference_Notes/English/Coastal_Security.pdf (Accessed on 27 February 2024)

[115] Ibid.

[116] *Annual Report 2022-23*, Ministry of Home Affairs at https://www.mha.gov.in/sites/default/files/AnnualreportEnglish_04102023.pdf (Accessed on 27 February 2024)

State/UT	Coastal Police Stations					Jetties		Four wheelers		Two wheelers		Marine Operations Centre		
	Sanctioned	Operational	Constructed	Construction	To be	Sanctioned	Constructed/ upgraded	Sanctioned	Purchased	Sanctioned	Purchased	Sanctioned	Operational	Constructed
Gujarat	12	12	11	0	1	5	1	12	12	24	24	0	0	0
Maharashtra	7	7	5	0	2	3	14*	7	7	14	14	0	0	0
Goa	4	4	1	1	2	2	2	4	4	8	8	0	0	0
Karnataka	4	4	4	0	0	2	2	4	4	8	8	0	0	0
Kerala	10	10	10	0	0	4	2	10	10	20	20	0	0	0
Tamil Nadu	30	30	30	0	0	12	5	30	30	60	60	0	0	0
Andhra Pradesh	15	15	15	0	0	7	0	15	15	30	30	0	0	0
Orissa	13	13	12	1	0	5	4	13	13	26	26	0	0	0
West Bengal	8	8	7	0	1	4	0	8	8	16	16	0	0	0
Daman & Diu	2	2	2	0	0	2	2	2	2	4	4	0	0	0
Puducherry	3	3	2	0	1	2	2	3	3	6	6	0	0	0
Lakshadweep	3	3	1	0	2	2	1	3	3	6	6	0	0	0
A&N Islands	20	20	20	0	0	10	0	20	20	20	20	10	10	4
TOTAL	131	131	120	2	9	60	35*	131	131	242	242	10	10	4

(*) The state government of Maharashtra has upgraded 14 jetties of MMB by constructing engine rooms, operational rooms for the crew of boats instead of construction of new jetties.

Source: MHA *Annual Report 2022-23.*

The Indian Coast Guard has been providing regular training to marine police personnel since 2006. The training conducted at the Coast Guard District Headquarters involves a three-week orientation module, and a one-week on-the-job training aimed to develop capabilities of these personnel and give them an orientation towards their new workspace, i.e., the sea.[117]

[117] "Coastal Security", Indian Coast Guard at https://indiancoastguard.gov.in/content/1727_3_CosstalSecurity.aspx (Accessed on 28 February 2024)

The Indian Navy also conducts a two-week training for the personnel of CISF and marine police at *INS Chilka*. In addition, each Command undertakes training of marine police and Customs personnel as and when requested.[118]

In order to provide effective training to the marine police personnel, the National Academy of Coastal Policing (NACP) started functioning from the campus of the Gujarat Fisheries Research Centre in 2018. The training includes subjects of marine laws, navigation of boats, seamanship, boat handling, weapons training, training on equipment and surveillance gadgets fitted on boats and survival skills at sea. The foundation stone for the permanent campus of NACP at Dwarka, Gujarat, was laid in May 2023.[119]

The SMPs were raised to strengthen the Coastal Security Construct and were provided with coastal police stations (CPS), speedboats, jetties and manpower. The ICG and marine police work with a 'Hub-and-Spoke' concept, the ICG stations being the 'Hub' and the coastal police stations being the 'Spoke'.

Customs

Section 2(28) of the Customs Act, defines 'Indian Customs Waters' as the waters extending into the sea up to the limit of the Exclusive Economic Zone under Section 7 of the Territorial Waters, Continental Shelf, Exclusive Economic Zone and other Maritime Zones Act, 1976, and includes any bay, gulf, harbour, creek or tidal river. Earlier, till 29 March 2018, the Indian Customs Water extended only up to 24 nautical miles (contiguous zone of India under Section 5).[120]

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[118] https://mod.gov.in/faqs/q-7-what-level-training-assistance-being-provided-navy-cisf-and-marine-police (Accessed on 28 February 2024)

[119] "NACP to train marine police of nine coastal states, 5 UTs", *The Times of India*, 20 May 2023 at https://timesofindia.indiatimes.com/city/rajkot/nacp-to-train-marine-police-of-nine-coastal-states-5-uts/articleshow/100369360.cms (Accessed on 29 February 2024)

[120] Basic Primer on Customs Duty and Customs Law", 8 June 2023 at https://www.taxmann.com/post/blog/basic-primer-on-customs-duty-and-customs-law/#:~:text=As%20per%20section%202(28,Economic%20Zone%20and%20other%20Maritime (Accessed on 01 March 2024)

In the 'Indian Customs Waters' a Customs Officer has powers such as to arrest a person (Section 104) and to stop and search any vessel (Section 106).[121]

One of the functions of Customs department is surveillance of coastal and land borders to prevent smuggling. In 2008, Customs department started procuring 109 boats with hi-tech surveillance capabilities. Till then, the department had been operating with just 20 patrol boats, procured in the 1970s.[122]

Central Industrial Security Force (CISF)

The CISF has the responsibility to provide security to the major ports. The CISF undertakes seaward as well as land security of the major ports. The strengthening of sea patrolling capacity and capabilities of CISF is imperative as it provides a critical and peripheral layer of security for vital installations such as nuclear plants and space stations which are located along the coast.

Intelligence Agencies

The intelligence agencies play a significant role in strengthening the coastal security mechanism. The intelligence inputs help the maritime agencies to draw a more specific area of lookout and chalk out a more specific plan of action. The National Technical Research Organisation (NTRO), the Directorate of Revenue Intelligence (DRI), the Defence Intelligence Agency (DIA), the Narcotics Control Bureau (NCB), the Multi-Agency Centre (MAC) and Subsidiary MAC (SMAC) have contributed immensely with their intelligence inputs for carrying out successful operations by the maritime forces.

The MHA set up a National Intelligence Grid (NATGRID) in December 2020 to maintain a repository of intelligence databases. The

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[121] Ibid.

[122] "Customs on a boat ride to guard the coastline", *Financial Express*, 24 May 2008 at https://www.financialexpress.com/archive/customs-on-a-boat-ride-to-guard-the-coastline/313755/(Accessed on 01 March 2024)

data is shared with security agencies to counter illegal activities. The NATGRID works as an integrated intelligence grid that connects databases of core security agencies of the Government of India and flags any suspicious financial transactions. It provides real-time intelligence to the law-enforcement agencies.[123] The NATGRID therefore provides security agencies with automated, secure and immediate access to information obtained from reliable sources.

Special Forces

The National Security Guard (NSG), a federal contingency force, came into being on 22 September 1986. It is a federal contingency world class zero error force created to deal with anti-terrorist activities in all its manifestations.[124] In the aftermath of the Mumbai terror strikes on 26/11, the Government of India decided to establish four NSG hubs. These NSG hubs were subsequently established in 2009 at Chennai, Hyderabad, Kolkata and Mumbai.[125] The fifth NSG hub was raised in Gandhinagar, Gujarat, in 2014, to secure the entire western border from Gujarat to Rajasthan.[126] The creation of NSG hubs has helped in reducing the response time in case of any emerging situation across the entire country. The force level of the NSG has also been augmented since 26/11.

