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Journal of Indian Ocean Studies Vol. 33, No. 2 May-Aug 2025

ISSN 0972-3080

Vol. 33, No. 2 May-Aug 2025

Journal of Indian Ocean Studies

Maritime Security in the Bay of Bengal

Prints Publications Pvt Ltd

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Annual Subscription Price:

National (INR) 1500.00 International (US$) 150.00

Online version free with Print Subscription

All remittances must be paid in favor of Prints Publications Pvt Ltd payable at New Delhi.

ELECTRONIC VERSION : This Journal can be accessed at www.printspublications.com

PERIODICITY : This Journal is published three times a year in — **April, August and December**

Published and printed on behalf of Society for Indian Ocean Studies (SIOS)

By Mr. Pranav Gupta, Prints publications Pvt Ltd, New Delhi, India

All business correspondence should be addressed to:

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Journal of Indian Ocean Studies

Vol. 33, No. 2 **May-August, 2025**

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Editorial

Till recently, the Bay of Bengal was regarded as a peaceful and tension-free body of water surrounded by countries which sought good friendly relations. This biggest Bay in the world was far from being a theatre of competitive geopolitics and economic contestation and the security of its maritime space was never a major concern. However, in the last few decades all this has undergone a sea-change and today the Bay of Bengal can no more be looked upon as a placid 'lake' but a zone of rivalry and growing military activity. This certainly does not augur well for the region which lies at the centre of crucial sea lanes of communication (SLOCs) connecting the Indian and Pacific Oceans and inhabits close to 1.80 billion people. The enunciation of the Indo-Pacific adds greater significance to the centrality of Bay of Bengal. Along with the strategic importance of the numerous ports on the littoral of the Bay, the development programmes of the islands, the naval deployments as well as resource exploitation activities of both regional as well as the extra-regional powers the Bay of Bengal presents a picture of a region on the move. Maritime security of this region therefore becomes a common priority concern for all.

Driven by this consideration we decided to devote this issue of our Journal for a broad- ranging discussion on the topic of Maritime Security of Bay of Bengal. The response was very good. We received well-informed and researched papers from former high-level Indian Navy officers, retired Chief of the Sri Lankan Navy, a former Indian Ambassador and senior academics from leading Indian and Sri Lankan universities. The articles examined the growing strategic importance of the Bay of Bengal and also briefly analysed the security and economic perspective of the Andaman and Nicobar Islands, and littoral countries like Sri Lanka, Thailand , Bangladesh and the Indo-Pacific as related to the Bay.

According to Prof Shantesh K.Singh and Prof B.C. Chauhan India's maritime strategy concerning the Bay of Bengal is changing in response to geopolitical rivalries and has forced India to revaluate its maritime defences. The Bay of Bengal, once noted for regional trade and cultural exchanges, has now become a new epicentre for strategic contention. Moreover, there are emerging dangers like climate-induced erosion, as well as illegal fishing, smuggling and complex security challenges. The paper examines how India is

navigating the current environment through enhanced planning, institutional reforms and collaborative security mechanisms.

In his paper 'Strategic Importance of Andaman and Nicobar Islands and Opportunities for India' Vice Admiral (Retd) S.N. Ghormade, former Vice Chief of the Indian Navy has discussed the strategic location of A&N Islands from maritime security, defence and proximity to trade routes point of view. With Malacca Straits less than 350 km away and Southeast Asian nations like Indonesia, Myanmar and Thailand closely located the A&N Islands acquire key significance. The author believes that there is need for sustainable development striking a balance between strategic development and environmental preservation. There is scope to develop the islands as an aviation cum maritime hub as well as an area for resource exploitation. Referring to the Tri-Service Andaman & Nicobar Command(ANC) the author is of the view that ANC enhances cooperation and interoperability with regional navies and has significant potential as a strategic outpost to wider Indian Ocean Region (IOR).

Rear Admiral Jagat Jaisinghe (Retd) , former Chief of Staff of the Sri Lankan Navy in his paper 'From Rivalry to Responsibility: Building Mutual Security in the Indian Ocean and Bay of Bengal Maritime Domain' calls the Bay of Bengal as a theatre of both opportunity and tension. He believes that military strength alone is not enough to address multifaceted threats and there was need to shift from rivalry-driven postures to responsibility-based frameworks. Mutual security, according to him goes beyond deterrence and relies on military cooperation as well as non-military tools. For this, political will, institutional mechanisms and sustained dialogue are essential. He also regards the protection of submarine cables a matter of regional mutual security. Pointing out that no single state can guarantee security of cables he recommends setting up regional joint monitoring and rapid response units for the purpose and also for integrating cable security discussions with maritime security.

