ENSURING SECURE SEAS:
INDIAN MARITIME SECURITY STRATEGY

ISBN: 978-93-81722-22-0

Prepared by the Directorate of Strategy, Concepts and Transformation, Integrated Headquarters, Ministry of Defence (Navy), New Delhi.

Editorial and Production Team
Commodore Sanjay J Singh, NM
Commander Sarabjeet S Parmar
Commander Jasneet S Sachdeva

Designed by FACET Design, New Delhi

ENSURING SECURE SEAS: INDIAN MARITIME SECURITY STRATEGY

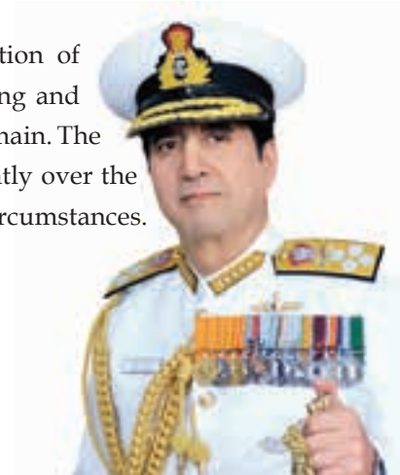
Indian Navy
Naval Strategic Publication (NSP) 1.2
October 2015

Foreword

India's quintessential maritime character and vital geo-strategic location are twin factors that have defined her growth as a nation and evolution as a cosmopolitan civilisation. Her prominent peninsular orientation and flanking island chains overlook strategic sea lanes in the Indian Ocean, linking her security and prosperity inextricably to the seas. With rugged terrain and high mountain ranges dominating her Northern borders, India finds the seas to be the primary means of extending her connectivity and trade links with her neighbourhood and the world at large. Not surprisingly, over 90% by volume and 70% by value of her external trade even today is transacted by sea.

The last decade has witnessed India's dependence on her maritime environment expanding substantially as her economic, military and technological strength grew, her global interactions widened and her national security imperatives and political interests stretched gradually beyond the Indian Ocean Region. There seems little doubt today that the 21st century will be the '*Century of the Seas*' for India and that the seas will remain a key enabler in her global resurgence.

The Indian Navy today remains the principal manifestation of India's maritime power and plays a central role in safeguarding and promoting her security and national interests in the maritime domain. The Navy's roles and responsibilities have also expanded significantly over the years in response to changing geo-economic and geo-strategic circumstances.



These facts and factors were aptly reflected in the *Indian Maritime Doctrine*, promulgated in 2004 and revised in 2009, and the *Freedom to Use the Seas: India's Maritime Military Strategy*, published in 2007. The two publications articulated the Navy's maritime strategic outlook, defined the parameters of its employment, and provided overarching guidance for its evolution as a combat force. They, however, need periodic review to continue reflecting prevailing circumstances and remaining contemporary and relevant. Such an exercise has become necessary today owing to three significant developments of the past decade that affect India's maritime security and the role of her Navy.

The first is the sweeping change that the global and regional geo-strategic environment has seen during the period. The shift in worldview from a *Euro-Atlantic* to an *Indo-Pacific* focus and the repositioning of global economic and military power towards Asia has resulted in significant political, economic and social changes in the Indian Ocean Region and impacted India's maritime environment in tangible ways.

The second is a considerable change that India's security-cum-threat calculus has seen during the period. In addition to persisting threats and challenges of the 'traditional' nature, India's maritime security environment has become even more complex and unpredictable today with the expansion in scale and presence of a variety of 'non-traditional' threats. The '26/11' terrorist attacks in Mumbai in 2008, for instance, demanded a re-evaluation of our security perceptions and devolved to the Navy the responsibility for India's overall maritime security, including coastal and offshore security. This, in turn, called for a reorientation of our organisation, operating philosophy and force development plans.

The third is a national outlook towards the seas and the maritime domain, and a clearer recognition of maritime security being a vital element of national progress and international engagement. Today, India interacts more actively with littoral states of the Indian Ocean Region and employs maritime security engagement as a cornerstone of her regional foreign policy initiatives. There is also wider acknowledgement of the role the Navy can play in strengthening and enhancing maritime security in the region.

These developments have necessitated a revision of the Navy's 2007 strategy and the promulgation of a follow-on edition. Titled *Ensuring Secure Seas: Indian Maritime Security Strategy*, this edition aims to highlight India's contemporary maritime security considerations and reflect the incontrovertible link between secure seas and India's resurgence in the 21st century.

This document covers a wide canvas. It seeks to provide readers in the Indian Navy, Indian Coast Guard, other maritime agencies and Armed Forces, as well as the Government and informed public, an insight into the rationale for strengthening India's maritime security in the coming years. It has been compiled through an iterative and inclusive process, eliciting inputs from the Indian Army, Indian Air Force, Headquarters Integrated Defence Staff, Indian Coast Guard, several defence-related '*think tanks*', and a large number of acknowledged experts in maritime affairs within and outside the Navy.

The document intends to provide strategic guidance for the growth, development and deployment of the Navy in the coming years, and will need review and retuning as circumstances and conditions change and evolve. I am sanguine that it will provide a useful template to guide the professional perspectives of those in the white uniform, as well as those that are associated with, or interested in, strengthening India's maritime security in different ways in the 21st century.

Jai Hind.

(RK Dhowan)
Admiral
Chief of the Naval Staff

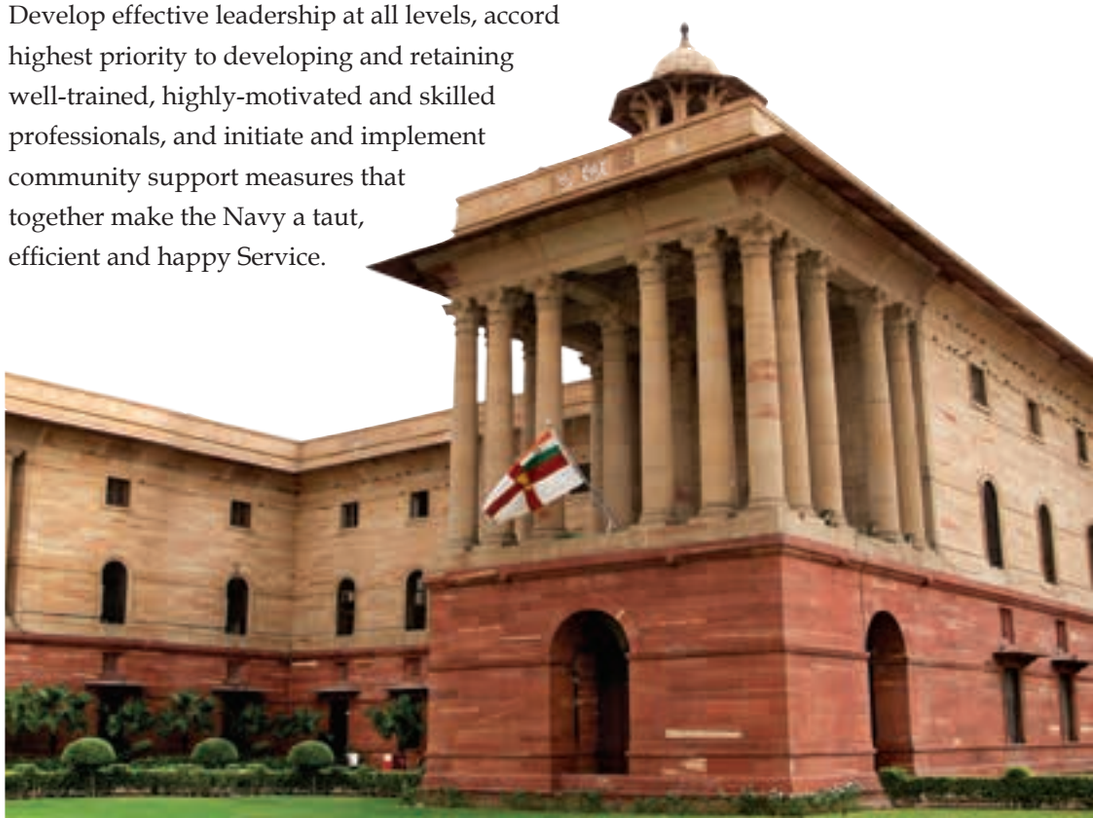
New Delhi
10 October 2015

Course to Steer

The Indian Navy's Vision Statement 2014

To effectively confront the multifarious challenges it faces in the complex maritime environment of the 21st century, the Indian Navy will:-

- Strengthen itself continuously as a formidable, multi-dimensional and networked force that maintains high readiness at all times to protect India's maritime interests, safeguard her seaward frontiers and defeat all maritime threats in our areas of interest.
- Optimise every resource, embrace innovation, and maximise indigenisation and self-reliance, to bridge critical capability gaps and generate credible combat power, to accomplish missions across the full spectrum of naval operations.
- Undertake quality maintenance, timely infrastructure modernisation, and efficient logistics management, to ensure optimum performance and operational safety at all times.
- Develop effective leadership at all levels, accord highest priority to developing and retaining well-trained, highly-motivated and skilled professionals, and initiate and implement community support measures that together make the Navy a taut, efficient and happy Service.



Way Points

The Guiding Principles

Raison d'être

Whereas preventing war and conflict is its primary purpose, the Indian Navy must play a decisive role in bringing them to an early and favourable conclusion, should they be thrust on the nation or become inevitable. All its capability-development measures and operational plans will be guided by this core consideration.

Navy for National Development

Operating with other stakeholders and agencies, the Navy is to ensure and enable maritime security in the sea areas of interest to India, to establish an environment conducive for the unhindered conduct of shipping, fishing and offshore exploration and other maritime interests that contribute vitally to economic growth and national development.

Organisational and Operational Agility

With its external environment remaining unpredictable and the range and scale of its operations changing constantly, the Navy is to adapt to the dynamic and uncertain geo-political landscape and the rapidly-advancing technological environment it operates in. It is to develop and maintain the organisational ability and agility to embrace, manage and absorb change, transformation and innovation.

Full Spectrum Capability

The Navy is to constantly sharpen its capabilities as a multi-dimensional, operationally-effective and balanced force that is capable of countering the full range of maritime challenges, and fulfilling its military, constabulary, diplomatic and benign roles effectively across the entire spectrum of conflict.

Multi-mission and Seamless Operational Capabilities

In synergy with the other Armed Forces, the Navy is to always maintain effective deterrence and warfighting capabilities. This it will do by generating adequate maritime

domain awareness, maintaining the required reach and sustainability, and conducting seamless and effective networked operations across multiple missions in the surface, sub-surface, air, space and cyber-space domains.

Maritime Cooperation

The Navy will effectively engage friendly maritime forces in the Indian Ocean Region and beyond, through port visits, bilateral interactions, training initiatives, operational exercises and technical support arrangements, in order to establish a cooperative framework that promotes mutual understanding and enhances security and stability in the region.

Operational Logistics

The Navy is to constantly review and refine its maintenance philosophy, technical practices and logistics support structures, to ensure that its combat units and formations receive quality maintenance and logistics support, while maintaining a high operational tempo. Through smooth and effective budget-management, it should endeavour to stretch every rupee to the maximum in ensuring that frontline operations are backed robustly by a responsive and efficient operational logistics structure.

Self-Reliance and Indigenisation

The blueprint for the future Navy is firmly anchored on indigenisation and self-reliance. The Navy is to remain steadfast in striving for self-sufficiency across the 'Float', 'Move' and 'Fight' components of all platforms, and provide highest priority to developing, integrating, inducting and managing high-end future technologies indigenously, in partnership with the DRDO, DPSUs, other government agencies and the growing domestic defence-industrial base.

Infrastructure Development and Environmental Consciousness

The Navy is to constantly upgrade, modernise and transform its operational, training, administrative and functional infrastructure, to remain abreast of its expanding force

levels and widening operational canvas, and to cater to all future operational and functional requirements. In doing so, the Navy is to ensure its bases are clean and green and have a zero carbon footprint, espousing the Navy's adopted theme of "Green Footprint to Blue Water Operations".

'Man behind the Machine'

The Navy will need to attract the best of India's youth to join its ranks, provide them efficient and effective training, and a living and working environment that fosters professionalism, motivation, loyalty and innovation. Maintaining the right quality and numbers of personnel, it needs to instill among all ranks and at all levels, a sense of pride, ownership and commitment, and ensure their personal and professional growth through appropriate empowerment, decentralisation and delegation.

Naval Community

The Navy is to strive constantly to improve the quality of life and cohesion of its community, and inspire a sense of belonging and community welfare among its personnel. Concurrent with developing the required competencies amongst its personnel, it needs to ensure their professional and personal satisfaction, assist them in finding a post-retirement second career, and maintain life-long bonds with them thereafter. The welfare and well-being of the veteran community is to remain of high importance to the Service.

Way Ahead

In order to contribute effectively to the nation's geo-political aspirations and developmental goals, the Navy will need to grow and develop rapidly, in an appropriately balanced manner. Considerable distance has been steamed in this endeavour over the past decades, yet there remains a large expanse of water to cross. The vision statement and way points aim to guide that transition. Accomplishing this vision requires all personnel of the Navy, uniformed and otherwise, to "pull together on their oars", with eyes focused firmly on a promising future.

Contents

Foreword i

Vision Statement and Guiding Principles iv

Chapter 1
Maritime Security Strategy in Perspective 2

Chapter 2
Maritime Security Imperatives and Influences 16

Chapter 3
Strategy for Deterrence 46

Chapter 4
Strategy for Conflict 60

Chapter 5
Strategy for Shaping a Favourable and Positive Maritime Environment 78

Chapter 6
Strategy for Coastal and Offshore Security 104

Chapter 7
Strategy for Maritime Force and Capability Development 126

Chapter 8
Epilogue 148

Notes 154

Explanatory Notes 162

Abbreviations 174

Acknowledgements 180

Bibliography 181

Index 183

1

MARITIME SECURITY STRATEGY IN PERSPECTIVE

1

Maritime Security Strategy in Perspective

"...a nation's social and economic well being is intricately linked to the seas, not only for trade but also how it faces threats to its own security that develop across the seas...our resolve to achieve high growth can be realised only if our maritime frontiers and assets are safe, stable and act as enablers. The Indian Navy, as the primary element of India's maritime power, has the challenging task of safeguarding the country's maritime interests."

— Shri Pranab Mukherjee, Hon'ble President of India[1]

As India moves forward in the 21st century, its development and prosperity will remain closely linked to the maritime domain. History bears out the role and contribution of maritime power in the growth and prosperity of great nations. The effective exercise of maritime power and employment of its primary instruments, especially the Navy and Coast Guard, requires an overarching strategy for achieving the maritime strategic goals.

Freedom to use the Seas: India's Maritime Military Strategy, published by the Indian Navy in 2007, met this requirement for India's maritime military power. It emphasised the growing importance of the maritime environment, and the centrality of maritime security for national development. It provided an insight and rationale for the resurgence of Indian maritime power and postulated a strategy underpinned on "freedom to use the seas for our national purposes, under all circumstances", with a central role for the Navy. The strategy brought out the various ways in which the Indian Navy could serve as a catalyst for peace, security and stability in the Indian Ocean Region (IOR).

This strategy has served its role well over the past decade, in providing long term direction and guidance to the Indian Navy in a dynamic environment. The strategy has been revised in order to keep it relevant and contemporary, taking into consideration developments in the geo-strategic environment, and corresponding changes in our maritime strategic imperatives and influences.

Revised Maritime Security and Strategic Perspective

The revised strategy has been titled *Ensuring Secure Seas: Indian Maritime Security Strategy*, in recognition of two key aspects. First, the rise in sources, types and intensity of threats, with some blurring of traditional and non-traditional lines, requires a seamless and holistic approach towards maritime security. Second, in order to provide 'freedom to use the seas' for India's national interests, it is necessary to ensure that the seas remain secure. The expanded outlook, reflected in the title, also takes into account the additional mandate of the Indian Navy, which has been entrusted with the responsibility for overall maritime security, including coastal and offshore security.[2]

Ensuring secure seas for national development

Employing various naval roles and means in an integrated manner

The strategy employs the various roles and means of the Indian Navy in an integrated manner, and also guides the development of new means. It further utilises the potential for increased maritime cooperation and coordination, across multiple agencies in India and with friendly nations. This strategy, while it is centred on the Indian Navy as the prime maritime force of the nation, also provides a broader framework for synergising actions in the maritime domain with the other stakeholders.

The revised strategy follows the previous edition and is based on the principles and concepts of national security and maritime power, enunciated in the *Joint Doctrine Indian Armed Forces* and the *Indian Maritime Doctrine*. It builds upon the Indian Navy's *Vision Statement* and *Guiding Principles*, formulated in 2014, which highlight the strategic 'way points' for the next decade. It reviews the key maritime strategic imperatives and influences, articulates the national maritime interests, and defines the related maritime security objectives. It then derives corresponding strategies for attainment of these objectives.

Key Determinants for Shaping the Maritime Security Strategy

The key determinants for shaping the maritime security strategy cover broader maritime strategic imperatives and more specific maritime security drivers. These are, both, important influences in shaping the overall strategy, and also govern the determination of India's areas of maritime interest.

The maritime strategic imperatives cover India's relations with the seas that also have a security connotation. These include India's unique maritime geography with a central location and reach across the IOR, which is also the hub of global trade and commerce. Another important feature is India's relations with its maritime neighbours and role in the maritime neighbourhood, including the fact that these are based on mutual respect for international law and norms, and desire for cooperative, inclusive development. The key imperative, which underscores the development of this strategy, is India's dependence on the seas for national development, which has increased steadily and significantly. The steady shift in global economic and military power towards Asia has contributed to this imperative.

India's maritime economic activities have continued to expand across a large range, including energy security, seaborne trade, shipping and fishing, with substantial Indian investments and citizens overseas. India has an overwhelming reliance on the seas for its external trade and for sustaining its energy needs. These include crude and liquefied hydrocarbon imports, export of refined products, offshore development, and economic partnerships across the world. India's trade and energy security, development of its deep sea mining areas, and supporting its scientific research stations in Antarctica, are all dependent on its Sea Lines of Communication (SLOCs).

This has lent a pivotal role to the security of India's SLOCs and increased the importance of the sea routes, international shipping and *freedom of navigation* to India's

The key determinants for shaping the maritime security strategy cover broader maritime strategic imperatives and more specific maritime security drivers

India's maritime security drivers have also shown increasing complexity in recent years, covering both traditional and non-traditional threats, with continuing and increased challenges across the regional maritime security environment

national interests. The revised strategy has, therefore, accorded increased focus on the following:-

- The safety and security of seaborne trade and energy routes, especially in the IOR, considering their effect on global economies and India's national interests.
- The importance of maintaining freedom of navigation and strengthening the international legal regime at sea, particularly the United Nations Convention on the Law of the Sea (UNCLOS), for all-round benefit.
- The considerable scope and value in undertaking cooperation and coordination between various navies, to counter common threats at sea.