In addition, many states such as Gujarat and Maharashtra have also raised their own terror response teams at the state level. Maharashtra

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[123] "NATGRID to scale up surveillance, offer real-time Intel on individuals", *Business Standard*, 28 April 2023 at https://www.business-standard.com/india-news/natgrid-to-scale-up-surveillance-offer-real-time-intel-on-individuals-123042800263_1.html (Accessed on 02 March 2024)

[124] "About NSG", National Security Guard at https://nsg.gov.in/about-us/about-nsg (Accessed on 03 March 2024)

[125] "Regional Hub of NSG", PIB at https://pib.gov.in/newsite/PrintRelease.aspx?relid=112916 (Accessed on 03 March 2024)

[126] "Gujarat gets new NSG hub; fifth in the country", *The Economic Times*, 14 July 2018 at https://economictimes.indiatimes.com/news/defence/gujarat-gets-new-nsg-hub-fifth-in-the-country/articleshow/58095713.cms?from=mdr (Accessed on 04 March 2024)

raised 'Force One' in 2009 to deal with terror attacks on the lines of the NSG.[127] Similarly, Gujarat has raised its own Marine Task Force (GMTF) to deal with any emergency situation.

Ports

The ports and maritime trade are the drivers of economic growth. The security of ports and trade therefore holds great importance. The International Ship and Port Facility Security (ISPS) Code was developed after 9/11 attacks in response of the perceived threats to ships and port facilities. It consists of a comprehensive set of measures required to enhance the security of ships, port facilities and to protect the ships, cargo and the crew from threats. The ISPS measures also help to reduce the risks of security threats by ensuring proper preventive measures. The Code provides a standardised and consistent framework to evaluate risks and thus determine the desired security levels and security measures.

The compliance of the ISPS Code is mandatory for the states who are contracting governments to the International Convention for the Safety of Life at Sea (SOLAS), 1974.[128] India has ratified the ISPS Code and implemented its provisions through the Merchant Shipping Act 1958, as amended in 2004.[129] Therefore, the Indian EXIM ports – whether major or non-major and Indian flagged ships are required to be ISPS Code-compliant. The Director General of Shipping (Designated

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127 "Maharashtra's 'Force One' only for counter-terror activities", *Hindustan Times*, 30 November 2009 at https://www.hindustantimes.com/mumbai/maharashtra-s-force-one-only-for-counter-terror-activities/story-EpRMrASkHeOBfjKaU3sHXJ.html (Accessed on 06 March 2024)

128 "What is the ISPS Code?", International Maritime Organization at https://www.imo.org/en/OurWork/Security/Pages/FAQ.aspx#:~:text=on%20maritime%20security%3F-,What%20is%20the%20ISPS%20Code%3F,attacks%20in%20the%20United%20States (Accessed on 05 March 2024)

129 "ISPS Code and Maritime Security of India Part – I", National Maritime Foundation, 8 June 2022 at https://maritimeindia.org/isps-code-and-maritime-security-of-india-part-i/ (Accessed on 05 March 2024)

Authority for ISPS Code implementation in India) view security concerns in the region has extended the scope of ISPS implementation to vessels below 500 GT, not engaged in international voyages, and the class of vessels defined as 'River Sea Vessels" (RSVs), with effect from 15 May 2011.[130]

The provisions of the ISPS Code call for appointing security officers and staff on board ships, port facilities and shipping companies. The Port Facility Security Officer (PFSO), Ship Security Officer (SSO) and Company Security Officer (CSO), are assigned with duties and responsibilities to handle the security threats. Three security levels are envisaged in the ISPS Code. Security level 3 is the exceptional level, applicable in cases when there is the probable or imminent risk of a security incident. It means further specific protective security measures are to be maintained for a limited period of time when a security incident is probable or imminent, even if identification of specific target is not possible.[131]

The ISPS Code also stipulates for a Ship Security Plan (SSP) to ensure security measures on board, monitoring of regular conduct of Ship Security Assessments (SSA), provision for a Ship Security Alert System (SSAS), conduct of the Port Facility Security Assessment (PFSA) and formulation of the Port Facility Security Plan (PFSP). To act as a security consultative body that is involved in the continuous development and implementation of PFSPs, DG Shipping has formed committees. These committees constitute the PFSO of the concerned port and representatives from the Indian Navy, Indian Coast Guard, Customs, NCB, CISF, Intelligence agencies, local police and any other central or

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130 "Revised Requirements of International Ship & Port Facility Security Code Implementation on India vessels", Directorate General of Shipping, 20 May 2011 at https://dgshipping.gov.in/Content/viewNotice.aspx?noticeid=952 (Accessed on 06 March 2024)

131 "What is the ISPS Code?", International Maritime Organization at https://www.imo.org/en/OurWork/Security/Pages/FAQ.aspx#:~:text=on%20maritime%20security%3F-,What%20is%20the%20ISPS%20Code%3F,attacks%20in%20the%20United%20States (Accessed on 07 March)

state government body as considered essential by the Chairman/CEO of the port.[132]

As per DG Shipping circulars of November 2005, February 2009 and November 2011, in accordance with the provisions of the ISPS Code, the ships visiting Indian ports, including vessels trading in coastal waters or coasting between Indian Ports, are required to submit certain details to the port in the Pre-Arrival Notification of Security (PANS) format. The PANS details include crucial information such as details of private security and the satellite communication system on board. PANS information must be provided to the port 96 hours prior to the arrival of the vessel. In case of shorter voyages, it must be provided within two hours of departure from the last port. The PANS information is also required to be provided to the Indian Navy and the Indian Coast Guard.

The implementation of the ISPS Code has been helpful in bringing down risks for maritime sectors and ports. However, the threat from containerised cargo and bulk shipment continues to exist. State Maritime Boards have been set up for management and administration, including for matters related to security of the non-major ports in India. The draft Indian Ports Bill, 2022 has been prepared to consolidate and amend port-related laws. It seeks to replace the 116 year-old Indian Ports Act 1908, and address India's international obligations and emerging environmental concerns. Further, it updates the existing penalties with respect to the amounts and offences.[133]

Department of Fisheries (DoF)

The Department of Fisheries (DoF) is a department under the Ministry of Fisheries, Animal Husbandry & Dairying since 05 February 2019.

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[132] ISPS Code and Maritime Security of India Part – II", National Maritime Foundation, 9 June 2022 at https://maritimeindia.org/the-isps-code-and-the-maritime-security-of-india-part-ii/ (Accessed on 08 March 2024)

[133] "Draft Indian Ports Bill, 2022 issued for Stakeholder Consultation", PIB, 18 August 2022 at https://pib.gov.in/PressReleasePage.aspx?PRID=1852874 (Accessed on 10 March 2024)

The responsibilities of the DoF include formulation of policy and schemes relating to the development of inland, marine and coastal fisheries and the fishery institutes. The Department undertakes activities such as promotion and development of fishing and fisheries, welfare of fishermen and cooperation with international organizations in matters relating to fisheries development.[134]

A scheme for the issuance of bio-metric identity (ID) cards to coastal fishermen was launched by the Department of Animal Husbandry, Dairying Fisheries, Ministry of Agriculture and Farmers Welfare on 11 December 2009. The scheme was intended to eliminate duplications of cards issued by different agencies, empower coastal fisherman, establish a National Marine Fishers Database (NMFD) and strengthen coastal security by reducing threats from the sea routes.[135] The Central Sector Scheme (CSS) on issuance of Biometric ID Cards had a total project cost of Rs. 72 crores, out of which Rs. 8 crore was released to the coastal states and Union Territories and the remaining went to the Consortium of Central Public Sector Undertakings, for digitization of data, capturing of biometric details and other works relating to design, production and issuance of biometric ID cards.[136] As on August 2023, a total of 19,21,329 biometric ID cards have been issued to the marine fishermen. In addition, 12,40,869 QR code- enabled Aadhar cards have also been issued to these marine fishers by the Unique Identification Authority of India (UIDAI).[137] The state-wise details of