Captain Shyam Kumar (Retd) in his article ' Sri Lanka- A Security Provider in Bay of Bengal' states that Sri Lanka and India have common interests in the Bay of Bengal and both are in pressing need for collaboration. India is adding to the maritime capacity of the Sri Lankan navy. According to him Bay of Bengal is not controlled by one entity and is actually a strategic buffer between

eastern IOR and Western Pacific open to extra-regional influences. He finds a shift in Sri Lankan foreign policy with the country giving thrust to exploiting blue economy and natural resources for security of the Bay at regional level. According to the author there are different approaches of BIMSTEC countries to BRI. China remains a development partner to Sri Lanka and other Bay states and these states are unwilling to discuss the threats posed by China. However, the author believes that the Confidence Building Measures (CBMs) provided by India during Sri Lanka's economic crisis have made the latter to realign its strategic goals.

Ambassador Suchitra Durai (Retd) in her paper presents a broad picture of the geostrategic and geoeconomic significance of the Bay of Bengal pointing out that there was rapid militarization of the Bay. India was the 'first responder' and 'net security provider' in the region. The Andaman & Nicobar Command(ANC) was the first line of defence for India on eastern flank. She also lists the Non-traditional security threats faced in the region. They include: IUU fishing; Illicit maritime trade; and Maritime Mixed migration. Giving a perspective on Thailand the author states that the Bay supports 25% of Thailand's population and 30% of its economy. Thailand is following its 'Look West policy' since 1997 and has an active port of Ranong on the Bay of Bengal. Thailand is the founder member of BIMSTEC and Mekong Ganga Cooperation.

Prof Anshu Joshi in her article refers to the challenges the Bay of Bengal faces and writes about the positioning of various nations, with a particular emphasis on Bangladesh. She believes that because of its pivotal location, the Bay of Bengal plays a critical role in maritime trade and energy security in the region and has become a significant geopolitical and geoeconomic hotspot. It also acts as a bridge between South and Southeast Asia, a stage for competition as well as collaboration among China and India. Both these countries are engaged to enhance their presence. Parallel to the Indian Ocean Rim Association (IORA) China set up an IORF(Indian Ocean Region Forum) in 2022. The author states that in maintaining a secure Bay of Bengal collective initiatives of littoral countries such as that of Bangladesh is critical. Current developments in Bangladesh have however severely affected the security and development of the whole region. Also, issues between Bangladesh and Myanmar have impacted the formation of the Bay of Bengal economic community.

In the paper' Securitizing Bay of Bengal-Assessing India's Strategic calculus in Indo-Pacific Maritime Great Game', Prof Urbi Das has discussed the transformative role of India in geopolitical calculations in the Bay of Bengal which is described as an integral part of the Indo-Pacific and a fertile ground for strategic game of the latter. According to the author, China's assertiveness and militarising the region have raised concerns for peace and stability, especially with China's surveillance vessels engaged in monitoring and inspecting the Bay which is a threat to India's security. The U.S strategy in the Indo-Pacific region is said to counter Chinese acts of aggression.

Two Sri Lankan scholars , Thedini Herath and Shayan Peris, in their paper have projected views about Sri Lanka's strategic calculus in the Bay of Bengal region. According to them Sri Lanka's strategic autonomy operates through management of transactional dependencies across India's defence partnerships, China's BRI investments and selective U.S maritime engagement. They further argue that to maintain policy autonomy within an increasingly polarised regional security environment, a three-dimensional strategic framework – security, economic and institutional-to evaluate Sri Lanka's capacity to balance competing great power interests while preserving policy independence can be suggested. The authors also express the view that emphasis on functional cooperation rather than strategic alignment enables smaller states like Sri Lanka to participate through technical expertise and diplomatic engagement.

All in all, it is evident that the Bay of Bengal has undergone in recent times considerable transformation in security dynamics. The challenges faced by India and other littoral countries to maintain peace and stability in the region calls for a closer dialogue and promotion of better understanding amongst them. A number of thoughts and ideas have been expressed in the papers in this issue in this regard which I hope will be of value.

Sudhir T. Devare
Editor-in Chief
30th August, 2025

Journal of Indian Ocean Studies, Vol. 33, No. 2, May–August 2025, 189-204

From Rivalry to Responsibility: Building Mutual Security in the Indian Ocean and the Bay of Bengal Maritime Domain

*Jagath Ranasinghe

Introduction

The Bay of Bengal has emerged as a strategically vital maritime space in the Indo-Pacific, marked by growing geopolitical competition, resource exploitation, and increasing security concerns. This semi-enclosed region bordered by South and Southeast Asian nations is home to busy sea lines of communication (SLOCs), vital trade routes, and untapped energy reserves, making it a theatre of both opportunity and tension.