India's maritime security drivers have also shown increasing complexity in recent years, covering both traditional and non-traditional threats, with continuing and increased challenges across the regional maritime security environment. There has been no reduction in the potential threat from traditional sources, necessitating continued focus on appropriate military preparedness for all contingencies. However, there is potential for simultaneous cooperation even amidst competition, which can be promoted through maritime efforts and is a focus area in the revised strategy.

In the case of non-traditional threats, in particular, there has been a sharp increase in threat-levels, necessitating higher focus and attention. Maritime terrorism has expanded in recent years, and has developed new ways and means. It poses a serious and continuing threat, with potential for asymmetric and hybrid warfare, with possibility of overlapping traditional challenges. The '26/11' terrorist attacks in Mumbai, in 2008, led to change in mandate of the Indian Navy, which was thereupon entrusted with the additional responsibility for overall maritime security, including coastal and offshore security. This necessitated some organisational changes and adapting the existing strategy to address requisite ways and means, especially mechanisms for strengthening

interagency coordination. These have duly evolved, and the revised strategy provides dedicated focus on:-

- Combating the persisting nature of threats emanating at and from the sea.
- Strengthening mechanisms for interagency coordination and cooperation.
- Developing a seamless, cohesive maritime security framework.

Other non-traditional threats have also been rising in recent years. Piracy and armed robbery at sea have flared up in new regions over the past decade, and remain a significant threat to international shipping and seafarers. The constant challenge of unregulated activities, and inherent limitations in Maritime Domain Awareness (MDA) on the seas, hold a possibility of their linking with or enabling other threats. There has also been a higher incidence of natural disasters and regional instabilities over the past decade, necessitating increased deployment of the Indian Navy for Humanitarian Assistance and Disaster Relief (HADR) operations and Non-combatant Evacuation Operations (NEO). The ways and means to address the range of increased non-traditional threats require a revised focus and suitable augmentation of capabilities in some areas, along with further pursuit of a broader, cooperative approach across the region.

Maintaining presence and preparedness for all contingencies

A significant development in this regard has been the growing recognition of India's maritime outlook, capabilities and actions, on the national and international stage. The increased role and involvement of the Indian Navy in strengthening maritime security in the IOR have been in strong evidence over the past decade. Some important features that have been further shaped and incorporated in the revised strategy are:-

- The steady increase in the Indian Navy's operational footprint across India's areas of maritime interest, with a growing cooperative framework and contributions as a 'net security provider' in the maritime neighbourhood, including deployments for anti-piracy, maritime security, NEO and HADR operations.
- An expansion in maritime operational engagements, with increased number and complexity of exercises with foreign navies, coordinated mechanisms for maritime security operations, and enhanced training, technical and hydrographic cooperation with friendly maritime forces.
- Continued development of regional cooperative approaches for enhancing maritime security in the IOR, including growth of the operational interactions termed as 'MILAN', evolution of the Indian Ocean Naval Symposium (IONS), and emergence of maritime security cooperation as a priority area for the Indian Ocean Regional Association (IORA).

Another important aspect is the growth and development of the Indian Navy's force levels and maritime capabilities, with steady focus on indigenisation. While this has been in pursuance of the earlier strategy and perspective plans, its steady progress underscores the ongoing resurgence of India's maritime power. The revised strategy has, accordingly, reflected the substantive enhancement in the Indian Navy's capabilities for exercising deterrence, projecting maritime power, providing maritime security and safeguarding India's maritime interests.

These various determinants and developments have been factored into the articulation of the maritime interests and maritime security objectives, and the revised strategy has been formulated to address these requirements.

The Indian Navy's operational footprint has spread across India's areas of interest, with a growing cooperative framework and contributions as a 'net security provider' in the maritime neighbourhood

There has been a growing recognition of India's maritime outlook, capabilities and actions

National Maritime Interests

India's *maritime interests* that are addressed by the strategy are summarised as follows:-

- Protect India's sovereignty and territorial integrity against threats in the maritime environment.
- Promote safety and security of Indian citizens, shipping, fishing, trade, energy supply, assets and resources in the maritime domain.
- Pursue peace, stability and security in India's maritime zones, maritime neighbourhood and other areas of maritime interest.[3]
- Preserve and project other national interests in the maritime dimension.

India's Maritime Security - Aim and Objectives

India's maritime security aim is to safeguard national maritime interests at all times.

India's maritime security objectives, flowing from the above aim, are:-

- To deter conflict and coercion against India.
- To conduct maritime military operations in a manner that enables early termination of conflict on terms favourable to India.
- To shape a favourable and positive maritime environment, for enhancing net security in India's areas of maritime interest.
- To protect Indian coastal and offshore assets against attacks and threats emanating from or at sea.
- To develop requisite maritime force levels and maintain the capability for meeting India's maritime security requirements.

Ensuring Secure Seas: Indian Maritime Security Strategy

Ensuring Secure Seas envisages a coordinated and cooperative set of actions, in consideration of the spectrum of threats and challenges, and the key determinants and developments. In implementing this strategy, the Indian Navy will operate in concert with the Indian Coast Guard, other armed forces, and the various Union/ State agencies that have a role and responsibility for distinct elements of maritime security.

The maritime security strategy is, in effect, a combination of five constituent strategies for attaining corresponding maritime security objectives. Each strategy employs a combination of various doctrinal roles of the Navy, viz. military, diplomatic, constabulary and benign, with their associated objectives, missions and tasks.[4] The various constituents of the strategy describe the range of coordinated and synergised efforts, to maintain and strengthen India's maritime security.

Strategy for Deterrence. The strategy for deterrence is the foundational strategy for India's defence. Prevention of conflict and coercion against India is the primary purpose

Ensuring Secure Seas envisages a coordinated and cooperative set of actions, in consideration of the spectrum of threats and challenges, in a combination of five constituent strategies

of India's armed forces. The Indian Navy will contribute to national deterrence at nuclear and conventional levels, by strengthening the credibility of its military capability, readiness posture and communication of intent. This strategy shall be progressed through development of appropriate force structures and capabilities, conduct of threat assessment and contingency planning, maintenance of strategic situational awareness and MDA, maintenance of preparedness and presence, and effective strategic communication. The strategy for deterrence is supported and strengthened by the other strategies and will, in turn, reinforce them.

Strategy for Conflict. This strategy describes the broad manner of employment of India's maritime forces during conflict. The strategy is based on the principles of war, with application of force and focus on strategic effect as additional operational principles. It employs MDA, networked operations, preparedness, jointness and coordination, and operational tempo, as the main operational enablers. The strategy is centered on various operational actions, which include maritime manoeuvre, maritime strike, sea control, sea denial, SLOC interdiction, SLOC protection, coastal and offshore defence, information warfare, and escalation management. These will be undertaken as per the operational plan and situation, in coordination with the other armed forces and national agencies.

Strategy for Shaping a Favourable and Positive Maritime Environment. This strategy describes the ways in which the Indian Navy will contribute to shaping a favourable and positive maritime environment, to enhance net security therein. The strategy covers the wide range of activities undertaken by the Navy in peace time, across all doctrinal roles. These aim to promote security and stability at sea, and enhance cooperation, mutual understanding and interoperability with maritime forces of friendly nations. These include naval deployments for exercising presence in our areas of interest, engagement with maritime forces of friendly nations in a number of ways and at multiple levels, maritime capacity building and capability enhancement through cooperation in training, technical areas and hydrography, cooperative efforts for development of regional MDA, and conduct of maritime security operations, both independently and in coordination with other maritime forces in the region.

Strategy for Coastal and Offshore Security. This strategy describes the ways by which the cooperative framework and coordinative mechanisms for coastal and offshore security will be strengthened and developed, against threat of sub-conventional armed attack and infiltration from the sea. It articulates the coastal and offshore security framework, measures

Indian Navy - A combat ready, technology driven, network enabled force, capable of meeting India's maritime security needs into the future

Ensuring Secure Seas has endeavoured to be informative, explanatory and definitive, so as to provide clarity on 'what' and 'how' the Indian Navy will undertake to ensure India's maritime security

for development of coastal MDA and coastal community participation, mechanisms for coordinating interagency presence, patrol and operational response, cooperative capability development, and focus areas for supporting maritime governance.

Strategy for Maritime Force and Capability Development. This strategy describes the ways to develop and maintain a combat ready, technology driven, network enabled navy, capable of meeting India's maritime security needs into the future. The capability development covers conceptual, human resource and force level aspects. The major thrust areas for force development have been defined, with focus on indigenisation, MDA, Network Centric Operations (NCO), force projection and protection, maintenance and logistics, and new technologies.

Ensuring Secure Seas has endeavoured to be informative, explanatory and definitive, so as to provide clarity on ***'what'*** and ***'how'*** the Indian Navy will undertake to ensure India's maritime security, in concert with the other armed forces and maritime agencies. While it is aimed at providing insight and guidance primarily to the Indian Navy, it also provides a framework for strengthening jointness and cooperation with the other maritime stakeholders and security agencies. The strategy would further serve to enhance understanding of maritime security issues and approach towards the same amongst both, key stakeholders and the general public.

The maritime security strategy has considered a variety of factors, such as the geo-economic and geo-strategic environment, changes in type and nature of threats and challenges, availability of own forces, capabilities and resources, assessments of intensity, duration, type and tempo of possible conflicts, and the overall political direction. The strategy and its constituents cater for all these factors and a dynamic environment, in which India's relations with the seas have been steadily growing. As India moves further ahead in the 21st century, its employment of maritime power for safeguarding national interests and meeting national aspirations would also increase. *Ensuring Secure Seas: Indian Maritime Security Strategy* will shape and guide this employment, over the next decade.

2

MARITIME SECURITY IMPERATIVES AND INFLUENCES

2

Maritime Security Imperatives and Influences

India's Maritime Outlook

Although land has been the primary and natural habitat of mankind, and is central to political, economic, military and social activities, the oceans have directly and indirectly influenced events on land. Over the past two centuries, in particular, technological and maritime developments have significantly altered the role and influence of the maritime environment. From a medium of transportation for trade, economy and the projection of power onto land, the oceans have become the primary conduits of international trade and are central to the global economy. The oceans and seabed are increasingly looked upon today as resource providers and critical contributors to national growth and prosperity. Maritime power is an important component of national power and is a key enabler for national growth and development. These aspects have prompted a steady, global shift of attention from land to the seas and an expanding maritime outlook, including for India.

The maritime outlook of a nation is shaped by the growth of population, industry, infrastructure and politico-economic power along the coast, and the ensuing dependence on the seas for national growth and prosperity. It is a central determinant of a nation's maritime interests and strategy. The key drivers of India's maritime outlook are its unique and advantageous geography, the need for sustained economic growth, a dynamic geo-strategic environment, the need to ensure safety and security of its SLOCs, and the security of Indian investments and other interests overseas, including Indian diaspora.

Maritime Geography

"The vital feature which differentiates the Indian Ocean from the Atlantic or the Pacific is the sub-continent of India, which juts out far into the sea for a thousand miles. It is the geographical position of India that changes the character of the Indian Ocean..."

— KM Panikkar[5]

Geography is a vital aspect, which can aid but also complicate maritime security, depending on the nation's geographic characteristics and the prevailing geo-strategic environment. India has a vast coastline extending to more than 7,500 km, with more than 1,200 islands, and a large Exclusive Economic Zone (EEZ) of about two million sq. km.[6] The anticipated addition of approximately 1.2 million sq. km of continental shelf would make India's total seabed area almost equal to the land mass.[7]

The Indian Ocean, through which much of the world's shipping transits, is distinguished by a land rim on three sides, with maritime access to the region possible only through certain 'choke points' leading to and from the Arabian Sea and the Bay of Bengal, and from the southern Indian Ocean. India flanks the first two regions and has a central position overseeing the third. Its peninsular feature provides a natural reach across wide sea spaces in all directions, extended by the islands in the Andaman & Nicobar and Lakshadweep Island groups.

India's central position in the IOR, astride the main International Shipping Lanes (ISLs), accords distinct advantages. It places the outer fringes of the IOR and most choke points almost equidistant from India, thereby facilitating reach, sustenance and mobility of its maritime forces across the region. India is, therefore, well positioned to influence the maritime space, and promote and safeguard its national maritime interests, across the IOR. At the same time, India's vast coastline and maritime zones require significant resources and investments to ensure their security.

Maritime power is an important component of national power and is a key enabler for national growth and development. These aspects have prompted a steady, global shift of attention from land to the seas and an increasing maritime outlook, including for India

Map 2.1: Important Choke Points and ISLs

Suez Canal

Strait of Hormuz

Persian Gulf

INDIA

Bab-el-Mandeb

Malacca and Singapore Straits

South China Sea

Ombai and Wetar Straits

Sunda Strait

Lombok Strait

Mozambique Channel

Cape of Good Hope

North Arabian Sea. Persian Gulf and Gulf of Oman to West Coast of India.

Central Arabian Sea. Red Sea/ Gulf of Aden and East Coast of Africa to West Coast of India.

South-West Indian Ocean. Cape of Good Hope and IOR Island States (Mauritius, Seychelles and Maldives) to India.

Bay of Bengal. East Coast of India to Arabian Sea, Bay of Bengal Eastern Rim, Andaman & Nicobar Islands and Malacca Strait.

South-East Indian Ocean. India to South-East Indian Ocean, including Indonesia and Australia.

Indo-Pacific. Indian Ocean to Pacific Ocean, through the various Indo-Pacific Straits and South/ East China and Philippines Seas.

Table 2.1: Choke Points in IOR

Cape of Good Hope

The Cape of Good Hope is not a conventional choke point, since adequate space and depth of water lies to its South and the passage of ships is not restricted by land. However, economic considerations and strong currents encourage ships to route closer to the coast. Ships that cannot pass through the Suez Canal follow this route. There was substantial increase in traffic in this area when the Suez Canal was shut down from 1967 – 1975.

Mozambique Channel

The Mozambique Channel is approximately 1,000 nautical miles (nm) long and 250 nm wide at its narrowest point. The usage of this channel reduced after the Suez Canal opened in 1869. However, with estimations of Mozambique holding over 100 trillion cubic feet of recoverable natural gas (one of the largest gas finds in the world) and huge coal reserves, the channel may regain prominence as an important sea route and choke point.

Bab-el-Mandeb

Bab-el-Mandeb is a 17 nm wide stretch of water that connects the Gulf of Aden with the Red Sea and, thence, the Suez Canal. Closure of the Bab-el-Mandeb, for any reason, would cut-off the Red Sea littoral from the Arabian Sea and Asia, and also prevent access to the Suez Canal. This would necessitate significant increase in shipping and tanker capacities, via other ISLs and choke points, to maintain the rate of oil and trade flow.

Suez Canal

The 105 nm long Suez Canal is the maritime gateway between Europe and Asia. Closure of the Suez Canal, for any reason, would cause traffic to be diverted around the Cape of Good Hope, thereby increasing the transit time and transportation costs. To illustrate, the distance between Mumbai to London is 6,200 nm via the Suez Canal, and 10,800 nm via the Cape of Good Hope.

Strait of Hormuz

The Strait of Hormuz, connecting the Persian Gulf to the Gulf of Oman and Arabian Sea, has a width of about 30 nm and primary navigable channel across a six nm wide zone. It has no maritime detour, rendering it as a critical choke point. About 17 million barrels of oil pass through this Strait each day, representing 35% of the world's oil trade by sea. Any closure of this strait would severely affect energy security of many nations, including India.

Malacca & Singapore Straits

The Straits of Malacca and Singapore link the Indian Ocean to the South China Sea and Pacific Ocean. Providing the shortest sea route from the Persian Gulf to East Asia/ West Pacific regions, it is a strategic choke point in the IOR. A dense shipping zone, more than 70,000 ships transit it each year. The narrowest point amongst the two straits is the 1.5 nm wide navigable stretch of the Phillip Channel in the Singapore Strait.

Sunda Strait

An alternative route to the Malacca and Singapore Straits is the Sunda Strait, which is 50 nm long and 15 nm wide at its North-East entrance. Large ships do not prefer passage through this strait due to navigational hazards, depth restrictions and strong currents.

Lombok Strait

At a minimum channel width of 11.5 nm, the Lombok Strait has sufficient width and depth, with lesser congestion, and provides an alternative passage between the Indian and the Pacific Oceans, especially for larger ships.

Ombai & Wetar Straits

The Ombai Strait lies between the islands of Alor and Timor, and the Wetar Strait lies between the islands of Timor and Wetar. Due to longer distance, routeing through this area is not normally preferred as an alternative to the Malacca and Singapore Straits. The route provides adequate depth for submarines to transit submerged between the Indian and Pacific Oceans.

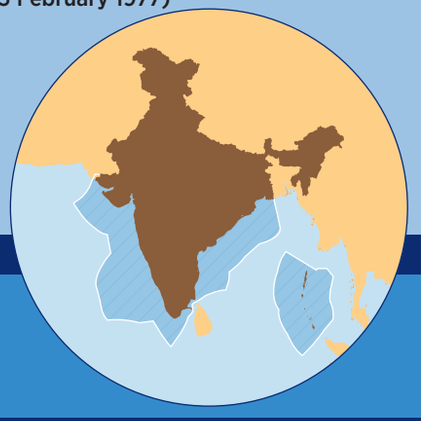
Maritime Neighbours

India's relations with most maritime neighbours have been friendly. India shares maritime boundaries with seven countries and has settled the boundaries with all, except Pakistan, in accordance with international laws and norms. Most of the settlements, in fact, predate UNCLOS. India has duly promulgated its baselines and submitted its claim for extension of the continental shelf, in accordance with the UNCLOS, in May 2009. India has also welcomed the judgement of the Arbitration Tribunal settling the maritime boundary with Bangladesh in 2014, considering it to be of overall mutual benefit.

Resolution of jurisdiction promotes peace, by reduction in the scope for disputes, and facilitates maritime governance, investments in maritime economic activities, legitimate use of the seas, and cooperation for maritime security. Strengthening relations with maritime neighbours requires mutual respect for the common principles of international law and the tenets of *Panchsheel*.[8] These principles and tenets have been consistently supported by India, including in the maritime domain.