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134 "About the Department", Department of Fisheries at https://dof.gov.in/about-us/about-department (Accessed on 12 March 2024)

135 "Ministry of Agriculture & Animal Husbandry: Marine Fisheries Card", Smart Card Operating System (SCOSTA) at https://scosta.gov.in/ministry-of-agriculture-animal-husbandry-marine-fisheries-card/#:~:text=The%20scheme%20for%20the%20issuance,Welfare%20on%2011th%20December%202009 (Accessed on 13 March 2024)

136 "Identity cards and KCCs issued to coastal fishermen", Ministry Of Fisheries, Animal Husbandry and Dairying Department of Fisheries, 11 August 2023 at https://sansad.in/getFile/annex/260/AU2649.pdf?source=pqars (Accessed on 14 March 2024)

137 Ibid.

biometric ID cards and QR code-enabled Aadhar cards issued to marine fisheries is as below:

Sl. No.	Name of the state	Number of Biometric ID Cards distributed to marine fisheries	Number of QR code enabled Aadhar cards distributed to marine fisheries
1	Tamil Nadu	349744	224879
2	Puducherry	34037	13354
3	Karnataka	82216	39482
4	Gujarat	171480	130294
5	Daman & Diu	8170	14635
6	Kerala	217117	160715
7	Lakshadweep	13315	6360
8	Maharashtra	180936	75369
9	West Bengal	258696	116103
10	Goa	12396	10084
11	Andhra Pradesh	270284	133417
12	Telangana	-	20110
13	Odisha	306050	288841
14	Andaman & Nicobar	16888	7226
Grand Total		**1921329**	**1240869**

Source: Government of India, Ministry of Fisheries, Animal Husbandry and Dairying, Department of Fisheries, Rajya Sabha Unstarred Question No.2649, 11 August 2023 "Identity cards and KCCs issued to coastal fishermen".

The Department is implementing Pradhan Mantri Matsya Sampada Yojana (PMMSY), under which financial assistance is being provided to various beneficiaries, including coastal fishermen and fish farmers, for taking up activities relating replacement nets and boats for traditional fishermen, safety kits, transponders and communication devices, livelihood support during ban/lean period for traditional fishermen

and insurance coverage for fishermen.[138] The PMMSY is likely to generate 55 lakh direct and indirect employment opportunities.[139] Such financial incentives will provide social, physical and economic security for fishers and fish farmers and build a robust fisheries management and regulatory framework. The economic security of the fishermen and coastal population is closely linked to coastal security. These fishermen are the eyes and ears in the coastal security construct and hence an inescapable link in overall coastal security.

The DoF has initiated a Blue Revolution: Integrated Development and Management of Fisheries scheme. The objectives of the scheme are, to increase the overall production of fish in a sustainable manner, modernization of the fisheries industry with new technologies, ensure food and nutritional security, generate employment and export earnings and to ensure inclusive development and empower fishers. The scheme has provisions for financial assistance, skill training, insurance, etc. The restructured Centrally Sponsored Scheme on Blue Revolution: Integrated Development and Management of Fisheries has been formulated at a total Central outlay of 3000 crores for five years and has the Monitoring, Control and Surveillance (MCS) component, related to coastal security.[140] Similarly, the Department extended the Kisan Credit Card (KCC) facility to fishermen in 2018-19 to help them to meet their working capital requirements.[141] As on August 2023, 1,47,423 KCC cards have been issued to fishers and fish farmers in all states/Union Territories.[142]

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138 Ibid.

139 "Employment Opportunities for Pradhan Mantri Matsya Sampada Yojana", PIB at https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1982647#:~:text=The%20Pradhan%20Mantri%20Matsya%20Sampada,other%20rural%2Furban%20populations%20in (Accessed on 16 March 2024)

140 "Blue Revolution", Department of Fisheries at https://dof.gov.in/blue-revolution

141 "Kisan Credit Card", Department of Fisheries at https://dof.gov.in/fisherieskcc (Accessed on 17 March 2024)

142 "Identity cards and KCCs issued to coastal fishermen", Ministry of Fisheries, Animal Husbandry and Dairying Department Of Fisheries, 11 August 2023 at https://sansad.in/getFile/annex/260/AU2649.pdf?source=pqars (Accessed on 17 March 2024)

Likewise, the Fisheries and Aquaculture Infrastructure Development Fund (FIDF) by the Department of Fisheries, envisages creation of infrastructure facilities for fisheries, both in the marine and inland fisheries sectors. The scheme, initially for five years from 2018-19, has been extended for three years from 2023-24 to 2025-26.[143]

The Government of India decided to introduce a comprehensive and integrated 'National Fisheries Policy, 2020' by integrating the National Policy on Marine Fisheries, (NPMF) 2017, the Draft National Inland Fisheries and Aquaculture Policy (NIFAP) and the Draft National Mariculture Policy (NMP), to strengthen the fisheries MCS.[144] The Indian Marine Fisheries Bill 2021 also aims to promote the livelihood and socio-economic well-being of traditional and small-scale fishers.

The coastal and fishing community

The coastal and fishing community constitute integral part of coastal security construct in India. With an aim to involve the coastal community in the security apparatus, the Maharashtra Police along with the Indian Navy, implemented a coastal-community (policing) initiative, the Sagar Rakshak Dal in 1999, in 263 villages with the aim of enhancing coastal security surveillance along the Maharashtra coast. Post 26/11, similar community groups comprising the coastal population, were established in few other states/Union Territories and integrated into the coastal security construct. Some of these groups are the Village Vigilance Committees in Tamil Nadu and Andhra Pradesh, the Sagar Suraksha Dal/Gram Rakshak Dal in Gujarat and Karnataka, the Kadalora Jagratha Samithi in Kerala and the Fishermen Watch Group in the Andaman and Nicobar Islands.[145]

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[143] "Fisheries And Aquaculture Infrastructure Development Fund (FIDF)", Department Of Fisheries at https://www.fidf.in/ (Accessed on 18 March 2024)

[144] "National Fisheries Policy (2020)", PIB at https://pib.gov.in/PressReleasePage.aspx?PRID=1654543 (Accessed on 20 March 2024)

[145] "Community-Engaged Maritime Security: Beyond 'Eyes And Ears'", National Maritime Foundation, 28 May 2018 at https://maritimeindia.org/community-engaged-maritime-security-beyond-eyes-and-ears/ (Accessed on 20 March 2024)

The Indian Coast Guard (ICG) has been conducting Community Interaction Programmes (CIPs) for the fishermen since 2009. The CIPs are conducted round the year in coordination with the other stakeholders to sensitize the fishing community and the coastal population to act as the 'eyes and ears' of the enforcement agencies in providing valuable information for enhancing the coastal security. In addition, the fishermen and coastal population are briefed about their safety at sea, general precautions to be taken at sea, usage of life-saving equipment and gadgets etc. by the ICG personnel in these CIPs. The Indian Navy also conducts Coastal Security Awareness Programmes (CSAPs).

These community programmes and forming of village groups' helps in integrating the fishermen and the coastal population in the coastal security construct. One of the crucial lessons learnt from the 26/11 attack is that the fishermen and coastal population are important links in coastal security.