Traditionally, maritime security in the Bay of Bengal has been viewed through the lens of state-centric military deterrence and balance of power. However, the limitations of this approach are becoming increasingly apparent. Piracy, trafficking, illegal fishing, environmental degradation, and humanitarian crises caused by natural disasters or migration cannot be addressed through military strength alone. These multifaceted threats require cooperative and inclusive security mechanisms.

In this context, there is a growing recognition of the need to shift from rivalry-driven postures to responsibility-based frameworks that emphasise mutual security. Mutual security goes beyond deterrence; it fosters collaboration, transparency, and trust among regional actors. It relies on both military coordination such as joint patrols and information sharing and nonmilitary tools like diplomatic engagement, economic interdependence, environmental protection, and confidence-building measures.

The complexity of maritime challenges in the Bay of Bengal calls for a holistic security architecture that integrates both traditional and non-traditional

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DOI : https://doi.org/10.32381/JIOS.2025.33.02.3

approaches. Political will, institutional mechanisms, and sustained dialogue are essential to ensure that mutual security becomes a guiding principle in regional maritime governance.

This paper explores the concept of mutual security as a pathway to enhance maritime security in the Bay of Bengal. It examines the geopolitical realities, identifies current gaps in cooperation, and proposes a pragmatic approach to building trust and shared responsibility among littoral states. By moving from rivalry to responsibility, the Bay of Bengal can serve as a model for inclusive maritime peace and stability in the broader Indian Ocean Region.

To ground this analysis, the paper adopts a cooperative security framework aligned with Barry Buzan's Regional Security Complex Theory, which explains how proximate states such as those in the Bay of Bengal share interconnected security concerns shaped by geographic and strategic dynamics.[1] This is further supported by constructivist insights, which emphasize the influence of regional norms and historical experiences in shaping inter-state behavior.[2] Drawing inspiration from ASEAN's security community model, this paper advocates for a cooperative maritime order based on transparency, trust-building, and non-aggression.

Military Limitations and Modern Conflict Lessons

Despite rapid advancements in defence technology, recent conflicts have highlighted the limitations of military power as a singular strategy for achieving national objectives. The Israeli Iron Dome missile defence system, once regarded as a highly advanced solution for intercepting aerial threats, has revealed vulnerabilities when subjected to saturation attacks and evolving enemy tactics.[3] These developments suggest that adversaries have not only studied such systems extensively but have also devised ways to penetrate them, thereby reducing their strategic effectiveness.[4]

1 Barry Buzan and Ole Wæver, *Regions and Powers: The Structure of International Security* (Cambridge University Press, 2003).

2 Barry Buzan, Ole Wæver and Jaap de Wilde, *Security: A New Framework for Analysis* (Lynne Rienner Publishers, 1997).

3 'How Israel's Iron Dome Protects Its Cities', *Reuters* (online, 2023).

4 'Hamas Rockets Expose Flaws in Israel's "Iron Dome" Air Defense System', *Defence Security Asia* (online, 2023).

Historical and contemporary conflicts further demonstrate that military dominance alone does not ensure success. During the Vietnam War, the United States, despite superior firepower and technological advantage, failed to achieve its political goals and ultimately withdrew in the face of resilient opposition, declining domestic support, and overestimation of its strategic credibility.[5] In the present day, Russia's invasion of Ukraine offers a similar lesson. Russia expected a swift victory but instead faced profound logistical errors, significant Ukrainian resistance, and sustained NATO-supplied support transforming the war into a costly, attritional struggle.[6]

This pattern was also evident during President Jimmy Carter's administration. In 1980, Operation Eagle Claw, an attempted U.S. military rescue of hostages in Iran, ended in failure due to environmental, logistical, and mechanical challenges. Despite technological superiority, the operation highlighted the fragility of complex military interventions when faced with unpredictable variables.

A broader structural factor behind sustained militarisation is the influence of the military-industrial complex. In his 1961 farewell address, President Dwight D. Eisenhower warned of the growing entanglement between the defense establishment and arms industry, noting the "conjunction of an immense military establishment and a large arms industry" and urging vigilance to prevent it from distorting democratic decision-making.[7] As arms producers benefit from war, their economic logic can operate independently of genuine security needs.

These realities reinforce the need for alternative approaches to national and regional security particularly those grounded in diplomacy, transparency, and cooperative engagement. In maritime regions such as the Bay of Bengal, where overlapping interests and asymmetric threats prevail, the limitations of militarisation underscore the importance of developing mutual security frameworks that integrate both military and non-military tools. Such

5 'What Went Wrong in Vietnam', *The New Yorker*, 26 February 2018.