Table 2.2 - Settlement of India's Maritime Boundaries

Delimitation of Continental Shelf	
Indonesia	17 December 1974 (Extension 15 August 1997)
Thailand	15 December 1978
Bilateral Boundary Agreements	
Sri Lanka	10 May 1976 (Extension 05 February 1977)
Maldives	08 June 1978
Myanmar	14 September 1987
Thailand	17 January 1996
Bangladesh	07 July 2014 (judgement date of the Arbitration Tribunal)
Trilateral Agreements	
Sri Lanka, Maldives	31 July 1976
Indonesia, Thailand	02 March 1979
Thailand, Myanmar	24 May 1995
Historic Waters	
Sri Lanka	08 July 1974



Good maritime relations are reflected by interactions like Indo-Thai Coordinated Patrol in the Andaman Sea

Maritime Relations

India's maritime neighbours are not only those sharing common boundaries of our maritime zones – but also nations with whom we share the common maritime space of the high seas. Accordingly, India has a vast maritime neighbourhood, which extends across the IOR. Maritime relations with the nations in our wider neighbourhood and beyond are an important facet of our broader politico-economic relations, in which the Indian Navy also plays an important role.

This was reflected in the "Look East" policy, wherein the Indian Navy was a key instrument in India's diplomatic outreach to countries in East and South-East Asia, particularly ASEAN members. The "Look East" policy has now been transformed into the "Act East" policy, to expand India's engagement and relations to its East, across the Indo-Pacific, with emphasis on economic and security cooperation. India has also launched Project *Mausam* in 2014, to renew the cultural links and contact among countries in the IOR.[9] It has further projected the vision of SAGAR – 'Security And Growth for All in the Region', in 2015, as part of India's endeavours to strengthen economic relations and development in the IOR, in a mutually supportive and cooperative manner.[10]

The Indian Navy will remain prepared for contributing to, and continue to play an important role in, national efforts towards enhancing India's relations and engagement with friendly countries, and strengthening the international legal regime for all-round benefit

International law and norms provide a proven template for conduct of maritime relations and resolution of maritime issues between nations, which include handling divergence and enabling maritime security cooperation. Respect for international law and promotion of its principles at sea would, therefore, continue to be accorded due attention by the Indian Navy. However, it is recognised that there have been instances where some states have not respected the established international legal regime or even their own commitments, and others where non-state actors have been able or enabled to operate outside state jurisdictions. In such cases, the risks of maritime instability and insecurity could suddenly rise, and will need to be catered for in our security matrix.

The Indian Navy will remain prepared for contributing to, and continue to play an important role in, national efforts towards enhancing India's relations and engagement with friendly countries, and strengthening the international legal regime at sea, for all-round benefit.

Maritime Economy

Maritime economy covers the range of economic activities related to the maritime domain, including for ports, coastal infrastructure, shipping, fishing, seaborne trade, offshore energy assets, undersea pipelines and cables, and seabed resources. These have been growing in importance and value for India. Maintenance of a secure maritime environment, which enables unhindered pursuit of these economic activities, is an essential purpose of the maritime security strategy.

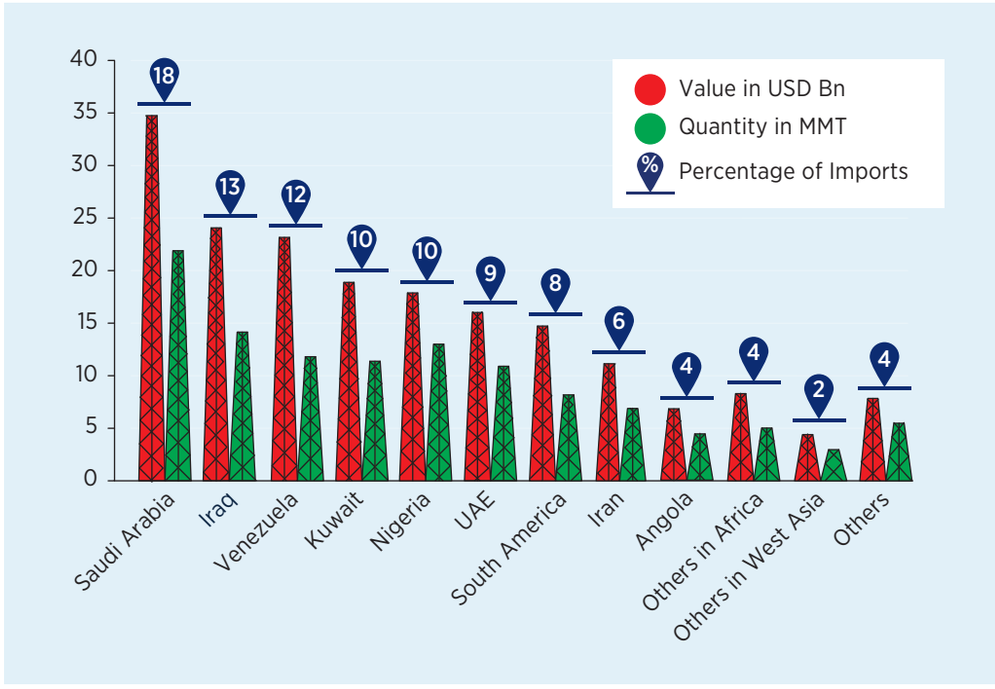
India's energy security has a vital role in national development, and is highly dependent on the seas. Nearly 80% of the country's crude oil requirement is imported by sea, using the ISLs across the Indian Ocean. Another 11% of national crude oil requirement is met from offshore energy sources within the Indian EEZ. Offshore gas fields also contribute to 80% of India's domestic natural gas production. In addition, India has

built up substantial refining capacity and exports refined petroleum products to many other countries by sea. The products of the petroleum industry account for about 15% of our Gross Domestic Product (GDP).[11] Taking into account the total oil imports by sea, offshore oil production and petroleum exports, the country's cumulative 'sea dependence' for oil is estimated to be about 93%.

India has sovereign rights for exploitation of living and non-living resources in its EEZ, which essentially comprise the offshore energy sector and fisheries sector at present. India has been promoting exploration and production of hydrocarbon energy in its EEZ under the New Exploration Licensing Policy (NELP), which has seen expanded investments in recent years.

Merchandise trade constitutes 42% of India's GDP, and can be expected to increase in the future.[12] More than 90% of India's international trade by volume and over 70% by value is carried over the seas.[13] The total size of the Indian shipping industry has been growing over the years, even as the relative share of Indian flagged shipping in the

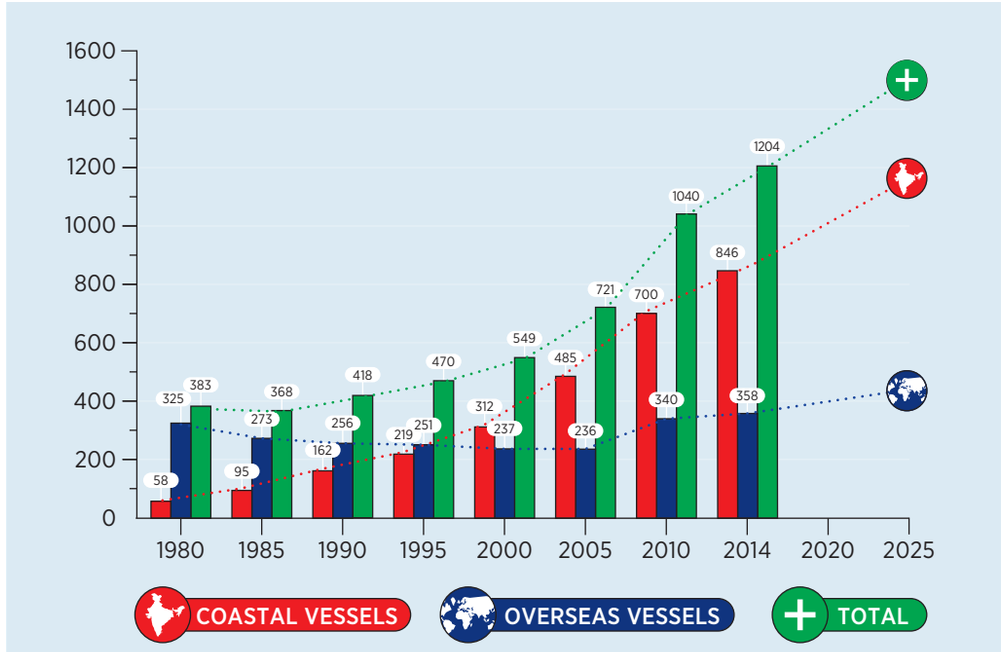
Diagram 2.1: Crude Oil Imports by India, 2014–2015



Data Source: *Ministry of Commerce/Government of India (GoI), Export Import Data Bank. www.commerce.nic.in/eidb/*

country's external trade has declined, from about 40% in the 1980s to approximately 8.5% by 2014. This is largely because the growth of our seaborne trade, post economic liberalisation, has been relatively higher and faster than the growth of our shipping industry. While the Indian shipping industry is set to grow, the pace and needs of national development indicate that our dependence on foreign shipping would continue over the coming years. There is also a significant presence of Indian nationals in the international seafaring community, operating on both Indian and foreign ships, with approximately 6.6% of the world's merchant mariners being Indian.[14] The overall safety and security of Indian seaborne trade and seafarers, on both Indian and foreign ships, require that international shipping and sea routes remain safe, secure and free for navigation and legitimate uses.

Diagram 2.2: Growth of Indian Shipping

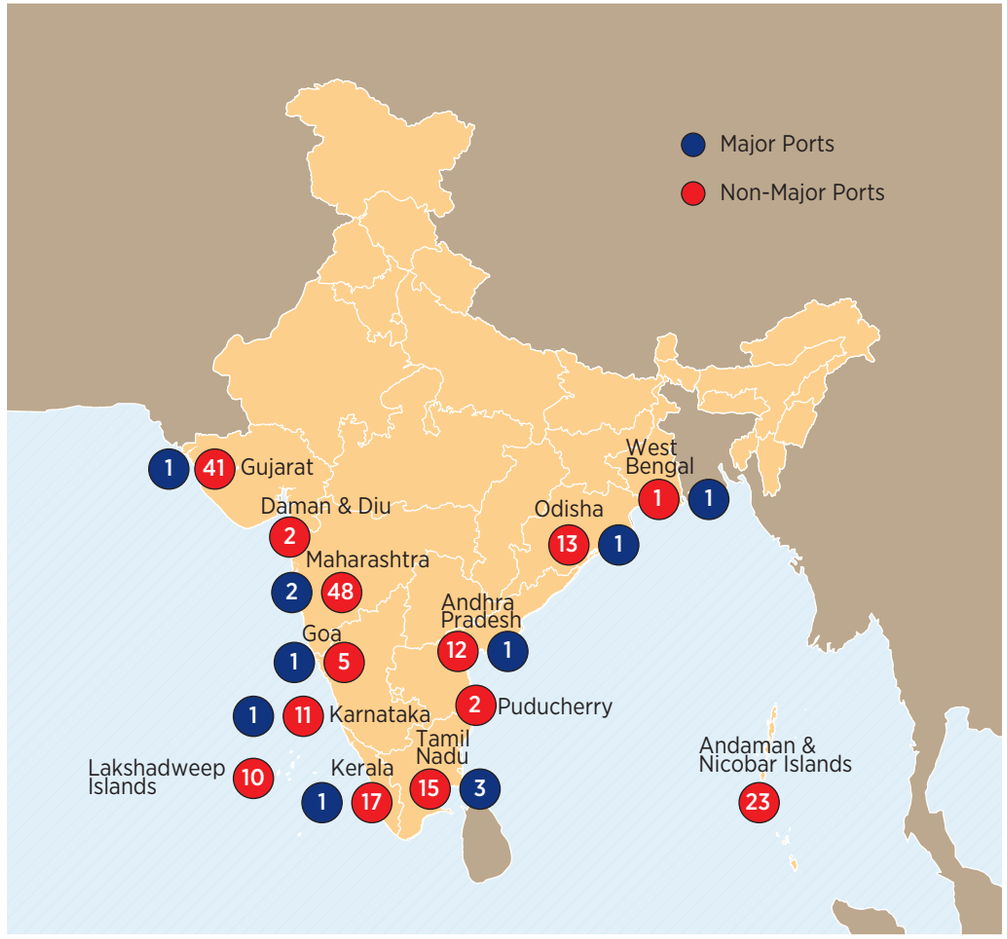


As on 01 January 2013, India was ranked 17th in the world in terms of Dead Weight Tonnage (DWT) with a global share of only one percent.

As on 31 December 2014, India had a fleet strength of 1,204 ships with Gross Registered Tonnage (GRT) of 10.31 million. Of this, 358 ships with 9.09 million GRT were deployed for overseas trade and 846 ships with 1.22 million GRT for coastal trade.

Source: *MoS/GoI Annual Report 2014 – 2015 and Ministry of Road Transport and Highways Transport Research Wing/GoI Indian Shipping Statistics 2014 (data extrapolated to 2025).*

Map 2.2: Major and Non-Major Ports in India



Source: *Basic Port Statistics of India, 2013 – 2014, Ministry of Road Transport and Highways, Transport Research Wing/GoI, March 2015*

India has 12 major and 200 non-major ports, spread along its East and West coasts, as also its islands.[15] Ports play a vital role in the overall economic development of the country, as they provide the trade hubs where sea and land trade routes meet and the cargo moves from one medium into the other. These are both the destination and the source of the maritime leg of global supply chains. The cargo handling capacity of the ports, the infrastructure in these ports and cities, and the development of support services therein have a direct link to the economy. These are presently being developed under India's *Sagarmala* project, which is estimated to boost the nation's GDP growth by 2%.[16]

India is the second largest producer of fish in the world, accounting for 5.68% of the world's fish production.[17] There are about 2,45,000 fishing vessels in India and the annual marine fish landings amount to about four million metric tonnes. India's fisheries sector contributes about one percent of the national GDP and 4.6% of the agricultural GDP.[18] It is estimated that the fishing communities along the coast comprise over 8,60,000 families and number about four million, with livelihood from fishing extending to approximately 14.5 million people.[19]

Sea Lines of Communication

The importance of SLOCs to a nation may vary, as per its geography and dependence on specific routes, both for transportation of essential commodities and for conduct of maritime operations. There has been increased movement of trade and goods by sea in recent decades, along with increased dependence on energy imports for sustaining developmental goals. The higher density of shipping, traversing through relatively narrow areas of maritime space, has focused most nations' dependence on their SLOCs, including India. Consequently, safety and security of SLOCs has become a key national interest. During peace, the SLOCs would generally coincide with the ISLs. Hence, the safety, security and freedom of navigation along ISLs assume high international importance.

In the case of India, there has been increasing dependence on sea routes for import and export of essential cargo, including crude and refined energy products, trade and other commodities, and for support to Indian interests overseas. India's interests and linkages have also expanded over the years, from the Arabian Sea and the Bay of Bengal, to the IOR, thence across the Indo-Pacific Region, and now also into the Atlantic Ocean. The ISLs to these areas have, accordingly, grown in importance for India, with sea routes through the Arabian Sea, Bay of Bengal, South-East and South-West Indian Ocean, and the Indo-Pacific region contributing to India's SLOCs.

The importance of SLOCs to a nation may vary, as per its geography and dependence on specific routes, both for transportation of essential commodities and for conduct of maritime operations

Safety, security and freedom of navigation along ISLs is of high international importance

There are several potential threats and challenges to India's SLOCs from both traditional and non-traditional sources, which can impact our national interests. The security of these SLOCs would require that the main ISLs, through India's areas of maritime interest, remain safe, secure and free for movement of shipping, as prescribed by international law. This emphasises the importance of maritime cooperation and universal respect for international law, promotion of which would, therefore, be in India's interests. At the same time, India will also need to undertake measures for maintaining security and unhindered movement of shipping in its maritime zones and adjacent waters, and across its areas of maritime interest. In times of heightened readiness or conflict, for conduct of maritime operations, SLOCs would acquire increased importance, both for India and the adversary, necessitating measures for protection and interdiction respectively.

Overseas Maritime Investments

There has been a growth in India's overseas economic and trade relations. These are reflected in India's investments in and from other maritime nations, which are likely to expand in the coming years. These span various sectors, including energy, infrastructure, industry, manufacturing and services.

India has also invested in overseas scientific research stations. India has two stations in Antarctica: *Maitri* set up in 1989, and *Bharati* commissioned in 2012. These are valuable sources of information and research into the climate and weather patterns, on which the Indian monsoons and, consequently, a substantial portion of the nation's economy depend. India has commissioned its first Arctic research station, *Himadri*, in 2008, which also conducts research in various fields with emphasis on climate change.

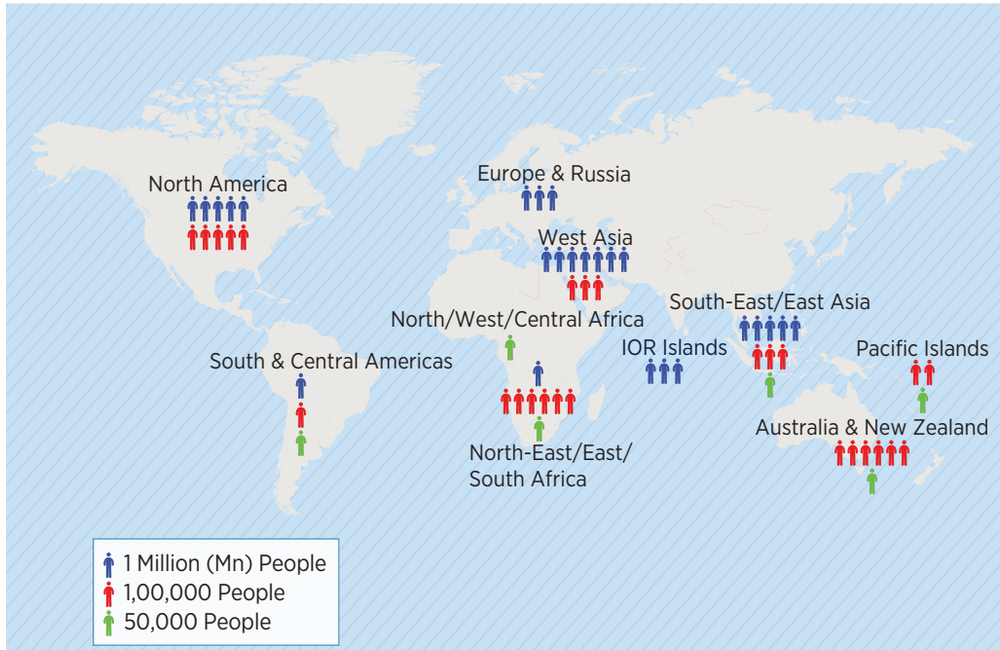
The Indian Ocean is a potential source of various minerals, including rare earth metals important for Indian industries, which can be obtained from the ocean floor and sub-soil. India has made significant strides towards harnessing deep sea resources, with the International Seabed Authority (ISA) according it pioneer status and current allocation of 75,000 sq. km of the seabed in the Central Indian Ocean Basin (CIOB). Investments in survey, exploration and technology development, to extract and exploit deep sea resources, are being progressed under India's polymetallic nodules programme.[20] A case for allocation of further 10,000 sq. km is in progress, for exploration of polymetallic sulphides.