Electronic Surveillance

The sea is a vast area; it provides natural stealth to small fishing boats. These boats ride on the waves, seen when riding on the crest and disappearing momentarily while in the trough of the wave. The detection of the boats gets more difficult in bad weather and low visibility conditions. The physical sighting with binoculars is always difficult in low visibility conditions over sea. In the night, the night vision binoculars are effective however, the chances of missing an isolated boat at long distance cannot be ruled out. These fishing boats often remain unlit in the night even while making way. They are often missed on Radar as well, as their echo is mingled with the clutter of the Radar on the screen in bad weather. A suspicious boat at sea beyond visual and effective radar range, is a security threat as it is likely to go undetected.

An efficient electronic surveillance mechanism is capable of providing near gap-free surveillance and thus can boost coastal security endeavours. Therefore, various measures of harnessing technology have been instituted to enhance Maritime Domain Awareness (MDA). Post 26/11, the Coastal Surveillance Network (CSN) has been established by the Indian Coast Guard. The CSN comprises Chain of Static Sensors

having Radars, Automatic Identification Systems (AIS), Day/Night Cameras and Met Sensors at 46 locations along the coastline and islands.[146] The CSN project was implemented through Bharat Electronics Limited (BEL) and the contract for this turnkey project for over Rs 600 crore was signed in 2011.[147] In phase-I of the project, 46 Remote Radar sites (36 locations in the mainland, six in Lakshadweep & Minicoy and four in Andaman & Nicobar Islands) have been established. Under the project high-end surveillance gadgets like Frequency Diversity Radar, Electro Optic Sensors (Charge Coupled Device (CCD) Day Camera, Low Light TV (LLTV) Night Camera and Long Range Thermal Imagers) VHF sets and Meteorological equipment were installed on lighthouses and masts erected on land belonging to the Director General of Lighthouses and Lightships (DGLL). The CSN gives a real time surface surveillance picture up to 25 nautical miles.[148] The ongoing second phase of CSN envisages setting up 38 additional radar stations with static radars and electro-optic sensors, eight mobile surveillance systems along with integration of Vessel Traffic Management Systems (VTMS) sites of the Gulf of Kutch and Gulf of Khambat. The CSN Phase II project costing over Rs 800 crores, is also being implemented through BEL.[149]

With a coastline of over 1700 kilometres, Gujarat sees highest maritime activity with 41 ports including major and minor ports. It has two major Gulfs – Gulf of Kutch (GoK) and Gulf of Khambat (GoKH),

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146 "Coastal Security", Indian Coast Guard at https://indiancoastguard.gov.in/content/1727_3_CosstalSecurity.aspx (Accessed on 22 March 2024)

147 "State gets hi-tech radars to watch its long coastline", *The Indian Express*, 26 August 2012 at https://indianexpress.com/article/cities/ahmedabad/state-gets-hitech-radars-to-watch-its-long-coastline/ (Accessed on 23 March 2024)

148 Ibid.

149 "Phase-II of Coastal Surveillance Network to be completed on time: Nirmala Sitharaman", *The Times of India*, 24 September 2018 at https://timesofindia.indiatimes.com/india/phase-ii-of-coastal-surveillance-network-to-be-completed-on-time-nirmala-sitharaman/articleshow/65938754.cms (Accessed on 24 March 2024)

having good natural depths and high tidal ranges which are an advantage for deep draft vessels. The Vessel Traffic System-GoK (VTS-GoK), covering an area of around 16000 square kilometres, is one of the largest VTS in the world. The VTS-GoK comprises 09 X-Band Radar and 02 S-Band Radar stations, six automatic identification systems, two direction finders and six sets of meteorological sensors with data processing servers, network servers and database servers along with VHF. Data from all the sensors is collected through a microwave network, for processing and integration at the Master Control Centre (MCC) Kandla.[150]

The VTMS project for Gulf of Khambhat (GoKH), Gujarat installed in 2010, allows for surveillance and VTS Information service, to all vessel traffic in the Gulf of Khambhat.

The National AIS (NAIS) network has been established by the Directorate General of Lighthouses and Lightships (DGLL). In Phase I, 74 AIS shore stations were established to cover the mainland and in Phase II, seven AIS shore stations to cover Andaman & Nicobar Islands and six for Lakshadweep Islands were established. The NAIS network facilitates an overall image of AIS-complying vessels along the Indian coastline, by tracking all the SOLAS-compatible vessels and the vessels carrying transponders, as per notices issued by DG Shipping. Thus, it enhances the maritime domain awareness and strengthens the coastal security construct. The NAIS network comprises 87 Physical Shore Stations (PSS) installed at various lighthouses along the Indian coast, eight Regional Control Centres (RCCs) located at regional headquarters at Jamnagar, Mumbai, Kochi, Chennai, Kolkata, Vishakhapatnam, Kavaratti and Port Blair, two Coastal Control Centres (CCC) located at Mumbai and Vishakhapatnam and one National Data Centre (NDC) at Deep Bhavan, Mumbai. The viewing terminals have been shared with the national coastal and security agencies, viz., the Indian Navy,

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[150] "VTS MCC Kandla", Directorate General of Lighthouses and Lightships at https://www.dgll.nic.in/DGLL-light-house-location/about-vts-gandhi-dham/vts-mcc-kandla (Accessed on 25 March 2024)

Indian Coast Guard, DG Shipping located at LRIT Data Centre Jahaz Bhavan Mumbai, IMAC Gurgaon, Joint Operations Centres (JOCs), NTRO New Delhi and DGLL Noida.[151]

The DGLL on 06 November 2023 came out with a request for Expression of Interest (EoI) for the integration of the vessel traffic management system (VTMS) at all major ports on turnkey basis. The integration of the VTMSs, will enable viewing of maritime traffic of all the ports installed with VTMS at a single point. Such a single-point comprehensive picture will enhance maritime domain awareness apart from effective marine traffic planning along the Indian coastline. It also envisages that all the VTMS feed from the major ports would be integrated at DGLL's NDC. Further, the NMDA Centre and Mercantile Marine Domain Awareness Centre (MM- DAC) of DG Shipping will be provided with this integrated VTMS feed. The NAIS network established by the DGLL will be utilised for the transfer of data from the VTMSs.[152]

The Automatic Identification System (AIS) provides position, identification and other information about the ship to other ships and to coastal authorities automatically. The IMO in 2000 adopted a new requirement for the ships to install AIS. The regulation came into effect from 31 December 2004 and requires AIS to be fitted aboard all ships of 300 gross tonnage and above engaged on international voyages, cargo ships of 500 gross tonnage and above not engaged on international voyages and all passenger ships irrespective of size. The

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[151] "National Automatic Identification System", Directorate General of Lighthouses and Lightships at https://www.dgll.nic.in/about-DGLL/Service-reminders/nais#:~:text=The%20Director%20General%20Lighthouses%20and,and%20tracking%20of%20SOLAS%20Vessels (Accessed on 25 March 2024)

[152] "Request For Expression Of Interest (EoI) From Prospective Bidders For Integration Of Vessel Traffic Management System At All Major Ports On Turn Key Basis", Directorate General of Lighthouses and Lightships at https://www.dgll.nic.in/sites/default/files/2023-11/Tendernotice_1%20%281%29.pdf (Accessed on 27 March 2024)

AIS helps in monitoring and tracking ships and exchange of data with the shore facilities.[153]

In May 2006, the IMO, through a Resolution, established the Long-Range Identification and Tracking (LRIT) of ships as an international system. The United States Coast Guard (USCG) proposed the LRIT system after the 11 September 2001 attacks. The LRIT regulations came into force from 1 January 2008 and LRIT, which tracks vessels globally, is useful for tracking and monitoring ships in coastal areas. Thus, it is an instrument to strengthen the coastal security mechanism. The LRIT regulation applies to ships engaged on international voyages and includes all passenger ships including high-speed craft, cargo ships, high-speed craft of 300 gross tonnage and above, and mobile offshore drilling units. The LRIT is a two-way communication system between the ship's LRIT equipment and the shore-based LRIT operator. In July 2009, the Indian National Data Centre (INDC) for LRIT was set up and made operational at DG Shipping Mumbai. It is the repository of information of LRIT and is connected to the wider international LRIT system via the International Data Exchange (IDE), using a specific LRIT communications protocol. The National Data Centre (NDC) continuously monitors Indian ships engaged in international trade all over the world. Foreign ships can be monitored up to 1000 nautical miles from the Indian coast when the LRIT Standing Orders are opened. Since October 2014, the Indian LRIT NDC has been providing LRIT services to Sri Lanka, which are likely to be extended to other neighbouring countries as well.[154] The information, tracking and two-way communication, helps in establishing credentials of the ship at sea, enhances maritime domain awareness and the overall security architecture.