6 'The Russian Military's 4 Biggest Mistakes in Ukraine', *Time*, 2023.

7 Dwight D Eisenhower, 'Farewell Address' (Speech, 17 January 1961), quoted in UPI, 'Eisenhower cautions against "Military-Industrial Complex" in farewell address', UPI Archives (online); History.com Editors, 'President Eisenhower warns of military-industrial complex', *History.com*, 16 November 2009.

frameworks offer a more resilient and sustainable path toward regional stability.

Reassessing Traditional Military Paradigms

In the evolving global security landscape, the assurance of both- national and international stability- can no longer rest solely on military capabilities. As states increasingly recognise the limitations of militarisation and seek to reduce their dependence on armaments, there is a pressing need to integrate non-military approaches into broader security frameworks.[8] This transition requires careful attention to political, economic, and psychological dimensions, particularly those that foster mutual trust, dialogue, and long-term cooperation among states.

While military parity remains a significant component of deterrence and defence, it is insufficient on its own to address the diverse and interlinked threats that characterise today's security environment. Non-military strategies such as diplomacy, economic collaboration, confidence-building measures, and institutional partnerships must complement traditional security mechanisms.[9] However, achieving security primarily through these non-military means presents a complex challenge. It involves navigating political sensitivities, managing economic interdependence, and deploying psychological tools to strengthen inter-state confidence.

The critical task lies in developing a balanced and inclusive security threshold that accommodates the varying perceptions and needs of individual states, blending military and non-military elements in a coherent strategy. At the same time, this process must be accompanied by a gradual and responsible reduction in armaments, thereby alleviating the financial and strategic burdens of excessive military build-up.[10]

Yet, in the context of the complex maritime domain of the Bay of Bengal, this raises a critical question: is such a shift truly feasible? The maritime environment marked by overlapping claims, strategic mistrust, and transnational threats poses unique challenges to the implementation of

8 *Ibid* above n1.

9 David Brewster, 'Mutual Security in the Indian Ocean: Strategic Interdependence and Maritime Cooperation' (2021) 44(1) *The Washington Quarterly* 7.

10 *Ibid.*

mutual, non-military security arrangements.[11] Moreover, the trajectory of maritime security in this region has wider implications for the evolving global security order. Ultimately, the central issue is how non-military mechanisms can be effectively leveraged to bridge the gaps left by diminishing military parity, ensuring that peace and stability are not only preserved, but actively strengthened.[12]

Bridging the Gap: Non-Military Security as a Stabilising Force

The Indian Ocean and wider Indo-Pacific region are witnessing profound geopolitical shifts, driven by economic resurgence, strategic rivalry, and the dynamic interplay of regional and extra-regional powers.[13] The Bay of Bengal, once marginal in global security calculus, now occupies a pivotal position in maritime trade and geopolitical contestation.[14] This transformation is intensified by competing visions for connectivity between East and West, the rise of China and India as maritime powers, and emerging technologies that reshape trade logistics and port infrastructure.[15] Meanwhile, the increasing presence of external actors, including the US, China, and EU navies, offers both opportunities for security partnerships and risks of great power rivalry.[16] Strategic diplomacy and regional cooperation remain vital to mitigating these tensions.[17] A rules-based international order anchored in dialogue, international law, and multilateralism particularly through UNCLOS and platforms like IORA is essential to maintaining stability and ensuring inclusive development in the region.[18]

11 Rajeswari Pillai Rajagopalan, 'Cybersecurity and Undersea aCables: Security Implications for the Indo-Pacific' (ORF Issue Brief No 440, Observer Research Foundation, 2021) 4.

12 Buzan, et al , *Security: A New Framework* above n2, 205.

13 David Brewster, 'India's Maritime Multilateralism' (2023) 97(2) *Naval War College Review* 45.

14 Rahul Roy-Chaudhury, 'The Bay of Bengal Region: Strategic Stakes and Changing Dynamics' (2022) 13(4) *Maritime Affairs Journal* 112.

15 Rajesh Basrur et al, 'Connectivity Corridors and Strategic Competition in the Indo-Pacific' (2021) 29 *Asia Pacific Bulletin* 3.