Overseas Indians

The safety and security of Indian citizens in other countries is also an important consideration. India has the second-largest diaspora in the world, of nearly 28.5 million spread across 206 nations/ territories.[21] These include nearly 11.5 million Non-Resident Indians (NRIs) who are Indian citizens, and another 17 million Persons of Indian Origin (PIOs) who have maintained close links with India. Significantly, 94% of the NRIs and 99.7% of the PIOs reside in coastal states, adding to our maritime links and overseas interests. The large numbers and spread of Indian citizens, many in regions that have been afflicted with instabilities, add to our maritime challenges. In recent years, the Indian Navy has been deployed for several NEO in crisis-affected areas, both in precautionary support and for actual evacuation of Indian nationals and those of friendly countries, and for HADR operations.

As India's interactions across the world and the effects of globalisation increase, the areas of interest would correspondingly evolve

Map 2.3 – Indian Diaspora (NRIs & PIOs)



Region	NRIs	PIOs	Region	NRIs	PIOs
West Asia	7.26 Mn	17,000	North-East/ East/ South Africa	82,000	1.59 Mn
North America	1.45 Mn	4.01 Mn	North/ West/ Central Africa	61,000	700
South-East/ East Asia	0.73 Mn	4.62 Mn	IOR Islands	55,000	2.88 Mn
Europe & Russia	0.72 Mn	2.08 Mn	South & Central Americas	17,000	1.14 Mn
Australia & New Zealand	0.29 Mn	0.34 Mn	Pacific Islands	9,000	0.25 Mn

Data Source: *Ministry of Overseas Indian Affairs (moia.gov.in/index.aspx)*

Areas of Maritime Interest

India's areas of maritime interest are defined in consideration of the factors described above. Based on their relative degree of impact on India's maritime interests, the areas have been categorised as *primary* and *secondary* areas of interest. As India's interactions across the world and the effects of globalisation increase, the areas of interest would correspondingly evolve.

Primary Areas

India's primary areas of maritime interest include the following:-

- India's coastal areas and maritime zones, including coastline, islands, internal sea waters, territorial waters, contiguous zone, EEZ and continental shelf.
- The Arabian Sea, Bay of Bengal, Andaman Sea, and their littoral regions.
- The Persian Gulf and its littoral, which is the source of majority of our oil supplies and gas imports, and is home to more than seven million expatriate Indians.
- The Gulf of Oman, Gulf of Aden, Red Sea, and their littoral regions.
- South-West Indian Ocean, including IOR island nations therein and East Coast of Africa littoral regions.
- The choke points leading to, from and across the Indian Ocean, including the Six-degree Channel; Eight/ Nine-degree Channels; Straits of Hormuz, Bab-el-Mandeb, Malacca, Singapore, Sunda and Lombok; the Mozambique Channel, and Cape of Good Hope and their littoral regions.
- Other areas encompassing our SLOCs, and vital energy and resource interests.

Secondary Areas

India's secondary areas of maritime interest include the following:-

- South-East Indian Ocean, including sea routes to the Pacific Ocean and littoral regions in vicinity.
- South and East China Seas, Western Pacific Ocean, and their littoral regions.
- Southern Indian Ocean Region, including Antarctica.
- Mediterranean Sea, West Coast of Africa, and their littoral regions.
- Other areas of national interest based on considerations of Indian diaspora, overseas investments and political relations.

The Indian Navy will continue to monitor all developments impacting the maritime domain, which may affect its roles and responsibilities, and incorporate the same into its strategic and operational plans

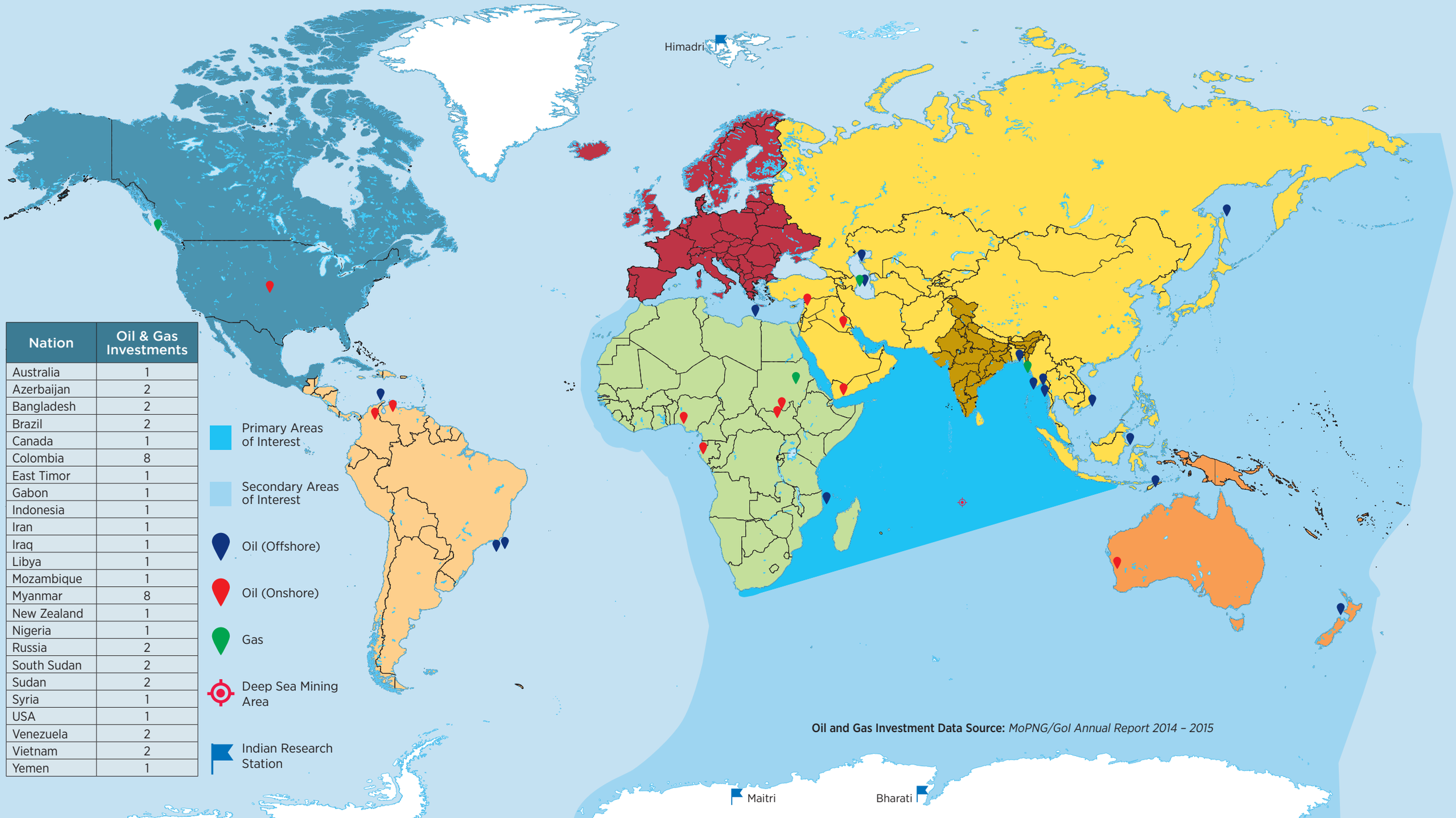
Maritime Threats

Threats and challenges to India's maritime interests emanate from traditional and non-traditional sources. The various sources and types of maritime threats must be catered for in the maritime security strategy. The strategic assessment of probable and possible sources of threats to India is a continuous process, and is carried out by various national agencies and the armed forces. The Indian Navy will continue to monitor all developments impacting the maritime domain, which may affect its roles and responsibilities, and incorporate the same into its strategic and operational plans.

Traditional Threats and Sources

The traditional sources refer to states with organised military capability and resources, which harbour adversarial posture and inimical intent towards India. Hostile actions by such states, in terms of scale, scope and intensity of force that may be applied, would potentially be of a higher order. Traditional sources, therefore, pose a higher level of threat to India's national security interests.

Map 2.4: Areas of Maritime Interest and Investments



Nation	Oil & Gas Investments
Australia	1
Azerbaijan	2
Bangladesh	2
Brazil	2
Canada	1
Colombia	8
East Timor	1
Gabon	1
Indonesia	1
Iran	1
Iraq	1
Libya	1
Mozambique	1
Myanmar	8
New Zealand	1
Nigeria	1
Russia	2
South Sudan	2
Sudan	2
Syria	1
USA	1
Venezuela	2
Vietnam	2
Yemen	1

Oil and Gas Investment Data Source: *MoPNG/GoI Annual Report 2014 – 2015*

Countering traditional threats remains the *raison d'être* of the Indian Navy

The likely sources of traditional threat would be from states with a history of aggression against India, and those with continuing disputes or maintaining adversarial postures to India's national interests. The traditional sources of threat could also extend to nations that have the capability to harm Indian interests and display inimical intent against India. The possibility of sudden politico-economic and military events leading to changes in the regional security environment would also need to be considered.

The prevailing geo-strategic environment is characterised by simultaneous competition and cooperation, resulting in blurring of conventional divisions. Nations with vastly differing international views and divergent national interests can be significant trade partners today, and share many areas of convergence. There can also be issues of wide divergence, including in security perceptions, with nations that may be traditional friends. This could emanate from their policies concerning a third country, which may maintain postures that are inimical to India's security interests.

There has been a rise in regional tensions and instabilities in some areas of maritime interest to India, particularly the Persian Gulf and Gulf of Aden littoral, in recent years. These have already had a spill-over effect from land to sea, giving rise to non-traditional threats and maritime security challenges, such as piracy, terrorism, and humanitarian crises necessitating NEO. A number of leading powers maintain military presence in the IOR to safeguard their interests, through military bases and forward deployed units. There has been continued militarisation of the region and proliferation of weapons amongst non-state groups, including private security organisations. These factors have complicated the regional maritime security environment. Increased tension in our areas of interest can adversely impact maritime security and prosperity in those areas and adjacent waters, with consequent effect on India's maritime interests.

Non-Traditional Threats and Sources

Countering traditional maritime security threats will remain the *raison d'être* of the Indian Navy, particularly the way in which it is structured, equipped, modernised, trained and deployed. However, in recent years non-traditional security threats have necessitated the development of a fresh paradigm for maritime security. There has been a steady rise in non-traditional threats, in occurrence and scale, with the lines at times getting blurred with traditional challenges. This is especially the case where non-traditional threats receive cooperation, support and sponsorship from traditional entities. Changes in the nature of non-traditional threats and challenges necessitate

corresponding changes in strategies, force structures, operating methodology, training, and coordination mechanisms. Some of the main threats are described below.

Maritime Terrorism

Terrorism, in particular, has had a major impact on our maritime security. In recent decades, there been an expansion of this threat from land to sea, and from sea further onto land, aimed at multiple targets located off or near the coast. The targets may include conventional military and soft non-military assets, such as commercial and population centres, industrial centres, ports, ships, tourist centres, iconic structures, and strategic infrastructure like offshore oil production installations and nuclear power plants. The possibility of terrorists obtaining lethal weapons, including chemical, biological, nuclear material and associated 'dirty weapons', bears continued attention.

Maritime terrorism has displayed an increasingly hybrid nature, with a characteristic of morphing into different, deadlier forms. It is enabled by the availability of advanced technologies, including readily available Commercial Off-The-Shelf (COTS) equipment to non-state actors, and niche expertise and active/ passive support provided by some state sponsors and radicalised agencies. Maritime terrorism has evolved from indirect to direct actions from and at sea, and remains active in our maritime security environment.

Patrolling off the coast against seaborne ingress

Maritime terrorism has displayed an increasingly hybrid nature, with a characteristic of morphing into different, deadlier forms

- ***From the Sea***. Movement of arms, explosives and terrorists by sea, for subsequently or directly conducting terrorist attacks ashore. India has faced terrorism from the sea in both these ways. In 1993, the seas were used to smuggle explosives for subsequently conducting terrorist attacks in Mumbai.[22] In 2008, this graduated to terrorists emerging from the sea to carry out direct attacks on landing ashore.[23]
- ***At Sea***. Conducting attacks against ships at sea. These used explosives and small craft in the early 2000s, which has recently graduated to direct weapons and rocket attacks against ships from ashore.[24] There were also attempted hijackings of naval ships in our neighbourhood in 2014, with the intention of attacking maritime targets using their conventional capabilities.[25] This represents a new genre of threat, wherein radicalised or vulnerable state forces may be commandeered by terrorists to launch semi-conventional attacks against other nations and populace.

Piracy and Armed Robbery at Sea

Piracy and armed robbery at sea constitute the oldest forms of maritime security threats. These target maritime trade and, therefore, the economies of affected nations.[26] These also put the lives of people working onboard ships at risk, and threaten freedom to use the seas for livelihood and economic growth, affecting the maritime interests of a large number of countries. Hence, combating piracy has been a traditional task of navies, over hundreds of years – and remains so in the 21st century.

Piracy has seen a rise in recent years in areas of maritime interest to India. This includes the Gulf of Aden and the Somali basin, from where piracy had spread across the Arabian Sea and to within 500 nm of the Indian mainland by 2011. Robust action by the Indian Navy and Coast Guard pushed piracy away from India's maritime zones. The Indian Navy has also maintained a ship on patrol in the Gulf of Aden continuously since October 2008, safely escorting more than 3,000 merchant ships and nearly 25,000 Indian seafarers, besides other nationalities. Cooperative efforts of international navies, adoption of 'Best Management Practices' (BMP) by transiting merchant vessels, and

A large part of the maritime domain comprises the high seas, which are outside the jurisdiction of any single state or authority. There is also reduced scope for the monitoring and regulation of activities at sea, especially farther away from the shore

stabilising actions ashore in Somalia, have all resulted in a steady reduction of Somali piracy threat since 2012. However, till the root causes ashore are addressed, the danger of resurgence will remain, with potential for instability in the littoral.

Armed robbery in the Gulf of Guinea and off the West coast of Africa has also increased in recent years, while there has been periodic resurgence of piracy and armed robbery in the Malacca Strait. These challenges are being addressed by cooperative mechanisms amongst the regional maritime forces and law enforcement agencies.

Unregulated Activities at Sea

A large part of the maritime domain comprises the high seas, which are outside the jurisdiction of any single state or authority. There is also reduced scope for the monitoring and regulation of activities at sea, especially farther away from the shore. This may also be experienced within the EEZ, especially for nations with a large EEZ and relatively smaller maritime forces. Unregulated activities at sea are, therefore, a historical and continuing fact, which cover both legitimate and inimical activities. There is inherent risk, however, that unregulated activities at sea, especially by non-state actors, could turn against good order at sea and the security interests of others, including maritime communities and nations. Due to connectivity of the seas, these activities can also transgress into another nation's maritime zones and, thence, ashore, to threaten the security and economy of the coastal state.

Trafficking/ Smuggling. The use of unregulated movements at sea for seaborne trafficking in narcotics and arms remains a constant threat to India, with the 'Golden Crescent' to its West and 'Golden Triangle' to its East. The *modus operandi* of trafficking/ smuggling by sea is transshipment of consignments on the high seas into local craft, which then mingle with dense fishing activity offshore and can land at any of the myriad landing points ashore. The sea route has been in use for human trafficking/

smuggling, not only in relation to India's close maritime neighbours, but also across the seas and extended maritime neighbourhood. This places a constant demand on various maritime agencies and their resources. The threat of nuclear material being smuggled in/ from our maritime neighbourhood also needs to be a constant consideration, requiring monitoring of the maritime spaces.

Illegal, Unreported and Unregulated Fishing (IUU). IUU disregards established international and national laws on conservation and management of living marine resources. It is a global issue, which can be a threat to ocean ecosystems and sustainable fishing. IUU carries the risk of seriously damaging or even destroying living resources, marine environment and bio-diversity, to the detriment of the marine ecosystem and future livelihood of the coastal populace. This could lead to shortages and tensions, and to further activities that increase insecurity. The advent of piracy off Somalia has been linked to the fall in fish stocks and, hence, sustenance of traditional fishermen, due to substantial IUU by mechanised foreign vessels.[27] IUU also affects India as it impacts food and related economic security, as well as the livelihood of the Indian fishing community.[28] In the Palk Bay, tensions between fishermen of India and Sri Lanka have, in large part, been due to differently perceived fishing rights and employment of different fishing methods. Transgression by fishermen between neighbouring maritime zones, like between India and Pakistan, also renders the fishermen liable to the other state's jurisdiction and actions by its maritime and law enforcement agencies, which can aggravate sensitivities and heighten insecurities. Poaching in the Andaman & Nicobar Islands and the Andaman Sea has been a matter of concern for India and other littoral states.

Proliferation of Private Armed Security. There is increasing privatisation of armed security, with related concerns on the scope for increased violence and threats from inimical elements using this mechanism to act against state interests. Piracy off the coast of Somalia has resulted in the proliferation of private armed guards for protection of merchant vessels transiting the piracy High Risk Area (HRA). This has led to large numbers of Privately Contracted Armed Security Personnel (PCASP) being employed by Private Maritime Security Companies (PMSC), often operating from 'floating armouries' in the Arabian Sea. While the deployment of private armed security onboard ships has been of value in countering piracy, their functioning can also lead to insecurity and threats especially in case of non-availability of international regulations or non-adherence to governing standards.[29] In particular, the possibility of terrorists embarking merchant ships under the guise of PCASP and, thereby, reaching within

Table 2.3: Concerns Regarding Deployment of Armed Security Guards on Merchant Ships

- Possible infiltration of non-state actors
- Possibility of escalation of violence at sea
- Liabilities for injuries/ deaths of innocent fishermen and seafarers
- Issue of right of innocent passage (as per UNCLOS) by merchant ships with armed security personnel embarked
- Facilitation by Coastal States for embarking/ disembarking foreign security guards from hitherto unarmed merchant ships
- Infringement of over-riding authority of the Master, mandated under International Convention for Safety of Life at Sea (SOLAS)

Source: MoS/GoI F.No. SE – 13020/6/2009-MG(pt.) dated 29 August 2011

striking distance of a coastal city or offshore assets, has to be guarded against. India's Ministry of Shipping and the International Maritime Organisation (IMO) have issued guidelines on the employment of PCASP, which also bring out many related concerns.