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[153] "AIS transponders", International Maritime Organization at https://www.imo.org/en/OurWork/Safety/Pages/AIS.aspx (Accessed on 27 March 2024)

[154] "Long Range Identification and Tracking", Directorate General of Shipping at https://www.dgshipping.gov.in/Content/LRITNationalDataCentre.aspx (Accessed on 28 March 2024)

The Information Management and Analysis Centre (IMAC) at Gurugram was inaugurated on 23 November 2014. The IMAC is the nodal centre of the National Command Control Communications and Intelligence Network (NC3I Network) to enhance coastal surveillance. The NC3I network links 20 Naval and 31 Coast Guard stations located along the coast and on island territories. The network provides these stations coastal surveillance information, which is obtained from various sensors such as the coastal radar chain, AIS and electro-optical cameras. The data from various sensors and databases is aggregated, correlated and disseminated to various stations by the IMAC. The software on which the coastal surveillance is carried out, has hi-tech features like data fusion, correlation and decision support, to facilitate conscious decision-making.[155] The Indian Navy also established the Information Fusion Centre-Indian Ocean Region (IFC-IOR) at Gurugram in December 2018 to enhance collaborative maritime safety and security in the Indian Ocean Region.[156] Further, the IMAC will be upgraded into the National Maritime Domain Awareness (NMDA) Centre, which will have representatives from 15 agencies of seven ministries and enable exchange of real time maritime information.[157]

In India, ReALCRaft is a web-enabled online application system for Vessel Registration under the MS Act and License Certificate under the MFR Act for the fishing vessels operating along the Indian coast. It

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[155] "Coastal Security Network Must Ensure Zero Tolerance to Error: Parrikar", PIB, 23 November 2014 at https://pib.gov.in/newsite/printrelease.aspx?relid=111697 (Accessed on 30 March 2024)

[156] "Maritime Security: Memorandum Of Understanding (MoU) Between The Information Fusion Centre - Indian Ocean Region (IFC-IOR) and Regional Coordination Operations Centre (RCOC)", PIB, 22 February 2023 at https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1901371 (Accessed on 02 April 2024)

[157] "National Maritime Domain Awareness centre to be ready in three years", *The Hindu*, 2 January 2024 at https://www.thehindu.com/news/national/national-maritime-domain-awareness-centre-to-be-ready-in-three-years/article67698773.ece (Accessed on 03 April 2024)

enables the security agencies, citizens and other approved government agencies to track the status of any registered vessel at any time from anywhere, through internet or via SMS. As of May 2024, the data of 2,50,514 registrations and 1,89,586 licenses are available on the ReALCRaft portal.[158] ReALCRaft therefore enables the law enforcement agencies to track the status of registered vessels and helps in regulating the movements of the fishing vessels, preventing IUU fishing and strengthening the coastal security construct.[159] Similarly, the Distress Alert Transponders (DATs), the newly developed second-generation DAT (DAT-SG), which provides the fishing boats real time connection through advanced satellite communication, navigation systems and the transponders for sub-20 metre fishing boats, are endeavours towards providing electronic surveillance for enhancing India's coastal security.

Space-based Surveillance

The Space-based applications are critical today for essential services such as navigation, communication and earth observation. Space-based surveillance has the potential to be an effective tool for detection of ships and boats for combating IUU fishing, smuggling and human trafficking, and monitoring of the marine protected areas. It is an effective and productive method for 24/7 surveillance.

The CARTOSAT-2 Series Satellite Mission was launched by India on 12 January 2018. It intends to augment data services, and the images sent by satellite are useful for cartographic applications, coastal land-use and regulation, change detection to bring out geographical and manmade features, and various other Land Information System (LIS) as well as Geographical Information System (GIS) applications.[160] The

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158 "ReALCRaft", Department of Fisheries at https://fishcraft.nic.in/web/new/index/ (Accessed on 04 April 2024)

159 "ReALCRaft", Fishcraft at https://fishcraft.nic.in/web/new/index/ReALCraft_Brochure.pdf (Accessed on 04 April 2024)

160 "CARTOSAT-2 Series Satellite", ISRO at https://www.isro.gov.in/CARTOSAT_2_PSLVC40.html (Accessed on 06 April 2024)

Radar Satellite-1 (RISAT-1) launched in 2012 is a Microwave Remote Sensing Satellite carrying a Synthetic Aperture Radar (SAR) payload, capable of imaging of the surface features both during the day and night under all weather conditions.[161] Similarly, the RISAT-2, is a Radar Imaging Satellite having all-weather capabilities for disaster management applications.[162]

Indian Regional Navigation Satellite System (IRNSS)

NavIC is an independent regional navigation satellite system of India. The IRNSS provides unrestricted Standard Positioning Service (SPS) and Restricted Service (RS).[163]

With resolution capabilities getting better with technology advancements and more satellite coverage, space surveillance offers effective scanning of vast sea areas with precision. The space-based technologies and applications thus have a great prospect in the coastal security mechanism of the future.

Apex level monitoring and Coordination

In 2001, the GoM Report had recommended setting up an apex body for management of maritime matters for institutionalised linkages between maritime security agencies and the various ministries of central and state governments. After 26/11, the Cabinet Committee on Security (CCS) had plans to constitute a Maritime Security Advisory Board (MSAB). The Government of India in August 2009 constituted the National Committee for Strengthening Maritime and Coastal Security (NCSMCS) under the chairmanship of the Cabinet Secretary. The NCSMCS is a national-level forum and an apex body to review the

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[161] "RISAT-1", ISRO at https://www.isro.gov.in/RISAT_1.html(Accessed on 08 April 2024)

[162] "RISAT-2", ISRO at https://www.isro.gov.in/RISAT_2.html (Accessed on 09 April 2024)

[163] "IRNSS Programme", ISRO at https://www.isro.gov.in/IRNSS_Programme.html (Accessed on 11 April 2024)

maritime and coastal security mechanism. The Committee comprises representatives of all the concerned ministries/ departments/ organizations in the Government of India as well as Chief Secretaries/ administrators of the coastal states/UnionTerritories. The NCSMCS reviews the progress of implementation of all the major decisions in respect of coastal security and the decisions taken in these meetings are followed up by the concerned agencies.[164]

A Steering Committee for Review of Coastal Security (SCRCS) was formed under the Chairmanship of Secretary (Border Management), MHA in 2013[165]. The SCRCS reviews the implementation of the coastal security schemes. In addition, in 2016, state and district level Coastal Security Committees were formed for effective implementation of coastal security measures at the ground level.[166] The micro management of Coastal security at the district and state level ensures that the apex level is not deprived of genuine feedback related to measures required for strengthening of the coastal security construct. It ensures two-way flow and provides a system for exchange of information, ideas and practical difficulties being faced at the ground level in the implementation of the existing mechanism, against the backdrop of the ever-increasing coastal security threat situation.