16 Jane Chan, 'Expanding Great Power Naval Presence in the Indo-Pacific' (2024) 18 *International Security* 23.

17 Barry Desker, 'Strategic Diplomacy in the Indian Ocean' (2023) 40(3) *Contemporary Southeast Asia* 10.

18 UNCLOS art 87; see also IORA, *IORA Action Plan 2022–2027* (2022).

The mutual security concept must adapt to these evolving dynamics, promoting collective responsibility over unilateral dominance.[19] Simultaneously, persistent threats such as piracy, drug trafficking, and arms smuggling, exploit jurisdictional weaknesses and flag-state loopholes, undermining both economic and environmental security. Illegal, Unreported, and Unregulated (IUU) fishing alone leads to billions in losses annually while damaging marine ecosystems.[20] The principle of *Mare Liberum*, foundational to freedom of the seas, is under stress as states attempt to balance liberty of navigation with the enforcement of security and environmental regulations.[21] Addressing these threats requires robust maritime domain awareness, interoperable enforcement mechanisms, and coordinated response strategies involving both state and non-state actors.[22] In this context, the Indian Ocean has become a laboratory for testing whether great powers can act responsibly to support shared prosperity or whether it will descend into fragmented competition.[23] A balanced blend of cooperation and managed rivalry, embedded within a mutual security framework, will define the region's strategic trajectory and its role in shaping global maritime order.

Submarine Cable Security in the Indian Ocean: A Mutual Security Imperative

Submarine cables, which transmit over 95% of the world's internet and communication traffic, are foundational to the global digital infrastructure.[24] In the Indian Ocean Region (IOR), these undersea networks form the backbone of regional connectivity, facilitating economic development, financial transactions, strategic communication, and human interactions

19 Anit Mukherjee, 'Mutual Security Cooperation in Maritime Asia' (2022) 20(1) *Asian Journal of Security Studies* 7.

20 U R Sumaila et al, 'Welfare Impacts of IUU Fishing on Small Island States' (2020) 8 *Marine Policy* 101.

21 Hugo Grotius, *The Free Sea* (Richard Hakluyt trans, Oxford University Press, 1916) 25

22 Toshi Yoshihara and James Holmes, 'Maritime Domain Awareness in the Indian Ocean' (2021) *Naval Institute Proceedings* 67.

23 David Brewster, 'Indo-Pacific Power Balancing: Cooperation or Competition?' (2023) 29 *Journal of Strategic Studies* 134.

24 Douglas Burnett, Robert Beckman and Tara Davenport, *Submarine Cables: The Handbook of Law and Policy* (Martinus Nijhoff, 2014) 15.

across borders.[25] Their protection, therefore, should not be seen merely as a technical concern but as a matter of regional mutual security.[26]

Their extensive geographic reach heightens the strategic importance of submarine cables in the IOR. These cables link Asia, Africa, the Middle East, and the broader Indo-Pacific.[27] However, their physical vulnerability arising from natural disasters, accidental damage by fishing or shipping activity, and the growing threat of sabotage or cyber intrusion poses a serious risk. Past disruptions have triggered regional outages, demonstrating how a single point of failure can have cascading effects on communication systems, economic stability, and even national security.

In this increasingly contested geopolitical space, submarine cables are more than passive conduits for information they are instruments of power and leverage. Control over cable landing stations and infrastructure can grant strategic advantages in both civilian and military spheres. The involvement of major powers in digital infrastructure projects, such as China's "Digital Silk Road" and the counterbalancing initiatives by the United States and its allies, has raised legitimate concerns regarding surveillance, data sovereignty, and regional autonomy. For smaller states like Sri Lanka, Maldives, and Seychelles, these dynamic underscores the urgency of establishing collective safeguards to avoid being caught in the crossfire of strategic rivalries.

Addressing submarine cable security in this environment demands coordinated regional mechanisms. No single state can unilaterally guarantee the security of cables that span international waters and connect multiple jurisdictions.[28] As such, collaborative measures ranging from joint maritime surveillance, satellite monitoring systems, rapid response protocols, and harmonised legal frameworks must be developed.[29] Regional organizations such as the Indian Ocean Rim Association (IORA) and BIMSTEC are well

25 Martyn Warwick, 'Subsea Cable Sector Continues to Boom', *TelecomTV* (online, 25 November 2022).

26 Rajeswari Pillai Rajagopalan, 'Undersea Cable Security in the Indo-Pacific' (2021) *ORF Issue Brief* No 440.

27 International Cable Protection Committee, *The Protection of Submarine Cables: A Global Responsibility* (2020).

28 Martin Tsamenyi and Ben Saul, 'Legal Frameworks for Subsea Cable Protection' (2022) 23 *Ocean Yearbook* 54.

29 IORA (n 6); BIMSTEC Secretariat, *BIMSTEC Master Plan for Transport Connectivity* (2022).

positioned to facilitate dialogue and establish norms governing the protection and maintenance of this infrastructure.