Climate Change and Natural Disasters

Climate change has manifested in alterations of seasonal temperatures and weather patterns the world over, with increased incidence of natural disasters. Changing precipitation and melting snow are altering hydrological systems, causing changes in the life pattern of terrestrial, fresh water and marine species.[30] Climate change has, thus, started impacting human and maritime security, with potentially major effects in the future. These include impact on oceanic living resources due to changes in the levels of salinity and acidity, possible inundation of low-lying coastal areas, and the loss of national territory, which force migration. While the magnitude of change and consequences may remain largely speculative, their impact may be suddenly experienced, across dispersed areas. The current trends of natural disasters, which may

get exacerbated with climate change, place increased demands on capability for HADR, Search and Rescue (SAR), and aid to civil authorities, all under the benign roles of the Indian Navy and Coast Guard. At the same time, in keeping with domestic laws and international trends, the need for imbibing 'clean and green' marine technologies in naval projects and infrastructure, will need to be addressed.

Critical Common Requirements for Maritime Security

In formulating the overall maritime security strategy and its constituents, there are certain aspects that would overlap and others that would remain common, as these are essential to the viability and success of each strategy, in an interlinked manner. These are discussed in subsequent chapters with respect to their specific role, impact and relation to respective strategies:-

- Maritime Domain Awareness.
- Force Structures and Capabilities.
- Preparedness and Presence.
- Networked Operations.
- Jointness and Coordination.
- Strategic Communication.

3

STRATEGY FOR DETERRENCE

3

Strategy for Deterrence

Maritime Security Objective

To deter conflict and coercion against India

India's broader national security policy has been based on the principle of self-defence and the tenets of *Panchsheel*. The primary objective of the maritime security strategy is, accordingly, to deter conflict and coercion against India. This requires that any potential adversary must be inhibited from initiating conflict or attempting coercion against India. A strategy of deterrence will be employed to achieve this purpose, which will also employ, support and be supported by various roles and associated objectives, missions and tasks of the Indian Navy. India's security strategies rely on both deterrence by denial and deterrence by punishment.

India's Deterrence Strategy

The strategy for deterrence will form part of the overall national deterrence strategy, towards a composite effort that would synergise all elements of national power (political, diplomatic, informational, military and economic), and be appropriately conveyed through strategic communication. The success of deterrence will rest on its credibility to the potential adversary. Towards this, India will, in fact, have to be fully prepared for conflict to occur, with assurance of denying victory to and imposing punishment upon the adversary. Deterrence is provided at both nuclear and conventional levels, including in the maritime domain. The Indian Navy will contribute to national deterrence strategy by its capability, posture and actions under its overall maritime security strategy.

Table 3.1: Strategy for Deterrence – Employed, Supporting and Supported Roles, Objectives, Missions and Tasks

ROLE	MILITARY	DIPLOMATIC	CONSTABULARY
OBJECTIVES	Deterrence against Conflict and Coercion Defence of India's Territorial Integrity, Citizens and Offshore Assets from Seaborne Threats Influence Affairs on Land Safeguard India's National Interests and Maritime Security	Strengthen Political Relations and Goodwill Strengthen Defence Relations with Friendly States Portray Credible Defence Posture and Capability Strengthen Maritime Security in IOR Promote Regional and Global Security	Coastal and Offshore Security Security of EEZ Good Order at Sea
MISSIONS	Nuclear Second Strike MDA Sea Control Sea Denial Power Projection Expeditionary Ops SLOC Protection Special Forces Ops Seaward Defence Coastal and Offshore Defence	Constructive Maritime Engagement Maritime Assistance and Support Presence	Counter Terrorism Counter Armed Threats from Non-State Actors
TASKS	Surveillance Patrol Anti-Submarine Ops Anti-Surface Ops Anti-Air Ops Information Ops Electronic Warfare Protection of Offshore Assets Mine Warfare Harbour Defence	Overseas Deployment Flag Showing/ Port Visits Hosting Foreign Warships' Visits Technical and Logistics Support Foreign Training Bilateral/ Multilateral Exercises Coordinated Patrol Activities under the IONS Programme	Counter Infiltration Patrol Anti-Trafficking

Nuclear Deterrence

Nuclear deterrence merits consideration as a separate level of deterrence, due to the nature of the weapon and its potential for mass destruction. As per India's nuclear doctrine, the fundamental purpose of India's nuclear weapons is to deter the use and threat of use of nuclear weapons against India.[31] Hence, its nuclear weapons will only be used in retaliation against a nuclear attack.[32] Accordingly, India is committed to both, a No First Use (NFU) policy for nuclear weapons, and to their non-use against non-nuclear weapon states.[33] Nuclear deterrence by India is, therefore, directed against only nuclear coercion and conflict. It is, accordingly, distinct from conventional deterrence and conflict.

India's nuclear deterrence is based on the maintenance of a credible minimum deterrent, with assurance of massive nuclear retaliation designed to inflict unacceptable damage, in response to a nuclear strike against India. The credibility of our nuclear deterrence and "retaliation only" policy rests upon the survivability of our nuclear forces and assurance of punitive response. This requires the maintenance of adequate, dispersed nuclear forces that have very high survivability against surprise attacks, and the ability to thereupon undertake punitive retaliatory action.

The three principles central to India's nuclear deterrence, viz. credibility, effectiveness and survivability, are imbibed in the sea-based segment of the nuclear triad, primarily the nuclear powered submarine carrying ballistic missiles (SSBN).[34] An SSBN, due to stealth characteristics enabling discrete and prolonged deployment, and combat capabilities including weapon outfit, provides a credible, effective and survivable capability, and contributes to assurance of punitive retaliation in accordance with our nuclear doctrine. SSBN deployments also counter an adversary's strategy of seeking advantage from nuclear posturing or escalation. The efficacy of SSBN deployments is predicated on the maintenance of robust command and control systems, effective MDA, sound planning and proper training, with due regard to safety and security.

India is developing sea-based nuclear deterrence, in accordance with its nuclear doctrine. The Indian Navy will operate the SSBN to reinforce nuclear deterrence, supported by corresponding operational capabilities and procedures for optimal deployment, in keeping with national policy.

Nuclear deterrence by India is directed against only nuclear coercion and conflict. It is, accordingly, distinct from conventional deterrence and conflict

India's nuclear deterrence is based on the maintenance of a credible minimum deterrent

Conventional Deterrence

The core of India's deterrence, other than against nuclear coercion, will remain centered on conventional deterrence and conventional military forces.[35] Conventional deterrence requires the maintenance of suitable combat power for exercising both methods of deterrence, viz. by denial and by punishment.[36] It will be necessary, therefore, to maintain highly effective conventional military capabilities for achieving conventional deterrence, and also for raising the nuclear threshold in support of the nuclear doctrine.[37] India's maritime forces, through the ambit of maritime deterrence, must be able to counter a potential adversary's strategy by convincing the adversary that the desired gains will be denied, whilst retaliation would impose adequate punishment to make the cost of aggression unacceptably high. The success of maritime deterrence will rely substantially on the effectiveness of the other maritime security strategies, so as to provide a net credible posture. The main components of the maritime strategy for deterrence, which also find resonance in the other components of the maritime security strategy, include:-

- Force Structure and Capabilities.
- Threat Assessment and Contingency Planning.
- Strategic Situational Awareness and Maritime Domain Awareness.
- Preparedness and Presence.
- Strategic Communication.

Force Structure and Capabilities

The threats and challenges to India's maritime security range across the entire spectrum of conflict. The higher levels of threat would tend to be traditional threats, due to their higher scales of violence, intensity of operations and geographical spread. The more likely would, however, remain non-traditional threats that are lower on the spectrum. At the core of the overall force structure must be the ability to deter and effectively prosecute high intensity conflict, even as the force levels and structures remain adequate to address the wider range of lower level threats.

The core of India's deterrence, other than against nuclear coercion, will remain centered on conventional deterrence and conventional military forces

Naval combat power strengthens national deterrence

The quantum and type of force required to ensure credible deterrence will also depend on the adversary's capabilities and strategy, the specific nature of threat, and the interests affected. The force structure and capabilities must cater to the full range of threats posed by potential adversaries, based on their history, capabilities and posture, including sources of support. At the same time, the force development plans must account for the fact that new threats may emerge faster than the new capabilities being developed.

An iterative and broader capability-driven approach, which also incorporates likely current and future threats, will be maintained to enhance deterrence and safeguard India's maritime interests. The Indian Navy will continue to maintain and develop adequately-sized force levels that are balanced, flexible, versatile, threat-based and capability-driven, with supporting organisational structures, prepared to undertake and sustain maritime operations across the entire spectrum. Since maritime force levels and structures are developed and deployed over a period of several decades, the Indian Navy's *Maritime Capability Perspective Plan* (MCPP) will continue to be refined, as per emergent threats and challenges. Capability gaps will be addressed by developing a timely, efficient and effective process, in coordination with other agencies.

The Indian Navy will maintain threat-based, capability-driven, balanced forces for the entire spectrum of maritime operations

Constant monitoring and assessment of the maritime environment, including threat scenario, potential adversaries' strategies and situations, will remain essential along with development of suitable strategies

Suitable cooperation and synergising of capability development amongst various maritime security agencies will be supported, especially for the lower intensity, non-traditional threats, so as to ensure optimisation of resources and maximisation of operational capabilities.

Threat Assessment and Contingency Planning

Constant monitoring and assessment of the maritime environment, including threat scenario, potential adversaries' strategies and situations as they develop, will remain essential along with development of suitable strategies and operational plans to counter emerging threats. This is of as much value to deterrence as it is to conflict.

The Indian Navy will continue to monitor the maritime and threat environment, in coordination with other agencies. Contingency plans for changes in the strategic situation, including stages and pace of change, from stable deterrence to unstable deterrence,[38] and proxy/ covert conflict to open conflict by the adversary, will be kept updated. This mechanism would enhance the deterrence value of our strategy, as also the response capability. Further, it will enable application of suitable levers, including military and non-military, to contain and push emergent situations back towards stable deterrence. In maritime terms, the main lever used will be *maritime posture*, which will include force deployment, readiness levels, security states, exercise patterns, shipping instructions, and strategic communication. Plans for *escalation* will be incorporated, with a view to manage and control possible escalation by the adversary. This would also convey to the adversary the likely failure of his plans, with assurance of high costs, so as to strengthen deterrence.

Strategic Situational Awareness and Maritime Domain Awareness

Strategic situational awareness will require gathering and correlation of information obtained at all levels, and its analysis, to develop the strategic picture. Organisationally, this will require sustained investment in human resources, including analysts, language specialists, area/ country specialists; development of technical means, including for gathering of data across all dimensions – air, surface, underwater, space and cyber; creation of data banks and networks; automated filtering, correlation and dissemination; as also arrangements for sharing of relevant information amongst friendly foreign agencies.

The term *Maritime Domain Awareness* qualifies a traditional maritime need for situational awareness at sea, and is used in the modern sense as an all-encompassing concept. It involves being cognisant of the position and intentions of all actors, whether own, hostile or neutral, and in all dimensions - on, over and under the seas. MDA in the areas of maritime interest will be developed by the Indian Navy based on both, integral efforts and inputs from other agencies.

The Indian Navy is, accordingly, enhancing coordination between all maritime stakeholders, including the Indian Coast Guard, Indian Air Force, Central and State maritime agencies, and national intelligence agencies. Efforts will be directed

Monitoring the maritime domain in all dimensions

towards building the support infrastructure, including hardware, interfaces, trained manpower and software systems, and evaluating various actions of the potential adversary, especially monitoring of likely movement along possible strategic paths and determining key indicators of such movement. This will assist in developing a maritime and strategic picture of the adversary, and facilitate improved strategic situational awareness and assessment.

Preparedness and Presence

The translation of the Indian Navy's combat potential into combat power will be enabled through preparedness and presence. The Indian Navy will maintain appropriate preparedness and presence in its areas of maritime interest, as per the threat assessment, with a forward deployed and ready naval posture to deter potential threats.

Preparedness for undertaking the range of missions and tasks will be enhanced through the combination of force capabilities, materiel readiness, training, leadership, MDA, jointness, networking and logistics.

Presence will be exercised by the forward deployment of naval forces with requisite capabilities, reach and sustenance through various methods. These include surveillance and patrol missions, maritime exercises and operations, port visits, and interactions with friendly maritime forces.

Strategic Communication

Strategic communication is an essential component in any modern strategy, and is of particular relevance to the Indian maritime security strategy and its constituents.[39] The Indian Navy will pursue strategic communication through the systematic projection of activities, in a linked, coherent and mutually supportive manner, to inform, engage and shape the perceptions of various stakeholders and audiences, for strategic purpose. This will aim to enhance understanding, focus efforts and improve coordination amongst our forces and agencies, whilst providing reassurance in the public domain. It will also endeavour to undermine the confidence of potential adversaries in pursuing aggressive posture against India and, thereby, strengthen deterrence.

Appropriate ways and means of communication will be exercised to convince the potential adversary of our capability and readiness to both, prevent any "adventurism" from succeeding and to impose a heavy cost for attempting aggression. This will be done by a combination of 'words' and 'actions'. 'Words' will include relevant statements of policy, practices and posture, while 'actions' will be conveyed through presence, demonstration of force capability, deployment patterns, force development and training.

The translation of the Indian Navy's combat potential into combat power will be enabled through preparedness and presence. The Indian Navy will maintain appropriate preparedness and presence in its areas of maritime interest, as per the threat assessment, with a forward deployed and ready naval posture to deter potential threats

4

STRATEGY FOR CONFLICT

4

Strategy for Conflict

Maritime Security Objective

To conduct maritime military operations in a manner that enables early termination of conflict on terms favourable to India

India's desire for friendly mutual co-existence or promoting conditions of peace and security may not be shared by another state or armed groups. In such a case, there would remain the possibility that conflict is forced upon India. Necessary actions to prosecute conflict would be undertaken by the armed forces, in concert with other security agencies. These would aim to counter and neutralise the threats posed by the aggressor state and armed groups, in accordance with the inherent right of self-defence and the political objectives of the conflict.[40]

The military strategy for conflict is determined jointly by the three armed forces, in coordination with other agencies concerned, and synergised at the national level. Operational readiness (contingency) planning is undertaken in this regard at joint and maritime levels. The Indian Navy will prosecute conflict in the maritime domain, in keeping with the broad tenets described in this strategy and directions provided by the Government, even as specific actions and methods may vary as per the operational situation. The strategy for conflict also supports and strengthens the primary strategy of deterrence against conflict and coercion.

The maritime strategy for conflict employs the inherently military character of power projection of the Navy, in coordination and synergy with the other armed forces, Indian Coast Guard and other maritime agencies, to conduct military operations so

Table 4.1: Strategy for Conflict – Employed, Supporting and Supported Roles, Objectives, Missions and Tasks

ROLE	MILITARY	DIPLOMATIC	CONSTABULARY
OBJECTIVES	Decisive Military Victory in Case of War Defence of India's Territorial Integrity, Citizens and Offshore Assets from Seaborne Threats Influence Affairs on Land Safeguard India's Mercantile Marine and Maritime Trade Safeguard India's National Interests and Maritime Security	Strengthen Political Relations and Goodwill Strengthen Defence Relations with Friendly States Portray Credible Defence Posture and Capability	Coastal and Offshore Security
MISSIONS	Nuclear Second Strike MDA Sea Control Sea Denial Blockade Power Projection Force Protection Expeditionary Ops Compellance Destruction SLOC Interdiction SLOC Protection Special Forces Ops Seaward Defence Coastal and Offshore Defence	Constructive Maritime Engagement Presence	Counter Terrorism Counter Armed Threats from Non-State Actors
TASKS	Surveillance Patrol Maritime Strike Anti-Submarine Ops Anti-Surface Ops Anti-Air Ops Amphibious Ops Information Ops Electronic Warfare Protection of Offshore Assets NCAGS & NCS Ops Mine Warfare VBSS Harbour Defence	Technical and Logistics Support Foreign Training Coordinated Patrol	Counter Infiltration Patrol Anti-Trafficking


Application of Force for Strategic Effect

as to attain the desired political ends and bring the conflict to an early and favourable conclusion. This strategy will also employ, support and be supported by various roles and associated objectives, missions and tasks of the Indian Navy.

The Indian Navy's strategy for conflict is, for the most part, in the classified domain. However, the broad contours of this strategy can be seen in relation to three components that flow from the doctrinal concepts of maritime power and operational art, viz. operational principles, enablers and actions.[41]

Operational Principles

Operational principles comprise the various principles of war, described in the *Indian Maritime Doctrine*.[42] Two additional principles that are central to the strategy for conflict are the application of force and strategic effect.

Application of Force. The use of properly directed force is central to the prosecution of conflict, as experienced since the earliest days of Indian history.[43] The maritime strategy for conflict envisages the application of adequate armed force, in an effective and efficient manner against the adversary, so as to optimally attain the military and, thereby, political objectives.[44] The application of maritime force shall be in accordance with the prescribed Rules of Engagement (RoE) and the Laws of Armed Conflict, particularly the principles of necessity, proportionality and distinction.[45] These would duly consider the distinct legal regime related to maritime warfare, and the prevailing circumstances and conditions.[46]

Strategic Effect. The focus of the strategy for conflict will remain on the desired ends, and all actions will be coordinated to deliver the required effects.[47] The strategic effect of maritime operations will finally be measured upon land. Hence, the impact of maritime operations will be focused on the adversary's political, military, economic, informational and psychological paradigms ashore, so as to influence the strategic course and result of conflict. Maritime operations will be conducted at and from the sea. These will comprise defensive 'shields' and offensive 'strikes', to deliver effect through both, direct and indirect operations. The strategy will cater to factors of scale, tempo, intensity and duration of conflict, including possible limitations in some or all of these aspects in a future conflict. The strategy will aim to attain the desired effects within such limited conflict, whilst being prepared to face and exploit escalation.

The strategic effects sought would include the following:-

- Repulsion of aggression.
- Management of escalation.
- Degradation of the threats emanating from conflict.
- Imposition of punitive costs.
- Psychological dominance.
- Creation of military conditions for an early and favourable conclusion of conflict.
- Protection of national maritime interests.