Maritime matters involve wide range of issues related to defence, security, customs, intelligence, ports, trade, external affairs, etc. Coordination amongst all stakeholders is therefore crucial to strengthen the security apparatus as well as to ensure that India harnesses its Blue Economy

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[164] *Annual Report 2009-10*, Ministry of Home Affairs, at https://www.mha.gov.in/sites/default/files/AnnualReport_09_10.pdf (Accessed on 13 April 2024)

[165] "Maritime and Coastal Security", Ministry of Home Affairs, at https://www.mha.gov.in/MHA1/Par2017/pdfs/par2015-pdfs/rs-021215/394.pdf (Accessed on 14 April 2024)

[166] "India enhanced coastal security significantly post 26/11 terror attack", *The Economic Times*, 25 November 2020 at https://economictimes.indiatimes.com/news/defence/india-enhanced-coastal-security-significantly-post-26/11-terror-attack/articleshow/79406138.cms?from=mdr (Accessed on 15 April 2024)

potential to the fullest. The Government of India for the first time has appointed a National Maritime Security Coordinator (NMSC) in 2022 for effective coordination and cooperation among multiple central and state agencies associated with the maritime domain from the coast to the high seas. The NMSC is part of the National Security Council Secretariat (NSCS) under the National Security Advisor (NSA).[167]

International Cooperation

Coastal security is not exclusive of regional security and the stability architecture. The strategic interests of nations overlap and converge at sea. The Indian Ocean Region is increasingly becoming strategically significant where contestation between the major powers are unfolding. Criminal activities transcend national maritime boundaries, therefore maintaining law and order at sea is both a challenge as well as a priority. The shared interests and obligations towards coastal and maritime security, safety of life at sea, search and rescue, Humanitarian Assistance and Disaster Relief (HADR) therefore calls for cooperation and collaboration. Cooperation mechanisms are imperative as no single nation has the capacity in terms of assets and capabilities to ensure safety and security of the region. The non-traditional threats being transnational have tendencies to spill over. The sea being a fluid medium, facilitates this. Regional cooperation thus forms the backbone of the security architecture in a fragile maritime environment.

In alignment with India's vision of Security and Growth for all in the Region (SAGAR), the Government of India has developed maritime cooperation frameworks such as IORA, ReCAAP, BIMSTEC and IONS. The Indian Ocean Rim Association (IORA) is an inter-governmental organisation established on 7 March 1997.[168] Its priority

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[167] "14 years after 26/11, India gets maritime security coordinator", *The Times of India*, 17 February 2022 at https://timesofindia.indiatimes.com/india/india-gets-its-first-national-maritime-security-coordinator/articleshow/89622219.cms (Accessed on 15 April 2024)

[168] "Indian Ocean Rim Association", IORA at https://www.iora.int/indian-ocean-rim-association (Accessed on 18 April 2024)

areas include maritime cooperation and maritime safety and security. The Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia (ReCAAP) formed in 2004, is a regional Government-to-Government agreement to promote and enhance cooperation to suppress piracy and armed robbery against ships in Asia. It aims to enhance regional cooperation through information sharing, capacity building and cooperative arrangements.[169] The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC), a regional organization, was established in 1997 with the signing of the Bangkok Declaration. Initially known as BIST-EC (Bangladesh-India-Sri Lanka-Thailand Economic Cooperation), the grouping was renamed during the First Summit in Bangkok in 2004 as BIMSTEC. The initial six sectors of BIMSTEC were expanded in 2008 to include agriculture, public health, poverty alleviation, counter-terrorism, environment, culture, people-to-people contact, and climate change. The sub-sectors of counter-terrorism and transnational crime, energy and disaster management are led by India.[170] In November 2019, the IFC-IOR, Gurugram conducted the first Coastal Security Workshop for BIMSTEC countries to provide a forum to share expertise and experiences and harness mutual interests of the BIMSTEC member states.[171] The Indian Navy conceived the Indian Ocean Naval Symposium (IONS) in 2008. It seeks to enhance maritime cooperation among navies of the littoral States of the Indian Ocean Region. India is scheduled to take over as the Chair of IONS for 2025-27 by the end of 2025.[172]

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169 "About ReCAAP Information Sharing Centre", ReCAAP at https://www.recaap.org/about_ReCAAP-ISC (Accessed on 19 April 2024)

170 'History", BIMSTEC at https://bimstec.org/history (Accessed on 20 April 2024)

171 "Coastal Security Workshop for BIMSTEC Countries", *BIMSTEC* at https://bimstec.org/event/18/coastal-security-workshop-for-bimstec-countries (Accessed on 21 April 2024)

172 "Indian Ocean Naval Symposium (IONS) – 2023" PIB, 22 December 2023 at https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1989652#:~:text=IONS%20was%20conceived%20by%20the,understanding%20on%20the%20way%20ahead (Accessed on 23 April 2024)

The ICG has been conducting a biennial exercise 'Dosti' with the Maldives National Defence Force Coast Guard (MNDF CG) since 1991. The ambit of 'Dosti' was expanded to include Sri Lanka in 2012. The ICG also cooperates with maritime agencies of Singapore, the US, Mauritius, Sri Lanka, Oman, Philippines, Seychelles, Bangladesh, Malaysia and Vietnam.[173] The ICG conducted the first Coastal Security Conference (CoSC) under the aegis of Colombo Security Conclave (CSC) at Chennai in 2022. Coast Guard personnel from four member countries i.e. India, Mauritius, Maldives and Sri Lanka, participated in CoSC 2022. In addition Coast Guard personnel from Bangladesh (an observer of Colombo Security Conclave) also participated in the CoSC 2022. The theme for CoSC 2022 was "Collaborative Efforts for Coastal Security."[174] For enhancing regional cooperation, the ICG has also signed a Memorandum of Understanding (MoU) with several Coast Guard agencies of the world. Institutionalised High-Level Meetings (HLM) and joint exercises are regularly undertaken by the ICG to strengthen the regional coastal security construct.

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[173] "Memorandum of Understanding (MOU)", Indian Coast Guard at https://indiancoastguard.gov.in/content/1732_3_MoU.aspx (Accessed on 24 April 2024)

[174] "Coastal Security Conference (CoSC) Under the Aegis of Colombo Security Conclave Inaugurated", PIB, 1 December 2022 at https://pib.gov.in/PressReleasePage.aspx?PRID=1880373#:~:text=Coast%20Guards%20from%2004%20member,Conference%20(CoSC)%20%2D%202022. (Accessed on 26 April 2024)

Chapter 4

Conclusion

In the maritime domain, development, governance and security are mutually inclusive. As India leans on 'Blue Economy' for sustainable development, its dependence on the sea for economic growth and well-being of its citizens has increased manifold. The dependence on the seas for trade and energy security, offshore wind energy, deep sea mining in the Central Indian Ocean Basin (CIOB), port- led development model SAGARMALA and the vision for the region in the form of SAGAR implies that the maritime domain and especially the coasts are emerging as the new hubs driving economic growth and development. The dependence on the seas and the increasing threats indicate that development and security are closely linked to each other. The need to have safe and secure seas and coasts is therefore imperative and a prerequisite for India's economic growth.