Beyond strategic concerns, submarine cables underpin human security and societal resilience. They enable telemedicine, remote education, digital trade, diasporic engagement, and cultural exchange. Thus, any disruption affects not just states but individuals and communities. A mutual security approach must therefore include a people-centric perspective that recognises digital connectivity as a public good essential for sustainable regional development.

To embed the submarine cable security within a broader mutual security architecture in the Bay of Bengal and the IOR, this paper recommends: setting up regional joint monitoring and rapid response units; developing transparent access rules to prevent monopolisation by external powers; and integrating cable security discussions into maritime security dialogues. These steps will not only safeguard a vital infrastructure but also enhance trust, stability, and cooperation in a region undergoing profound geopolitical change.

Mutual Security and Maritime Navigation: Addressing Satellite Vulnerabilities

Mutual security in the Indian Ocean and Bay of Bengal regions increasingly depends on the strategic use of satellite and space-based technologies. Countries like India, through institutions such as the Indian Space Research Organization (ISRO), are well positioned to support regional partners by offering capabilities in early warning systems, disaster response coordination, and maritime surveillance.[30] These collaborative initiatives enhance transparency and trust among regional actors, reduce misperceptions during crises, and help create a shared security architecture. Moreover, joint investments in space-based research and infrastructure for renewable energy, agricultural science, and public health strengthen societal resilience, addressing root causes of instability such as food insecurity, environmental stress, and inadequate healthcare systems.[31]

A key vulnerability in regional maritime security stems from over reliance on singular satellite navigation systems. The dominance of the U.S., controlled

30 Satyajit Das, 'Space Technology and Indian Maritime Security' (2022) *Journal of Strategic Studies* 119.

31 Arjun Sengupta and Meera Sinha, 'Space-Based Disaster Resilience in South Asia' (2021) *International Journal of Disaster Risk Reduction* 43.

NAVSTAR GPS highlights this risk. During the Gulf War, the United States altered the signal accuracy of GPS through Selective Availability, leading to significant navigational disruptions and vessel stranding in affected maritime zones.[32] This manipulation served as a wake-up call for many countries, prompting the development of independent and diversified global navigation satellite systems (GNSS) such as Russia's GLONASS, Europe's Galileo, China's BeiDou, and India's IRNSS.[33] To address similar threats, the U.S. also reintroduced LORAN-C in its enhanced form (eLORAN), which provides stronger anti-jamming capabilities and includes a data transmission channel.[34] Nevertheless, celestial navigation, once considered outdated, has also been restored in naval curricula as a redundancy measure.[35]

These technological adaptations have gained urgency as contemporary maritime incidents increasingly involve GPS spoofing and falsified AIS (Automatic Identification System) signals, particularly in geopolitically sensitive areas such as the Persian Gulf.[36] In this context, mutual security frameworks among Indian Ocean littoral states must include coordinated satellite data sharing, regional GNSS resilience planning, and collective protocols for detecting and responding to electronic navigational interference.[37] Integrating secure, multi-source navigational infrastructure into mutual security dialogues ensures not only maritime domain awareness but also safeguards civilian shipping, undersea cables, and humanitarian operations.

Cybersecurity and Mutual Security in the Indian Ocean and Bay of Bengal Regions

The intensifying digitalisation of military, governmental, and civilian networks has repositioned cyber security as a strategic pillar of mutual

32 George Bachmann and Julie McDonald, 'GPS Jamming and Spoofing: Lessons from the Gulf War' (1997) *Journal of Navigation and Positioning* 33.

33 Anantha Nageswaran, 'GNSS Diversification in Asia: GLONASS, Galileo, BeiDou, and IRNSS' (2020) *Asian Space Policy Review* 8.

34 John Drew, 'The Resurgence of LORAN as a Strategic Complement to GNSS' (2018) 22 *Navigation Journal* 17.

35 Kenneth Miller, 'Celestial Navigation in Modern Naval Training' (2019) *Maritime Education Review* 12.

36 Amit Patnaik, 'GPS Spoofing Incidents in the Persian Gulf' (2023) *Naval War College Review* 8.

37 Hang Tran and Oliver Collins, 'Satellite Data Sharing for Maritime Security in the Indo-Pacific' (2021) *Asia-Pacific Security Review* 15.

security, particularly within the Indian Ocean Region (IOR) and the Bay of Bengal.[38] This maritime expanse, increasingly marked by geo-strategic competition and contested infrastructure, is especially vulnerable to complex cyber threats. A purely state-centric or unilateral response to these threats is no longer sufficient; regional states must adopt a cooperative security framework grounded in trust, technological resilience, and shared norms to secure cyberspace and ensure maritime stability.[39]