Operational Enablers

The strategy for conflict covers many activities that are omnipresent in peace time and gain further momentum during conflict. These activities enable the conduct of operations and prosecution of conflict, and are termed as operational enablers.[48] The strategy for conflict will employ several operational enablers, including MDA, networked operations, preparedness, jointness and coordination, and operational tempo.

Maritime Domain Awareness for Conflict. The development of MDA will be a key component of the strategy for conflict, with inputs collated from various sources, both maritime and national. Developing comprehensive MDA is a continuous process and will also involve actions during peace time, to aid planning, deployment and employment of maritime forces for conflict. These will include gathering of intelligence, conduct of surveillance and reconnaissance in all dimensions (space, air, surface, underwater and electronic), and analytical review of the same, so as to derive *actionable information*. In a similar vein, actions by potential adversaries to develop MDA in our areas of interest, including during peace time, will be monitored and analysed, and will feed into our broader strategic situational awareness and operational planning matrices. MDA will be developed using all sources, including aircraft, both manned and unmanned, ships, submarines, Special Forces (SF), ground and space-based assets, information and cyber systems. MDA will shape and support our actions during conflict, enable disruption of the adversary's Information-Decision-Action (IDA) cycle, and contribute to generation of battle-space dominance.

The strategy for conflict will employ several operational enablers, including MDA, networked operations, preparedness, jointness and coordination, and operational tempo

MDA and networked operations – Across and over the seas

During conflict, MDA will also need to be maintained on the presence or absence of neutrals. This is a unique requirement for maritime warfare, governed by international law, since a maritime conflict zone is neither static nor limited by geographical constraints, except the territorial waters of a neutral nation. Hence, global seaborne trade and commerce are likely to continue, which will need to be catered for as it would affect identification and targeting. While international shipping may avoid a known conflict area, it would need to use many of the choke points and areas where SLOCs and ISLs converge. This challenge to MDA development will be addressed by various measures that include information sharing, navigational warnings, technical means and tactical procedures.

Networked Operations. Networking is an essential requirement for effective MDA, and for attaining synergy in operations. The wide range of operational activities, spread across all dimensions and vast areas, will be controlled and coordinated through secure and efficient networking of our maritime forces. The means of communication and exchange of operational information would be extended across the Navy, Air Force, Coast Guard, and also Army and other agencies as relevant to the operations. This will employ space-based capabilities, with application and integration of satellites for

communication and networking. Multiple networks have, accordingly, been developed over terrestrial, wireless and space-based media, and will be progressively upgraded. These provide connectivity across the maritime theatre and strengthen the IDA cycle with rapid, real-time/ near real-time, information correlation and dissemination.

Preparedness for Conflict. The Indian Navy will maintain appropriate preparedness levels for conflict, in consideration of all factors. These include the tempo and intensity of modern warfare, prevailing security environment, and the possibility of an adversary launching surprise attacks against India, wherein the ability to *respond quickly* to sudden events could prove critical. Preparedness will be supported by improved intelligence, along with efforts to enhance our awareness of a likely adversary's intent through constant monitoring and analysis. In addition to maintaining strategic situational awareness and MDA to guard against surprise, the Indian Navy will strengthen its operational capability to rapidly overcome any surprise and provide suitable response to sudden attacks. This would offset the possible initial advantage that may accrue to an adversary from choosing the time, place and method of attack. The following would be amongst the measures undertaken:-

- Contingency planning, catering for possible eventualities.
- Human resource development, including adequate and realistic training, for the full spectrum of maritime operations.
- Higher operational availability and readiness of combat forces.
- Suitable weapons and arming policies.
- Sufficient stock of munitions and combat spares for sustaining the envisaged tempo, scale, intensity and duration of conflict.
- Quick and dispersed Operational Turn Round (OTR) capability.
- Improved operational logistics and replenishment capability at sea.
- Maintain presence in areas of interest, to develop MDA, obtain familiarity with the operational environment, and enable quick response to any crisis.
- Augment means and improve preparedness through the strategy for force and capability development.

The principles of jointness and interagency coordination are central to maritime operations, and would be optimally employed

Joint operations – Across expanding dimensions

Jointness and Coordination. The principles of jointness and interagency coordination are central to maritime operations, and shall be optimally employed. These will cater to the multiple dimensions of maritime operations, with a variety of platforms operating on sea, air and land, across dispersed areas, and the involvement of numerous agencies. The awareness of actions by other agencies, methodologies of coordination and working together, and provision of mutual support will be incorporated into the operational plans.

The Indian Army, Navy and Air Force will jointly determine the operational plans for defending the nation and prosecuting the conflict. The maritime operations plans will be synergised with the joint plan. The Indian Coast Guard, which will function under operational control of the Indian Navy during conflict, will undertake maritime security tasking along with suitable naval forces, as per the operational requirements and plan. The Coast Guard will also coordinate aspects of coastal security with the various state and civil agencies, as part of the overall plan for coastal defence. The high degree of jointness and coordination required during conflict will be enabled by appropriate networking, joint operational planning, joint training and exercises, and common Standard Operating Procedures (SOPs).

Projecting combat force for national defence

Operational Tempo. Conduct of rapid, synergised operations, with high operational tempo is an important feature of warfighting. A high tempo of operations will increase the speed of the IDA cycle, even as it would aid in challenging and disrupting the adversary's IDA cycle, so as to generate a favourable asymmetry.[49] The ability to quickly attain and maintain a high operational tempo will facilitate control over the conflict in time, space or scale, and enable management of escalation on our terms, as required for attaining the desired objectives.

In order to maintain and sustain a high operational tempo, the corresponding requirements will be accorded priority and thrust. Emphasis on handling higher pace and complexity of the range of operational activities will be maintained through comprehensive planning, preparation, training, and strengthening of systems and structures in the IDA cycle.

Operational Actions

Operational actions are the key activities that characterise the way in which the Indian Navy will prosecute conflict. These will be aimed at maintaining, enhancing and exploiting freedom of action, to attain the desired objectives.[50] Operational actions will employ the operational principles and exploit the operational enablers, to execute specific offensive and defensive missions as per the joint and maritime operations plans. Operational actions constitute the main component of the strategy for conflict and will include projection of force, coastal defence, sea control, sea denial, SLOC protection, information warfare, and escalation management. The various operational actions are interlinked in many ways, and would mutually support and reinforce each other.

Force Projection

The Indian Navy will project combat force in and from the maritime domain, and undertake offensive action for national defence. Some of the key elements of force projection, which will be employed to develop battle-space dominance as per the operational plans, include maritime manoeuvre, maritime strike, SLOC interdiction, and amphibious operations.[51]

Maritime Manoeuvre. Maritime manoeuvre aims to shock and disrupt the IDA cycle of the adversary. The strategy for conflict will employ maritime manoeuvre in all its dimensions in a coordinated manner so as to achieve the desired objectives. The utilisation of manoeuvre will enable concentration of force at the required place and time, to counter surprise, gain the initiative, and obtain decisive results.

Maritime Strike. The Indian Navy will employ maritime strike to project accurate combat force onto a maritime or strategic target, at sea or ashore, with the purpose of destroying or damaging it. It will cover the range of combat strikes at sea, viz. anti-surface, anti-submarine and anti-air, with weapons launched from aerial, seaborne, underwater and shore platforms. In addition, maritime anti-surface strike will be undertaken by Air Force maritime strike aircraft and by Naval Coastal Missile Batteries, in coordination with the naval forces at sea.

SLOC Interdiction. Interdiction of the adversary's SLOCs will be aimed at applying strategic leverage, including psychological pressure, against the adversary by disrupting his freedom to use the seas for military purposes. This would also hinder his efforts for movement of commodities required by his national strategy. The Indian Navy will

> The Indian Navy will project combat force in, and from, the maritime domain and undertake offensive action for national defence

target the adversary's use of sea routes for executing his operational plan and sustaining war efforts. SLOC interdiction would be carried out in various areas: off the Sea Ports of Embarkation/ Disembarkation (SPOE/SPOD), choke points through which the SLOCs may pass, and in the open oceans. The Indian Navy's SLOC interdiction plans will take into account the following factors:-

- Maritime geography and dependence of an adversary on specific sea routes for his conduct of maritime operations and trade.
- Extent of dependence of the adversary on seaborne trade and strategic commodities imported by sea.
- The adversary's vulnerabilities in case of denial of strategic commodities. This aspect would also consider the existing stocks and availability of strategic reserves.
- Probable duration of conflict.
- Our capabilities for interdicting the adversary's SLOCs, in relation to his SLOC protection capabilities.

Amphibious Operations. Amphibious operations will remain valid and valuable in the Indian context, due to the coastal terrain in our primary areas of interest and our many islands. Therefore, the Indian Navy, in close cooperation with the Indian Army and Air Force, will retain the capability and expertise for conducting amphibious operations, and will be prepared to undertake them as required for both defensive and offensive purposes.

Coastal and Offshore Defence

Actions for ensuring coastal and offshore defence will be carried out by the Indian Navy in synergy with the Indian Army, Air Force, Coast Guard and security agencies. Air defence of India's coastal and offshore assets would be provided by the Indian Air Force. Various tasks that will be undertaken for coastal and offshore defence include maintenance of MDA, coastal and offshore surveillance and patrol, monitoring, control and coordination of shipping and vessel movement in the maritime zones, especially

Sea control is a central concept around which the Indian Navy will be employed. It is a key component of the strategy for conflict and a prerequisite for most naval operations

Carrier Task Force – Exercising sea control

those in the vicinity of our own ports, offshore and coastal assets, conduct of Visit, Board, Search and Seizure (VBSS) operations and Examination Services, and Local Naval Defence (LND), including harbour defence, conduct of mine clearance and maintenance of mine-swept channels into harbours. Conduct of coastal and offshore defence will be supported by maritime strike, as required.

Sea Control

Sea control is a central concept around which the Indian Navy will be employed. It is a key component of the strategy for conflict and a prerequisite for most naval operations. The Indian Navy will undertake the range of naval missions and tasks commensurate with the degree and duration of sea control required for execution of the operational plan. These will include developing MDA, power projection and force protection, in all dimensions, against the adversary. A balanced, multi-dimensional fleet is necessary for obtaining sea control beyond coastal waters. The Carrier Task Force (CTF), consisting of Carrier Battle Group(s) (CBG) with integral Anti-Air Warfare (AAW), Anti-Surface Warfare (ASuW) and Anti-Submarine Warfare (ASW) capability, Surface Action Groups (SAG), and Underway Replenishment Groups (URG), supported by land-based

Silent sentinel – Exercising sea denial

aircraft, will be deployed for establishing the required sea control. The following factors will be taken into account while planning for sea control:-

- The main purpose and requirements of the maritime operation, which qualify the extent of sea control and freedom of action required.
- Our ability to deploy the appropriate type and numbers of forces, to generate the requisite freedom of action.
- The ability of the adversary to oppose our attaining and exploiting freedom of action.
- Our ability to maintain and exploit our freedom of action, including by countering the adversary's actions.

Sea Denial

The Indian Navy will exercise sea denial as an offensive measure, to reduce the adversary's freedom of action and to degrade his operations. It will be exercised though suitable methods to prevent units of the adversary from operating in the designated maritime space, so as to thwart their purpose of deployment.[52] Towards this, the Indian Navy will primarily employ submarines, which are highly suited for carrying out sea denial, in areas through which the adversary forces may seek to traverse, including harbour approaches, areas of SLOC convergence, and also mid-ocean. Other means

that may be adopted are maritime strike and mines. Maritime strike, using long range missiles fired from ships, shore and aircraft, and the use of mines in selected choke points for the enemy, are also proven means of sea denial. Elements necessary for ensuring effective sea denial will be given due attention. These will include MDA, especially identification and distinction between neutrals and belligerents, accurate targeting information, rapid projection of force, and high mobility to reposition assets in the designated area. In the exercise of sea denial, the following aspects will also be considered:-

- The importance of a maritime area to the adversary, in pursuing his strategy.
- Adversary's capability to exercise sea control in that area.
- The vulnerability of the adversary in that area to sea denial by our forces.
- Future requirements of the maritime area for our use.

SLOC Protection

Protection of India's SLOCs, and carriage of national trade and cargo therein, will be an essential component of the strategy for conflict. The actions will be carried out in five broad ways. First, the determination of any changes required to the sea routes themselves, in relation to their location, routeing points, traffic and timing, as per the nature, areas and type of threats envisaged. Second, will be the promulgation of selected sea routes for use by Indian and foreign shipping, operating to/ from Indian harbours. This will be done by means of Naval Cooperation and Guidance to Shipping (NCAGS), indicating the preferred sea routes where the threat is lesser or where higher protection is available. Third, are the measures for Naval Control of Shipping (NCS) for Indian merchant ships, which include control over their movements and routes followed, as per prevalent threat and availability of suitable escort/ protection. Fourth, are the measures to ensure safety and security of shipping in our SLOCs, including physical protection, provision of escort and attaining sea control in key areas. And, fifth, will be the measures to seek and neutralise the sources of threat to our shipping and SLOCs, as necessary for our operations.

The Indian Navy will exercise sea denial as an offensive measure, to reduce the adversary's freedom of action and to degrade his operations

Information Warfare

The strategy for conflict will employ Information Warfare (IW) operations, to develop information advantage over the adversary. These measures will address the information chain in relevant domains, including cyber, optical, radar, radio, sonar, visual and voice, and cognitive processes at various stages, across strategic, operational and tactical levels. Information protection will be accorded critical importance, and will be ensured through an array of information security measures. Measures to strengthen our information chain and information development mechanisms will be taken in conjunction with the development of MDA, which they shall support and reinforce. This will include both technical and procedural measures.

Strategic communication will also play a key role in binding own actions, cognition and purpose, whilst seeking to counter those of the adversary, employing the range of communication means. At the operational and tactical levels, the Indian Navy will progress IW as an integral part of maritime operations. At the strategic level, the Indian Navy will contribute to joint and national efforts by undertaking related actions in the maritime domain.

Escalation Management

Broader national security objectives would normally require that any conflict against India be first contained, in some or all aspects of area, time and scale. Further, it must be suitably progressed to enable early termination and resolution on terms favourable to India. It is necessary, therefore, that our forces maintain the means and strengthen the methodology for ensuring management of escalation. This will provide the ability to control escalation, in a joint manner and in the maritime domain, so as to shape the course of conflict. It will, further, pose deterrence to the adversary against escalating the conflict.

Escalation control will be obtained by countering actions of the adversary at all levels of warfare and, more importantly, by gaining the initiative, which would, thereafter, be retained and exploited. This will require a rapid response and, perhaps, initial counter-escalation by own forces, to overcome the effect of any surprise and early gains made by the adversary, such as in case of sudden aggression. The role of MDA, networked operations, preparedness and presence will, in particular, be critical. The escalation will thereupon need to be controlled and maintained to our advantage, to progress our objectives. This will be done by exploiting the area, scale, intensity and tempo of operations, whilst undertaking actions to counter, including defend against and neutralise, the adversary's moves and aggression.

Escalation control in the maritime domain will be coordinated with the overall defence and national effort. The adversary will also have to be assured that each set of actions taken by him would be countered, resulting in his failure to achieve the desired aims, to deter further escalation. In this regard, our actions would aim to impose calibrated punishment on the adversary, with assurance of additional costs in case of escalation in any manner.

Broader national security objectives would normally require that any conflict against India be first contained, in some or all aspects of area, time and scale

Escalation Management –
Gaining initiative to retain control

5

STRATEGY FOR SHAPING A FAVOURABLE AND POSITIVE MARITIME ENVIRONMENT

5

Strategy for Shaping a Favourable and Positive Maritime Environment

Maritime Security Objective

To shape a favourable and positive maritime environment, for enhancing net security in India's areas of maritime interest

"We seek a future for the Indian Ocean that lives up to the name of SAGAR – Security And Growth for All in the Region."

—Shri Narendra Modi, Hon'ble Prime Minister of India[53]

The term maritime environment in this strategy refers to the multi-dimensional space and conditions therein, across the maritime zones of India, and extending to India's areas of maritime interest. It takes into consideration the seamless connectivity in the maritime domain, wherein there can be free flow of influences, including instability and insecurity, across different maritime areas. In recent years, there has been an increase in the movement and spread of terrorism, piracy, arms/ drug/ human trafficking and smuggling by sea. India's maritime environment is, accordingly, affected by security threats and challenges spread across its maritime neighbourhood and adjacent areas. Hence, it is important to shape favourable and positive conditions across the broader maritime environment, towards enhancing our own maritime security and for supporting our national interests.

Table 5.1: Strategy for Shaping a Favourable and Positive Maritime Environment – Employed, Supporting and Supported Roles, Objectives, Missions and Tasks

ROLE	MILITARY	DIPLOMATIC	CONSTABULARY	BENIGN
OBJECTIVES	Deterrence against Conflict and Coercion Security of India's Territorial Integrity, Citizens and Offshore Assets from Seaborne Threats Influence Affairs on Land Safeguard India's Mercantile Marine and Maritime Trade Safeguard India's National Interests and Maritime Security	Strengthen Political Relations and Goodwill Strengthen Defence Relations with Friendly States Portray Credible Defence Posture and Capability Strengthen Maritime Security in IOR Promote Regional and Global Security	Coastal and Offshore Security Security of EEZ Good Order at Sea	Promote Civil Safety and Security Project National Soft Power
MISSIONS	MDA Force Protection SLOC Protection Seaward Defence Coastal and Offshore Defence	Constructive Maritime Engagement Maritime Assistance and Support Presence Peace Support Ops	Counter Terrorism Counter Armed Threats from Non-State Actors	HADR Aid to Civil Authorities Hydrography SAR
TASKS	Surveillance Patrol Information Exchange Protection of Offshore Assets VBSS Harbour Defence	Overseas Deployment Flag Showing/ Port Visits Hosting Foreign Warships' Visits Technical and Logistics Support Foreign Training Coordinated Patrol Bilateral/ Multilateral Exercises NEO Peace Enforcement, Peace Making, Peace Keeping and Peace Building Activities under the IONS Programme	Counter Infiltration Patrol Anti-Piracy Anti-Poaching Anti-Trafficking	Provision of Relief Material and Supplies Medical Assistance Diving Assistance Hydrographic Assistance

A favourable maritime environment entails conditions of security and stability at sea, with various threats remaining at a low level. A positive maritime environment implies conditions wherein any rise in threats can be prevented or contained. The promotion of a favourable and positive maritime environment will, therefore, require the creation of conditions wherein threats and challenges can be regularly monitored and appropriately countered. This would require adherence to international norms and laws by all actors, with strong maritime cooperation amongst all stakeholders, supported by requisite maritime force capability.