India has been a victim of maritime terrorism in the past. Its long-inundated coastline, vast EEZ and the presence of large number of fishing boats poses a unique set of challenges and threats such as maritime terrorism, drug trafficking, human trafficking, piracy and armed robbery against ships, IUU, etc. The security challenges in the maritime domain get compounded by the fact that the jurisdictions over the maritime zones are quite different from that on the land borders. On land, the 100 per cent sovereignty within the national borders drops immediately to zero on crossing the border. However, at sea there is no such simple calculation. While the whole range of national laws apply within the territorial sea, the right of innocent passage by vessels irrespective of flags, limits the notion of absolute or full sovereignty. Even beyond the territorial waters, the sovereignty does not drop to zero. In the contiguous zone (24 nm from baseline), the coastal state may exercise the control necessary to prevent infringement of its customs, fiscal, immigration or sanitary laws and regulations within its territory or

territorial sea.[175] In the EEZ (200 nm from the baseline), the coastal state has the sovereign rights for exploring and exploiting, conserving and managing the natural resources – both living and non-living.[176] Maritime governance too is a complex subject in a federal structure like India. For example, fisheries in territorial waters is a state subject under the 7th Schedule of the Constitution of India[177] and the marine/coastal police come under the state government. However, maritime security or coastal security essentially remains a central subject.

The evolution of coastal security in India can be traced back to the 1990s. *Operation Tasha*, a Low-Intensity Maritime Operation (LIMO), which commenced in 1990 in the Palk Bay, was possibly the first joint coastal security operation.[178] The Operation involved joint surveillance and patrolling by the surface units and aircraft of the Indian Navy and the Indian Coast Guard. It was also for the first time that a layered concept of patrolling was adopted by the security agencies. While the hired trawlers were utilized for close coast patrol, the ships of Indian Navy and Indian Coast Guard patrolled the IMBL. Air surveillance was also undertaken to sensitize the area. *Operation Tasha* was the first institutionalized coastal security operation which involved multi-layered patrolling and multi-agency coordination.

The next turning point in the evolution of coastal security construct was the 1993 Mumbai blasts. *Operation Swan* was initiated after the blasts.[179] The intelligence inputs had indicated the likelihood of smuggling of arms and explosives along India's west coast. *Operation Swan* was a

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[175] "Part II Territorial Sea and Contiguous Zone" at https://www.un.org/depts/los/convention_agreements/texts/unclos/part2.htm (Accessed on 29 April 2024)

[176] Part V Exclusive Economic Zone at https://www.un.org/depts/los/convention_agreements/texts/unclos/part5.htm (Accessed on 30 April 2024)

[177] Seventh Schedule (Article 246) at https://www.mea.gov.in/Images/pdf1/S7.pdf (Accessed on 01 May 2024)

[178] Himadri Das, *Maritime Perspectives 2022: Coastal Dimensions of Maritime Security*, National Maritime Foundation, New Delhi, 2022, p. 45.

[179] Ibid.

coordinated surveillance operation undertaken from the Gujarat to the Konkan coast by the Indian Navy, Indian Coast Guard, Customs and state police. The joint coastal patrolling was based on the layered concept of patrolling. While the hired fishing trawlers were employed to patrol close to the coast in the shallow waters, the Indian Navy and Indian Coast Guard ships patrolled the outer layers. The state and district administration authorities held the coordination meetings.

The Kargil conflict in 1999 led to the formation of Kargil Review Committee (KRC).[180] The KRC highlighted shortcomings in the management of India's security, including border management. Based on the KRC's recommendations, the Government of India constituted a Group of Ministers (GoM) for a holistic review of the national security apparatus.[181] The GoM set four separate task forces, including one for the border management. The GoM Report 2001 prescribed numerous measures to strengthen national security and border management.[182] The recommendations included the creation of the Department of Border Management, strengthening of security agencies, improving coordination amongst the security agencies and other departments, and the setting up of an apex body for the management of maritime affairs. A significant step to boost coastal security was the approval of the Coastal Security Scheme (CSS) in 2005 by the Cabinet Committee of Security (CCS). Phase I of the CSS involved setting up of Coastal Police Stations (CPS), check-posts, etc. and the procurement of boats, jeeps and motorcycles. Phase I of the CSS was implemented from 2005-06 for an initial period of five years. While Phase I of the CSS was underway, Mumbai was attacked on 26 November 2008. The attack exposed the vulnerability of the Indian coastline. It also meant that existing mechanisms such as intelligence inputs, capacity

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[180] Jayant Prasad, "The Kargil War and India's Security Environment", *Journal of Defence Studies,* 13 (3), July-September 2019, p.11.

[181] Ibid.

[182] Group of Ministers' Report on "Reforming the National Security System", Press Information Bureau, 23 May 2001 at https://archive.pib.gov.in/archive/releases98/lyr2001/rmay2001/23052001/r2305200110.html (Accessed on 05 May 2024)

and capability enhancement of security agencies, coordination between the agencies needed to be enhanced considerably. Phase I of the CSS, was completed in March 2011. After 26/11, it was felt that the measures envisaged in the first phase were not enough and much more needed to be done if the vast and porous coastline of India was to be plugged and incidents like 26/11 are to be averted in the future. The Government of India undertook post- 26/11, a holistic analysis and review of coastal security. The coastal states/Union Territories were directed to undertake vulnerability gap analyses in consultation with the Indian Coast Guard, and Phase II of the CSS was formulated.[183] Considering the dire necessity that much more was required to be done in a urgent manner and with strict timelines, the Government of India implemented the second phase of the CSS the very next month after the completion of phase I. Phase II of the CSS was implemented from 1 April 2011. Phase II of the CSS laid emphasis on building infrastructure such as Coastal Police Stations (CPS), jetties and procurement of assets like boats, vehicles, etc. and was completed in March 2020. The CSS Phases I and II of the CSS were steered by the MHA with a total financial outlay of Rs 2225.91 crores. Implemented in 15 years, the CSS primarily focused on capacity and capability enhancement of the coastal police. In the absence of proper training facilities, the ICG provided for *ab initio* training to personnel of the coastal police from 2006. The training included one week of on-the-job Training (OJT) for imparting practical work experience.

Post 26/11, in the last 16 years, numerous efforts were initiated by the Government of India to strengthen the coastal security construct. Some of the important initiatives included creation of the NCSMCS for apex level monitoring, establishing a Steering Committee for Review of Coastal Security (SCRCS) under the Secretary, Border Management, setting up of four Joint Operations Centres (JOCs) at Mumbai, Visakhapatnam, Kochi and Port Blair (manned by the personnel from

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[183] "Performance Of Coast Guard Organisation", Standing Committee On Defence, (2011-2012), Fifteenth Lok Sabha, Ministry Of Defence, Thirteenth Report, 8 December 2011 at https://eparlib.nic.in/bitstream/123456789/63936/1/15_Defence_13.pdf (Accessed on 09 May 2024)

the Indian Navy and ICG), strengthening of intelligence agencies, implementation of phase I of the Coastal Surveillance Network (CSN), comprising 46 radar stations and Phase II (ongoing), comprising 38 static radar stations, eight Mobile Surveillance Systems (MSSs), and integration of VTMS of the Gulfs of Kutch and Khambat, establishing NAIS chain and National Data Centre (NDC), dedicated transponders for sub 20 metre boats, compliance of LRIT systems from 31 December 2008, establishment of NC3I and IMAC, Gurugram by the Indian Navy, initiation of space-based monitoring and tracking mechanism, issuance of biometric identity cards to fishermen, identification of 1278 Fish Landing Centres (FLCs) by the Central Marine Fisheries Research Institute (CMFRI), formulation of the National Policy on Marine Fisheries for MCS, and Community Interaction Programme (CIP).