Cyber threats have evolved significantly beyond traditional data breaches or denial of service attacks. State-sponsored actors and sophisticated cybercriminal networks now target critical infrastructure ranging from energy grids and financial institutions to command and control systems often with geopolitical intent.[40] These operations threaten sovereignty, destabilise regional security architectures, and are further complicated by the difficulty of attribution, which limits effective deterrence.[41] The convergence of cyber warfare with conventional military operations adds an added layer of complexity. Scholars and defense analysts caution that future conflicts may employ integrated campaigns wherein cyber-attacks degrade radar systems, spoof communication data, or disrupt missile early warning networks.[42] This form of hybrid warfare risks miscalculation, as false missile alerts or data manipulation could precipitate premature or disproportionate responses, particularly in nuclear-armed environments.[43]

Emerging technologies such as Artificial Intelligence (AI), unmanned aerial vehicles (UAVs), electronic warfare systems, and nanotechnology further expand the cyber threat surface. These tools are increasingly accessible to non-state actors and smaller powers, which blurs the traditional boundaries of conflict. For instance, drones offer remote strike capabilities that can be integrated with cyber surveillance for precision targeting, while AI-driven

38 Priya Menon, 'Cybersecurity as the New Maritime Frontier in the Indo-Pacific' (2022) *Asian Security Journal* 29.

39 *Ibid.*

40 Meera Joshi and David Riedel, 'Critical Infrastructure Cyber Threats in South Asia' (2021) *Global Security Studies*6.

41 *Ibid*

42 Michael O'Hanlon, 'Cyber and Conventional Integration in Future Warfare' (2020) *Defense Analysis Quarterly* 37.

43 Ian Easton, 'Risk of Cyber-Triggered Nuclear Escalation' (2023) *Journal of Conflict Studies* 55.

decision-making systems remain vulnerable to adversarial manipulation.[44] Similarly, nanotechnology and cyber espionage embedded within telecommunications and military equipment raise concerns of long-term infiltration and persistent surveillance. The integration of these technologies into security architecture demands region-wide cooperation on regulation, research, and responsible deployment.

Another crucial, yet under-examined dimension of cybersecurity in the IOR and Bay of Bengal is the influence of global defense industrial complexes. States within the region often rely on external partnerships for technology acquisition, which may create strategic dependencies.[45] However, when leveraged within a mutual security framework, these relationships can foster capacity building, technology sharing, and resilient cyber infrastructure. Transparency and standardisation in defence tech transfers are essential to prevent asymmetry or the creation of vulnerabilities through embedded foreign systems.[46] To meaningfully address these multidimensional cyber threats, regional mechanisms such as the Bay of Bengal Initiative for Multi Sectoral Technical and Economic Cooperation (BIMSTEC), the Indian Ocean Rim Association (IORA), and the Indian Ocean Naval Symposium (IONS) should be instrumental in crafting a collective security approach.[47] Joint cyber defense exercises, intelligence sharing frameworks, harmonised legal standards, and coordinated rapid response protocols are critical components of this strategy. Furthermore, the establishment of secure digital corridors and indigenous cyber infrastructure, supported by public-private partnerships, will reduce reliance on foreign systems and increase regional autonomy.[48]

As mentioned above, it is clear that cybersecurity is no longer a secondary or isolated security concern. It is a foundational pillar of mutual security within the IOR and Bay of Bengal. The nature of cyber threats, the proliferation of dual-use technologies, and the geopolitical complexity of the region demand a collective, resilient response. Establishing region-wide norms, building

44 Robert Ng and Helen Zhao, 'Drones and Data: The Interface of UAVs and Cyber Surveillance' (2023) *Journal of Technology and Conflict* 21.

45 Rajeev Kumar, 'Defense Tech Transfers and Strategic Dependency in the Bay of Bengal' (2022) *International Defense Review* 10.

46 *Ibid.*

47 BIMSTEC Secretariat, *BIMSTEC Cybersecurity Framework* (2023).

48 Indian Ocean Rim Association, *IORA Strategy on Cyber Resilience* (2022).

trust among littoral states, and investing in joint infrastructure are not merely policy options—they are strategic imperatives necessary to safeguard peace, prosperity, and stability across one of the world's most vital maritime regions.