The promotion of a favourable and positive maritime environment would also contribute significantly towards providing *net security* in the maritime area. The term net security describes the state of actual security available in an area, upon balancing prevailing threats, inherent risks and rising challenges in a maritime environment, against the ability to monitor, contain and counter all of these. The shaping or creation of conditions that enhance net maritime security would support our national maritime interests and maritime security objectives.

The ways by which the Indian Navy would shape a favourable and positive maritime environment, and thereby be a 'net maritime security provider', is described in this strategy.[54] In doing so, this strategy will also employ, support and be supported by various roles and associated objectives, missions and tasks of the Indian Navy. The components of this strategy are categorised under two main segments – principles and actions for net maritime security.

Maritime forces preserve peace, promote stability and maintain security at sea

A favourable maritime environment entails conditions of security and stability at sea, with various threats remaining at a low level. A positive maritime environment implies conditions wherein rise in threats can be prevented or contained. Together, this would provide *net security*

Principles of Net Maritime Security

"India continuously aims at promoting an ever-expanding area of peace and stability around it, so that developmental priorities can be pursued without disruption." [55]

The principles of net maritime security will guide the broad methodology to reduce common threats and challenges, and build conditions whereby these will be monitored, contained and countered. The principles comprise the following:-

- ***Preservation of Peace***. Maintaining and promoting conditions of peace in the maritime environment would enable keeping of traditional threats and challenges at minimal levels, which will also facilitate economic growth and national development. This would need adherence to international law and norms by maritime nations. Enhancing mutual understanding through maritime engagements between maritime forces, and the exercise of strategic communication, would assist this element.

- ***Promotion of Stability***. Regular monitoring of the maritime situation, promotion of good order at sea, and measures to prevent and check the rise of threats from traditional and non-traditional sources, would strengthen stability of the maritime environment. Maintenance of presence by our own and friendly maritime forces, both independently and under cooperative mechanisms, would help promote maritime stability.

- ***Maintenance of Security***. The core element in a favourable and positive maritime environment is the degree of security available therein. The maintenance of security in a maritime environment, with many Indian and international stakeholders, requires a comprehensive and coordinated approach to contain challenges, counter threats and manage changes. The measures would include maintenance of presence, pursuit of maritime engagements, capacity building and capability enhancement, and conduct of maritime security operations.

Actions for Net Maritime Security

The actions for net maritime security would transcribe the principles into sustained activity, so as to preserve peace, promote stability and maintain security. The key actions for net maritime security, under this strategy, are as follows:-

- Presence and Rapid Response.
- Maritime Engagement.
- Capacity Building and Capability Enhancement.
- Develop Regional MDA.
- Maritime Security Operations.
- Strategic Communication for Net Maritime Security.

Presence and Rapid Response

Presence and rapid response will be exercised by the Indian Navy, both independently and in coordination with other Indian and friendly foreign maritime forces, in the following ways:-

- Presence and Surveillance Mission (PSM).
- Patrol.
- Overseas Deployment (OSD).

Presence and Surveillance Mission. The Indian Navy will deploy ships and aircraft for exercising presence and conducting surveillance in our areas of maritime interest. Conduct of PSMs will be done as a dedicated action and would also be conjoined with other activities, such as exercises, patrols and deployments.

Patrol. The Indian Navy will deploy ships, submarines and aircraft for conduct of patrols in defined maritime areas to strengthen security and provide rapid response to emerging threats. Patrols will also be carried out under the strategy for coastal and offshore security.

Overseas Deployment. OSDs are an intrinsic part of the Indian Navy's operating philosophy, for exercising presence across our areas of maritime interest. The Indian Navy will continue to send its forces on OSDs, to gather operational experience and environmental knowledge, undertake military exercises, demonstrate reach and sustenance, exercise freedom of navigation, pursue maritime engagements, and showcase the nation and the navy.

Maritime Engagement

Shaping a broader maritime environment to counter the flow of threats and challenges from one area to another requires inclusive and cooperative efforts between the nations concerned and their maritime forces. These efforts are facilitated by maritime engagements, as a principal means of conducting maritime diplomacy. Interaction with maritime forces of different nations will be pursued to mitigate traditional concerns and address non-traditional threats for mutual benefit. These will also serve to enhance mutual understanding, cooperation, and interoperability between the maritime forces. The Indian Navy will pursue maritime engagements in multiple ways:-

- Port Visits.
- Personnel Exchanges.
- Staff Talks and Interactions.
- Exercises with Foreign Navies.
- Maritime Assistance.
- Operational Interactions.
- High-Level Maritime Strategic Interactions.

Port Visits. Ships of the Indian Navy and Coast Guard regularly undertake port visits to other nations, to promote goodwill and professional interactions. Similarly, port visits to India by warships of friendly nations are welcomed. Port visits will be undertaken as part of OSD or OTR, and also for special occasions such as national days, commemoration of historical events, and International Fleet Reviews (IFRs).

Personnel Exchanges. The Indian Navy undertakes attachments and exchanges of personnel with other maritime forces, for training interaction, gaining operational experience, sharing and developing skill sets, building interoperability and strengthening maritime diplomacy. These include reciprocal positioning of naval personnel in diplomatic billets, training and technical support teams, and onboard each others' ships for short durations, especially at sea (termed as 'sea riders').

Shaping a broader maritime environment to counter the flow of threats and challenges from one area to another requires inclusive and cooperative efforts between the nations concerned and their maritime forces

Fostering mutual understanding and cooperation through exercises at sea

Staff Talks and Interactions. Staff talks provide the mechanism for naval staff of friendly navies to deliberate on various issues of mutual interest. The Indian Navy conducts bilateral staff talks with around 20 foreign navies, on annual/ biennial basis. These enable structured growth of ideas and interactions, including plans for further maritime engagements and cooperation. The Indian Navy will continue to accord high importance to the mechanism of staff talks with friendly navies, and seek to progressively enhance their content and expand the number of navies thus engaged.

Exercises with Foreign Navies. The Indian Navy regularly exercises with various foreign navies, at bilateral and multilateral levels. These exercises are used to project Indian capabilities, hone operational skills, imbibe best practices and procedures, and enable doctrinal learning. Exercises also provide a benign means for benchmarking our capabilities against international standards, and develop mutual friendship and respect. The Indian Navy will progress exercises with foreign navies in three participative formats – passage, occasional and institutionalised.

- ***Passage Exercises***. The Indian Navy will seek to maximise the opportunity of port visits and passages to conduct exercises with friendly navies. Such Passage Exercises (PASSEX) would be conducted when ships of either navy pass near the other's coast. The duration and complexity of PASSEX will be determined as per the operational considerations and degree of interoperability attained between the two navies.

- ***Occasional Exercises***. The Indian Navy will participate in certain occasional exercises, and also occasionally participate in other periodic exercises. These include HADR Exercises, maritime security exercises on the sidelines of OSDs and IFRs, and the multinational maritime warfare Rim-of-the-Pacific (RIMPAC) Exercise.

- ***Institutionalised Exercises***. The main thrust of exercises with foreign navies is, however, on institutionalised bilateral/ multilateral exercises. These are conducted on regular basis in our areas of maritime interest with a select group of navies, with whom our maritime relations are strong. The scope and content of these exercises are progressively enhanced, to keep pace with both traditional and non-traditional maritime challenges.

Maritime Assistance. The Indian Navy has provided maritime assistance to friendly nations, on their request to the Government of India, to address specific requirements. These include hydrographic surveys, diving assistance, ordnance disposal, salvage (removal of wrecks), sealift of critical stores, search and rescue, and overseeing ship construction. Such assistance has been instrumental in reassuring the beneficiary communities, and has been a catalyst for enhancing relations and goodwill in those nations. Maritime assistance of this nature is also indicative of the trust and confidence reposed by requesting nations in India's capabilities and readiness to address contingency issues. The Indian Navy will continue to provide such maritime assistance, as part of national efforts.

Operational Interactions. The Indian Navy also interacts with friendly maritime forces in specific professional mechanisms, to enhance mutual understanding, operational coordination and maritime security cooperation. These include MILAN,

The Indian Navy has provided maritime assistance to friendly nations, on their request to the Government of India, to address specific maritime requirements

Table 5.2: Institutionalised Exercises with Foreign Navies

The Indian Navy conducts institutionalised exercises with foreign navies as follows:-

The United States Navy in Exercise *Malabar*, since 1992	The Royal Navy (UK) in Exercise *Konkan*, since 2004
The Royal Oman Navy, in Exercise *Thammar-al-Tayyib*, since 1993, later renamed as Exercise *Naseem-al-Bahr* in 2007	The Sri Lanka Navy in SLINEX, since 2005
The Republic of Singapore Navy, since 1994, in *IN*-RSN ASW Training Exercise *Sea Lion*, later renamed as Singapore India Maritime Bilateral Exercise (SIMBEX)	The Brazil and South African navies in IBSAMAR, since 2008
The French Navy in Exercise *Varuna*, since 2001	The Japanese Maritime Self Defence Force in JIMEX, since 2012
The Russian Navy in Exercise INDRA, since 2003	The Royal Australian Navy in AUSINDEX, since 2015
	The Indonesian Navy, since 2015

The Indian Coast Guard has been conducting an annual Exercise *Dosti* with the Maldives National Defence Force since 1991. It has been upgraded to a trilateral exercise with addition of the Sri Lanka Coast Guard since 2012

International Maritime Boundary Line (IMBL) Meetings, and Anti-Piracy cooperative mechanisms.

- ***MILAN***. The Indian Navy initiated a biennial meeting of regional navies, named as MILAN, in 1995. It will continue to promote MILAN as a forum for improving operational interaction between navies in the region. Participation in MILAN has steadily increased from five navies in 1995 to 17 navies in 2014, which is indicative of its progress and success.

Institutionalised Exercises, like *Malabar*, are carried out with a select group of navies with whom our relations are strong

- ***IMBL Meetings***. The mechanism of holding regular meetings at the IMBL, between maritime forces of neighbouring states, facilitates mutual understanding and communication between local commanders, for clarification of issues, coordination and cooperation, so as to maintain stability. The Indian Navy and Coast Guard hold biannual IMBL Meetings with the Sri Lanka Navy and Coast Guard, for this purpose.

- ***Anti-Piracy Cooperative Mechanisms***. The growth of piracy in the IOR has led to several initiatives for improving operational coordination between maritime forces operating in the region. These include the Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia (ReCAAP),[56] Contact Group on Piracy off the Coast of Somalia (CGPCS),[57] and Shared Awareness and Deconfliction (SHADE) mechanism.[58] The Indian Navy will continue to support anti-piracy cooperative mechanisms and interactions.

High-Level Maritime Strategic Interactions. High-level maritime strategic interactions are periodically held with other nations to improve strategic communication, share maritime strategic perspectives, and review measures for maritime cooperation. These also serve to shape maritime policy in a cooperative, balanced and mutually beneficial manner, and facilitate persuasion or dissuasion, where necessary.[59] The interactions are conducted by way of high-level visits, delegations and dialogues between India and other countries, in bilateral and multilateral mechanisms. The Indian Navy will continue to support and progress maritime strategic interactions, and a synergised approach to maritime security. Some key IOR mechanisms in this regard are:-

- ***Maritime Security Focus in IORA***. The IORA was formed in 1997, with India as a founding member. Since the 2011 meeting in Bengaluru, IORA has highlighted the key linkage of maritime security with regional economic growth and development.[60] It has also endorsed the role of IONS, and called for IORA's work on maritime security to align with and complement IONS initiatives.[61]

High-level maritime strategic interactions are periodically held with other nations to improve strategic communication, share maritime strategic perspectives, and review measures for maritime cooperation

Bringing IOR navies together

- ***Indian Ocean Naval Symposium***. IONS was conceptualised and activated by the Indian Navy in 2008, as a regional forum for navies of the Indian Ocean. It provides a platform wherein the Chiefs of Navy can regularly meet,[62] as a mechanism for constructive engagement, to review and enhance common maritime security. The IONS has gained momentum since inception, with a steady growth in activities that address the range of maritime security challenges. The Indian Navy will continue to play a leading role in strengthening and supporting IONS.

- ***Maritime Security Multilateral Cooperation***. A maritime security trilateral cooperation initiative was launched by India, Sri Lanka and Maldives in 2011. The three countries have also agreed on a roadmap for cooperation in enhancing MDA, training, capacity building of maritime forces, and joint activities to strengthen maritime security.[63] The Indian Navy is an active participant in this mechanism, and will support its activities and further development.

Capacity Building and Capability Enhancement

In order to address the wide range, increasing numbers and large spread of maritime security challenges, it is beneficial for the various maritime forces, both within India and across our maritime neighbourhood, to assist each other. This assistance can be

provided in areas of respective strengths and expertise, through measures for capacity building and capability enhancement. This will also facilitate increased efforts and cooperation for maritime security. At the national level, the Indian Navy will continue to assist and support the development of the Indian Coast Guard, and both would, in turn, support capacity building and capability enhancement of the marine police and other maritime security agencies. Similar measures for cooperative development will be pursued by the Indian Navy and Coast Guard with friendly maritime forces, across our areas of maritime interest. These include cooperation in training, technical support and maintenance, provision of platforms and equipment, and conduct of hydrographic survey.

Training Cooperation. The Indian Navy will pursue training cooperation with friendly maritime forces, to support capability development, facilitate a shared understanding of maritime issues, strengthen relations, enhance interoperability and enable broader cooperation. The Indian Navy has a well developed and internationally reputed training framework, covering all aspects of maritime security activities. India has been offering formalised training courses to maritime forces of friendly foreign countries for several decades,[64] and has also provided assistance for operational sea training of their ships. This allows friendly maritime forces to avail of quality training with India, which strengthens their skill sets and capabilities, in an economical manner, whilst enhancing mutual relations. To meet specific requirements and assist in developing resident expertise, the Indian Navy also deputes Training Teams to some countries, upon their request. In addition, during various port visits and overseas deployments, opportunity is availed of to provide exposure and training in specialised areas, onboard the visiting ships, as per the host navy's requirements. The Indian Navy itself avails of a few training courses with other navies, under similar programmes or reciprocal arrangements, to gain insight into their training techniques, doctrines and procedures.

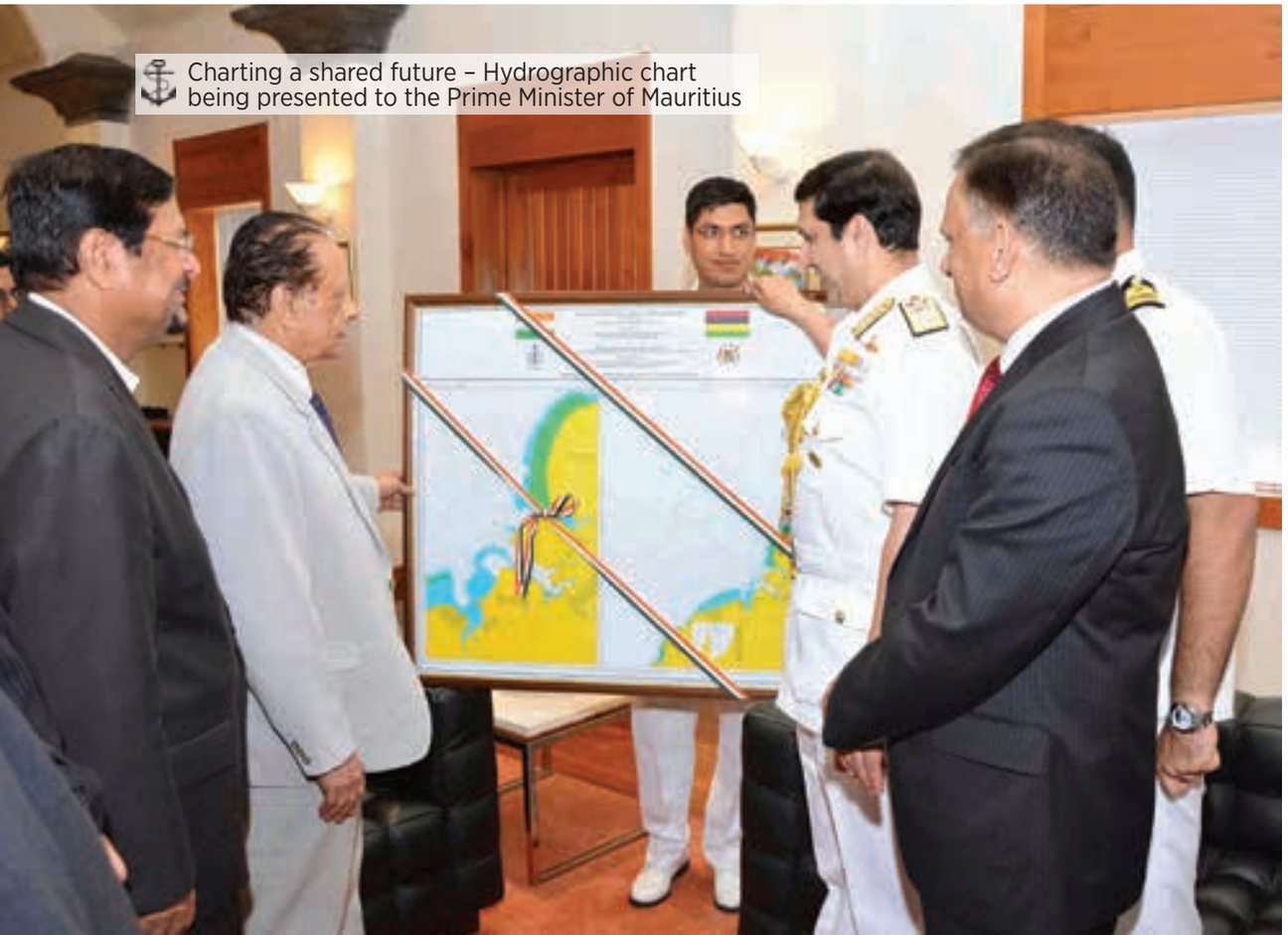
MCGS *Barracuda* - Building Bridges of Friendship, from GRSE Kolkata to Port Louis, Mauritius


Admiral's Cup at INA, Ezhimala – Sailing together towards common challenges

Technical Cooperation. The Indian Navy will continue to provide technical and maintenance support to friendly maritime forces, as per their request. This includes technical advice, assistance for maintenance, repairs and refits of their ships and equipment, support in operation of vessels and equipment made in India, development of resident technical expertise in these navies through joint programmes, and transfer of hardware by means of gift, sale, lease or attachment. In recent years, the Indian Navy has facilitated construction of new ships at Indian shipyards, as per the needs of the friendly maritime force. Increase in technical cooperation, especially in defence

production, will remain a focus area in the years ahead. This not only strengthens the capacity of the other maritime force to provide maritime security in its own area of operation, which goes towards improvement of net security in the regional maritime environment, but also strengthens bilateral relations and maritime interoperability.