On the ground, the maritime agencies, mainly the Indian Navy and the Indian Coast Guard work 24x7, throughout the year. The surface units and aircraft of the Indian Navy and Indian Coast Guard are deployed extensively to sensitize India's maritime zones and to ensure that these and the coastline are free from maritime threats. Exercises such as *Sagar Kavach, Sajag* and *Sea Vigil,* are conducted regularly to fine-tune the Standard Operating Procedures (SOPs) and enhance coordination between all stakeholders and agencies. In order to have better coordination amongst various agencies involved in coastal security, state-wise SOPs have been formulated. The coastal security construct in India is a 'whole of government' approach and involves multiple agencies. Coordination and inter-operability are key for a successful operation. The coastal security exercises are imperative so that the agencies can regularly incorporate the lessons learnt and can perform efficiently together. The ICG has been nominated as the Lead Intelligence Agency (LIA) for the coastal sea borders since 2003; the ICG stations conduct monthly LIA meetings with all stakeholders, for generating, coordinating and sharing intelligence with the concerned agencies.

The present coastal security construct is a multiple agency construct and tiered or layered construct so as to ensure that no suspicious contact goes undetected. The Government of India has recently initiated steps to bolster the existing coastal security construct. A permanent campus of the National Academy of Coastal Policing (NACP) at Dwarka, Gujarat is under construction on more than 450 acres of land. The

NACP, once fully operational, has the capacity to provide training to 3000 personnel in a year. Presently, the total strength of coastal police personnel in the country is around 12000, therefore training to all coastal police personnel involved in coastal security can be provided within four years.[184] The Government of India in 2022, appointed India's first National Maritime Security Coordinator (NMSC). It was a long pending reform, recommended way back in GoM report 2001 on National Security. In response to emerging threats in the Indian Ocean Region (IOR), the GoI approved National Maritime Domain Awareness Centre (NMDAC) project with an estimated expenditure of Rs 250 crore. The NMDAC is envisaged in order to gather, analyse, and provide actionable intelligence to address maritime challenges such as terrorism, piracy, trafficking, and illegal fishing. While the BEL has been entrusted with the responsibilities of providing necessary hardware and software for the establishment and functioning, the NMDAC aims to bring together 15 departments and organizations spanning seven ministries under a single roof so as to enhance India's overall maritime security[185]. In 2022, the Ministry of Home Affairs (MHA) also approved a common communication plan for coastal security in order to achieve better coordination and have seamless exchange of information. The real time communication and exchange of information between agencies and units involved with coastal security – especially those operating at sea is crucial for a successful operation. The plan envisages integrating agencies involved in coastal security in a common communication network with a dedicated spectrum.[186]

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[184] *Vigilant India, Securing Our Shores,* 30 November 2023, 15/16 (1) (Joint Edition) at https://bprd.nic.in/uploads/pdf/20240129061714706 1497VigilantIndiaNov.pdf (Accessed on 13 May 2024)

[185] "India's Maritime Security Initiative: Unveiling the National Maritime Domain Awareness Centre (NMDAC)", *Financial Express*, 6 June 2024 at https://www.financialexpress.com/business/defence/indias-maritime-security-initiative-unveiling-the-national-maritime-domain-awareness-centre-nmdac/3348286/(Accessed on 15 June 2024)

[186] "Centre approves common communication plan for ramping up coastal security", *Business Standard*, November 2022(date?), https://www.business-standard.com/article/current-affairs/centre-approves-common-communication-plan-for-ramping-up-coastal-security-122112000100_1.html (Accessed on 21 May 2024)

A quick 15-point recommendation, which needs to be implemented on priority to further enhance the coastal security, is listed below:

1. Holistic analysis to identify gaps which are required to be plugged-in and plan action accordingly in Phase III of the CSS.

2. Capacity and capability enhancement of Coastal Police: Cadre management and issues related to human resource management must be addressed.

3. Infrastructure development, procurement of sea-going assets and planned maintenance of existing boats of the coastal police: Proper and systematic financial allocation under various heads, for fuel, repairs, etc. by the coastal states/Union Territories.

4. Improve fisheries monitoring, control and surveillance mechanisms and adopt modern technology such as Artificial Intelligence, use of drones, etc.

5. Develop mechanisms and structures to counter underwater and aerial threats.

6. Develop and integrate space-based technologies for coastal security.

7. The deficiencies in the security of minor ports must be alleviated. Basic security requirements such as provisions for walls, barbed wire fences, CCTVs, proper record keeping, regular security rounds, etc. must be stipulated and provided.

8. Imparting proper training to coastal police in seamanship, navigation, fire and damage control, small arms and weapons and survival at sea.

9. Security mechanism for Fish Landing Centres (FLCs).

10. Community awareness and involvement amongst the coastal population through CIPs.

11. Regular conduct of coastal security exercises involving all stakeholders.

12. Conduct of Regional Coastal Security workshops/conclaves.

13. Institutionalize the entry and exit reporting by the Indian Dhows.

14. Empower the Department of Fisheries with manpower, technology, funds, and legal provisions.

15. Regular coordination meetings of all stakeholders.

There is no doubt that the efforts to revamp the coastal security construct post 26/11, have indeed boosted coastal security. The capacity building of security agencies, manpower sanctions, sanctions for assets and infrastructure, use of technology for surveillance, better coordination and monitoring at various levels including at the apex level by NCSMCS, have all ensured that incidents like 26/11 have not occurred in the last 16 years. It reflects that coastal security has been given due importance, financial support and priority at the apex level and by the Government. Much of the credit goes to the security agencies, primarily the Indian Navy and the Indian Coast Guard, whose ships and personnel spend days and night at sea battling through tough conditions at sea even during inclement weather. However, despite all out efforts by all the stakeholders, it would not be apposite to claim that the coastal security construct has become impregnable. The coastal security construct in India is a work-in-progress. Schemes like CSS Phase III must be implemented without any delay. The strengthening of coastal police by providing assets, infrastructure, training and addressing Human Resource issues will strengthen the coastal security mechanism. The budget allocation and manpower sanctions, to the Indian Navy and the Indian Coast Guard, needs to be further scaled-up considering that India is primarily a maritime nation and much of its progress, economic growth and security depends on the seas surrounding it.

The challenges in the maritime domain are ever-evolving; therefore the coastal security construct has to be an ever-evolving construct. Though much has been done, much more needs to be done. Therefore, the need is to keep reinvigorating the coastal security construct and to keep fine-tuning it, to cater for the changing requirements.

This monograph explores the Coastal Security Construct in a holistic manner. India's economic growth and sustainable development is intrinsically linked to seas and oceans around it. It's leaning on Blue Economy is thus natural. In the maritime domain, development, governance and security are mutually inclusive. Thus, India's maritime surveillance and governance capabilities will decide its future economic growth.

In India Coastal Security is an ever-evolving construct. The evolution of this construct can be traced back to 1990s when the coordinated efforts by multiple agencies and layered concept of patrolling was evolving.

The coastline of India continues to be susceptible to emerging maritime threats. The recent initiatives by Government of India, have given the much-needed impetus for strengthening of the Coastal Security Construct. The study examines all aspects of the Coastal Security Construct and presents an insightful analysis into the evolving perspectives.

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