An effective mutual security framework in the Bay of Bengal and Indian Ocean Region demands not only strategic alignment but also a balanced approach to burden-sharing among member states. Smaller littoral nations often lack the resources to independently safeguard maritime routes, digital infrastructure, or undersea communication systems, leaving regional security uneven and vulnerable. Addressing these asymmetries through collaborative platforms such as the Indian Ocean Rim Association (IORA) and BIMSTEC allows for pooled resources, shared capabilities, and coordinated responses.[49] Mutual investments in satellite surveillance, cybersecurity architecture, and early-warning systems enable regional states to counter transnational threats more effectively while fostering strategic trust.[50] As Mukherjee observes, mutual security must go beyond declarations, evolving into a functional ecosystem where responsibilities are equitably distributed and supported by tangible technical and financial commitments.[51] Such burden-sharing is not only pragmatic, but also vital to achieving operational credibility and long-term resilience in a region increasingly shaped by hybrid threats and strategic rivalries.

Conclusion

While military capabilities retain their relevance, they are no longer sufficient to address the evolving security landscape of the Bay of Bengal and Indian Ocean Region. The future of regional stability rests on integrating military and non-military strategies within a mutual security framework that prioritises cooperation over confrontation. This involves safeguarding critical infrastructure, such as submarine cables and digital networks, not solely as technical tasks, but as strategic imperatives that underpin national development and international connectivity.

In the Bay of Bengal region, mutual security must go beyond conventional military cooperation to include strategic partnerships in science and technology.

49 *Ibid*.

50 Burnett, et al *Submarine Cables: The Handbook of Law.*

51 Mukherjee, 'Mutual Security Cooperation, above n 17 20.

This expanded approach is critical to addressing shared challenges such as climate change, maritime safety, energy dependence, and public health that transcend national borders and require collective solutions.

Cooperation in climate science and environmental monitoring can help mitigate rising sea levels, coastal erosion, and extreme weather events that threaten both populations and infrastructure. Marine and oceanographic research, including data sharing on currents and fisheries, enhances maritime navigation and resource sustainability, reducing tensions over access and control. Mutual security must therefore be anchored in trust building, capacity enhancement, and scientific collaboration. These elements offer viable, non-militarised pathways to resilience, enabling states to respond collectively to emerging threats, particularly in the cyber domain where vulnerabilities are increasingly transboundary and systemic. Regional mechanisms must promote interoperable cybersecurity strategies, joint preparedness, and transparent information exchange to counter complex digital threats effectively.

Yet, mutual security is not merely a structural concept; it is a political commitment. The unresolved questions, who will lead, who will mediate, and whether long-standing grievances will yield to shared priorities, remain central to its success. The real test lies in whether regional actors can move beyond declaratory cooperation to meaningful action. It is only through such collective resolve that the Bay of Bengal and the wider Indian Ocean Region can evolve into a resilient, peaceful, and genuinely cooperative maritime space.

As parity in arms becomes harder to maintain, especially for smaller littoral nations, non-military mechanisms must act as stabilizers. Regional mechanisms like the Indian Ocean Rim Association (IORA) and the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) should focus more directly on maritime peace building, transparency, and cooperative security governance.

In this context, mutual security must extend beyond traditional military cooperation to encompass strategic partnerships in science and technology. Such collaboration is essential to addressing transnational challenges like climate change, maritime safety, energy dependence, and public health, all of which demand collective, cross-border responses.

Regional cooperation in climate science and environmental monitoring can mitigate rising sea levels, coastal erosion, and extreme weather, which directly threaten populations and critical infrastructure. Similarly, marine and oceanographic research including data-sharing on currents and fisheries—enhances maritime navigation, resource sustainability, and helps diffuse tension over access rights.

Moreover, mutual security must be grounded in trust-building, capacity enhancement, and scientific collaboration. These elements offer viable, non-militarised pathways to resilience, especially in the cyber domain, where threats are increasingly systemic and transboundary. Regional security architectures must prioritize interoperable cybersecurity, joint preparedness, and transparent information-sharing to effectively counter emerging digital threats.

As military parity becomes harder to sustain, particularly for smaller littoral states, non-military mechanisms must increasingly serve as stabilizers. Institutions like the Indian Ocean Rim Association (IORA) and the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC), should strengthen their focus on maritime peace building, cooperative governance, and institutional transparency to enable a more resilient, peaceful, and genuinely cooperative Indian Ocean community.

Ultimately, the credibility of mutual security in the Bay of Bengal and wider Indian Ocean Region hinges on the extent to which regional actors are willing to equitably share responsibility. Without burden-sharing, the rhetoric of cooperation risks collapsing under the weight of inequality and strategic mistrust. For mutual security to move from vision to reality, states must invest in collective assets, empower smaller partners, and adopt inclusive mechanisms that reflect shared vulnerabilities and interests. Only through such equitable commitment can the region build a resilient and genuinely cooperative maritime security order, one that deters conflict, safeguards critical infrastructure, and reinforces a sustainable peace.

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