Hydrographic Cooperation. Hydrographic cooperation has been a key feature of the Indian Navy's regional engagement initiatives. Hydrography is a resource intensive activity, and the Indian Navy is one of the few navies with considerable expertise in this field. Cooperation in the field of hydrography is an important area of naval diplomacy, which includes hydrographic assistance to friendly foreign navies for survey of their maritime zones and preparing nautical charts.[65] This strengthens bilateral relations and augments marine safety. The Indian Navy has been actively pursuing hydrographic cooperation with several countries, including Bangladesh, Indonesia, Kenya, Maldives, Mauritius, Mozambique, Myanmar, Oman, Seychelles, South Africa, Sri Lanka, and Tanzania, and shall endeavour to gain the status of producer nation of nautical charts in the IOR.



Charting a shared future – Hydrographic chart being presented to the Prime Minister of Mauritius

Developing Regional MDA

The obscurity provided by the maritime environment, due to its vast expanse and limits in surveillance ranges, provides inherent cover to vessels at sea, especially those operating further from the coast and on the high seas.[66] In order to reduce the information gaps and enhance maritime security for common benefit, the Indian Navy will promote mechanisms for developing regional MDA.

This will include efforts for development of Coastal Surveillance Radar System (CSRS) Chains in the region, especially the IOR island states. This would enhance the surveillance coverage of these states, whilst facilitating development of a broader regional MDA network. The data from CSRS would be interlinked with information from other sources, as per mutual arrangements. Efforts to develop broader Air Domain Awareness (ADA), as a part of MDA, would also be pursued, including by harnessing air traffic information.

The Indian Navy is, accordingly, pursuing arrangements for sharing of white shipping and air traffic information between friendly nations in the region. This will be supported by the creation of networked systems that link and compare all information received, including data from commercial sources. Such networked systems will enable monitoring of vessels across the region, with online correlation and validation of information. The information sharing arrangement would be progressively expanded to cover neighbouring regions, and coordinate with similar initiatives by other nations.[67]

Maritime Security Operations

In addition to the various measures described above, the Indian Navy will continue to undertake operations that augment maritime security in our areas of maritime interest. A key component of the strategy to shape a favourable and positive maritime environment, these operations would seek to enhance net maritime security in the region, in cooperation and coordination with other friendly maritime forces. The operations would include possible support to other maritime states, based upon their request to the Government of India.

> The Indian Navy will continue to undertake operations that augment maritime security in our areas of maritime interest

The maritime security operations under this strategy include the following:-

- EEZ Surveillance and Patrols.
- Coordinated Patrols (CORPAT).
- Anti-Piracy Operations.
- Humanitarian Assistance and Disaster Relief Operations.
- Non-combatant Evacuation Operations.
- Maritime Interdiction Operations (MIO).
- Peace Support Operations (PSO).
- Maritime Search and Rescue (M-SAR).

EEZ Surveillance and Patrols. The sovereign rights of a nation, over exploitation of natural resources in the waters, seabed and subsoil of its EEZ, are safeguarded by respective designated maritime agencies. The lead Indian agency in this regard is the Indian Coast Guard, which conducts regular surveillance and patrol in India's EEZ, to maintain presence, monitor activities, and enforce relevant laws of the country. This is also in support of coastal and offshore security, as the EEZ provides access to our territorial waters and the coast. The Indian Coast Guard is supported by the Indian Navy, as required. In recent years, the Indian Navy and Coast Guard have also been providing support to island nations in the IOR, for undertaking surveillance and patrol of their vast EEZ, in joint operations with the local maritime forces. These joint patrols augment maritime security of the island nations and also the surrounding maritime environment.

Coordinated Patrols. CORPATs for enhancing maritime security are undertaken by the Indian Navy with several regional navies.[68] Patrols are conducted in respective waters, on either side of the IMBL, by naval ships and aircraft in a coordinated manner.[69] The CORPATs address the range of non-traditional maritime security challenges, including maritime terrorism, gun running, human and drug trafficking, and poaching.

India's maritime forces will continue to counter piracy, in consonance with domestic and international law, to ensure security for shipping and fishing in the region

Securing the global commons – Maintaining anti-piracy vigil

Anti-Piracy Operations. The Indian Navy and Coast Guard have taken robust and kinetic actions to counter piracy, through sustained anti-piracy operations. These have led to the disruption and thwarting of more than 40 pirate attacks on merchant shipping in the Arabian Sea and the Gulf of Aden, with the arrest of 120 pirates, and pushing the furthest line of piracy back, to off the Horn of Africa by 2013. India's maritime forces will continue to counter piracy, as required, in consonance with domestic and international law, to ensure security for shipping and fishing in the region. These actions will also be carried out in coordination with international efforts and anti-piracy cooperative mechanisms.

Humanitarian Assistance and Disaster Relief Operations. The IOR and its hinterland form the locus of about 70% of the world's natural disasters, resulting from earthquakes, tsunamis, cyclones and floods. The Indian Navy has been at the forefront of HADR operations in coastal areas over the past decade, both in India and in the maritime neighbourhood. The Indian Navy will, accordingly, maintain credible HADR capability, and also promote capability development and coordination between regional navies for combined HADR operations. Towards this, as part of IONS initiatives in 2014, the Indian Navy assumed the chair of the IONS Working Group (IWG) on HADR, which has formulated a way ahead for developing coordinated HADR response amongst IOR navies.

Map 5.1: HADR Operations Undertaken by the Indian Navy since 2004

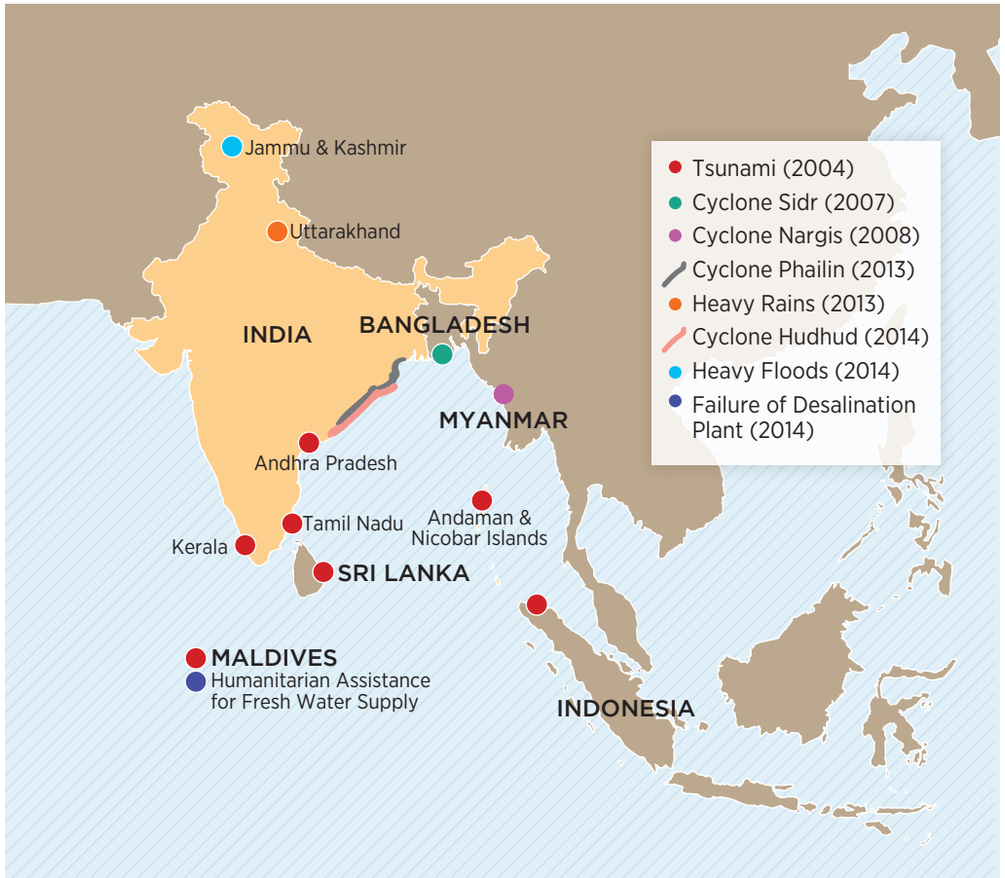


Table 5.3: Non-combatant Evacuation Operations Conducted by the Indian Navy

Country	Operation	Personnel Evacuated	By Indian Naval Ships	Year
YEMEN 	Rajdoot	Nil, as situation stabilised. Ships were on standby in the area	*Godavari Shakti*	1986
LEBANON 	Sukoon	1,764 Indian citizens and 516 foreign nationals	*Mumbai Betwa Brahmaputra Shakti*	2006
LIBYA 	Blossom	150 Indian citizens	*Mysore Jalashwa*	2011
KUWAIT 	Capella	Nil. Ships were on standby in the area	*Mysore Mumbai*	2014
YEMEN 	Rahat	1,783 Indian citizens and 1,291 foreign nationals from 35 nations	*Sumitra Mumbai Tarkash*	2015

Non-combatant Evacuation Operations. There are large numbers of Indian citizens working and residing overseas in areas that have been, and remain susceptible to, instability and insecurity. Consequently, the Indian Navy has undertaken several NEO in recent years, in coordination with other national agencies, providing succour to both Indian and foreign nationals. The Indian Navy will remain prepared to conduct NEO, on directions from the Government of India, to strengthen maritime security in our areas of interest.

Operation Rahat – Extending helping hands

Maritime Interdiction Operations. The Indian Navy will remain prepared to undertake MIO, as required, to stop movement of vessels that jeopardise India's maritime security interests, to prevent their reaching the intended destination. Conduct of MIO would be based on specific intelligence or security conditions and in accordance with applicable laws, to prevent or counter movement of maritime threats in the region. This may include operations in support of friendly nations on their request to the Government of India.[70] These operations may be conducted independently, in joint action with the Indian Coast Guard and other armed forces, or in coordination with maritime forces of friendly countries.

Peace Support Operations. The Indian Navy will also remain prepared to contribute to PSO mandated by the United Nations, and as directed by the Government of India.[71]

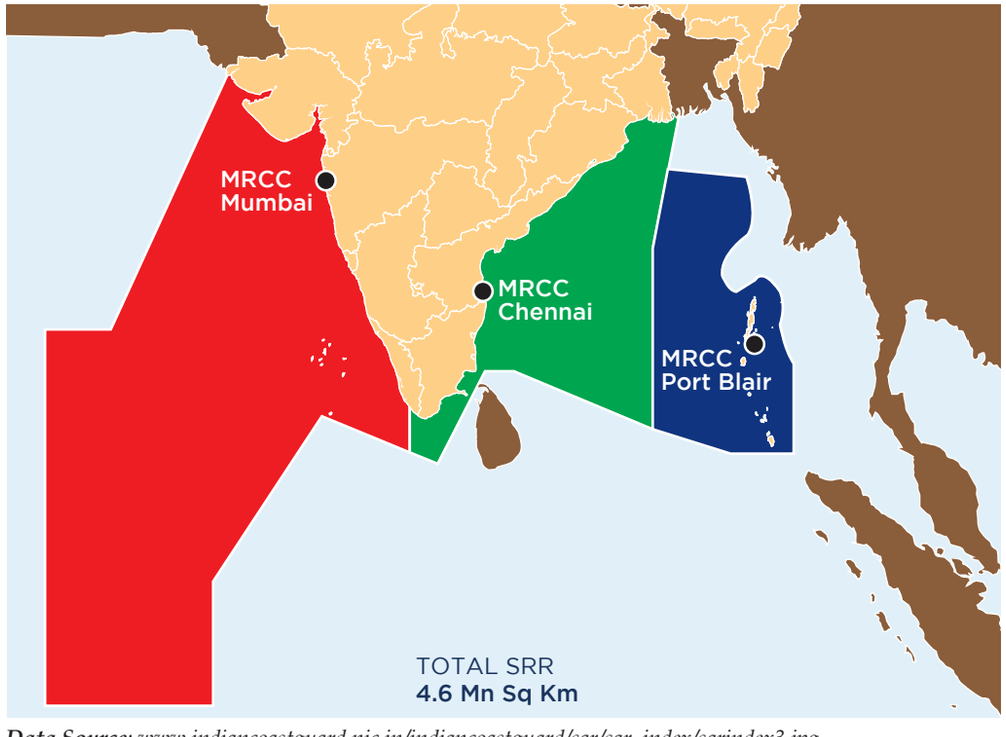
Maritime Search and Rescue Operations.[72] The Indian Coast Guard is the National Maritime Search and Rescue Coordinating Authority for SAR missions in the Indian Search and Rescue Region (ISRR). It has established Maritime Search and Rescue Coordination Centres (MRCCs) at Mumbai, Chennai and Port Blair, and the Indian Maritime Search and Rescue computerised ship reporting system called INDSAR, for ships transiting through the ISRR. M-SAR efforts are supported by the Indian Navy and Air Force, in addition to all other maritime agencies in the ISRR.[73]

Strategic Communication for Net Maritime Security

There are a large number of participants and stakeholders involved in the maritime environment. Shaping of favourable and positive conditions also depends on efficient, effective communication and understanding between these various actors. Hence, strategic communication of efforts by the Indian Navy to enhance net security in our areas of maritime interest will remain important and be accorded due focus.

In order to ensure positive effect of activities conducted, relevant tools of communication will be utilised to project the appropriate image, in a timely and accurate manner, taking into consideration both planned events and sudden developments. Participation in various maritime engagements and interactions, provision of images and statements in support of our stance, and communication of our message through staff channels and in the open domain, are some of the measures that will be undertaken in coordination with our diplomatic and other government agencies, towards the larger purpose of promoting a favourable and positive maritime environment.

Map 5.2: Indian Search and Rescue Region (ISRR)



***Data Source**: www.indiancoastguard.nic.in/indiancoastguard/sar/sar_index/sarindex3.jpg*

6

STRATEGY FOR COASTAL AND OFFSHORE SECURITY

6

Strategy for Coastal and Offshore Security

Maritime Security Objective

To protect Indian coastal and offshore assets against attacks and threats emanating from or at sea

The seamless nature of the maritime domain enables ready flow of threats and challenges from one area to another. In recent years, the rise in non-traditional threats, especially maritime terrorism, has necessitated increased focus on coastal and offshore security. Maritime terrorism has grown and expanded over the years, operating from the sea and at sea, in both direct and indirect forms. It has also started taking an increasingly hybrid character, with possible blurring of lines between conventional and sub-conventional levels of conflict.

India has faced this expanding maritime threat for over two decades.[74] The coastal and offshore security apparatus has accordingly evolved as per changes in the nature and type of threats, with increased involvement of the Indian Navy and Coast Guard in support of the state police and security agencies.[75] The events of '26/11' and unabated threat of terrorism led to an urgent revamp of the coastal and offshore security organisation. Enhanced patrolling and surveillance in coastal areas have since been undertaken by the State Marine Police (SMP), Customs, Coast Guard and the Navy. Substantial progress has been made in recent years, to a large, complex and dynamic challenge. Impetus has also been given to development of the coastal and offshore security infrastructure.

Operating in a framework of jointness and coordination

The strategy for coastal and offshore security has, accordingly, been developed with focus on the Indian Navy, as per its current mandate and being the principal maritime force of the nation, in a framework of jointness and coordination with the other maritime agencies. An increasing role and operational responsibilities are envisaged to be taken up by the Indian Coast Guard and other agencies, as their capabilities and the ambit of coastal security both evolve.

The strategy for coastal and offshore security shall seek to reduce, counter and eliminate the threat of armed attack by sub-conventional groups, and also influx of arms and infiltration by armed attackers from the sea, against coastal and offshore assets. It relies substantively on the other strategies for its operative elements, particularly the broader strategy for deterrence, key elements of the strategy for conflict, and many aspects of the strategy for shaping a favourable and positive maritime environment. This strategy also employs, supports and is supported by various roles, and associated objectives, missions and tasks of the Indian Navy.

Table 6.1: Strategy for Coastal and Offshore Security – Employed, Supporting, and Supported Roles, Objectives, Missions and Tasks

ROLE	MILITARY	DIPLOMATIC	CONSTABULARY	BENIGN
OBJECTIVES	Deterrence against Conflict and Coercion Defence of India's Territorial Integrity, Citizens and Offshore Assets from Seaborne Threats Safeguard India's National Interests and Maritime Security	Strengthen Defence Relations with Friendly States Portray Credible Defence Posture and Capability Strengthen Maritime Security in IOR Promote Regional and Global Security	Coastal and Offshore Security Good Order at Sea	Promote Civil Safety and Security
MISSIONS	MDA Sea Control Force Protection Special Forces Ops Seaward Defence Coastal and Offshore Defence	Constructive Maritime Engagement Maritime Assistance and Support Presence	Counter Terrorism Counter Armed Threats from Non-State Actors	Aid to Civil Authorities
TASKS	Surveillance Patrol Maritime Strike Information Ops Electronic Warfare Protection of Offshore Assets VBSS Harbour Defence	Technical and Logistics Support Coordinated Patrol	Counter Infiltration Patrol Anti-Piracy Anti-Trafficking Anti-Poaching	Medical Assistance Diving Assistance

Developing Coastal and Offshore Security Mechanisms

This strategy is focused on developing the coordinative framework and ways by which the mechanism for coastal and offshore security will counter a continuing and evolving threat. The measures will be progressed by the Indian Navy, Indian Coast Guard and other maritime agencies, with focus on the following areas:-

- Coastal and Offshore Security Framework.
- Coastal and Offshore Maritime Domain Awareness.
- Coastal Community Participation.
- Coordinated Presence and Patrol.
- Coordinated Operational Response.
- Cooperative Capability Development.
- Maritime Governance.

Coastal and Offshore Security Framework

In a cooperative and coordinative mechanism, it is essential to maintain a common understanding of the framework in which the strategy will operate. Aspects of the roles, responsibilities and applicability of various means and methods in the maritime domain have been aligned accordingly and will be progressively synergised. The main concepts that govern the framework of actions are summarised below.

Coastal Security Mandates. In February 2009, the Indian Navy was entrusted with the responsibility for overall maritime security, including coastal security and offshore security.[76] The Indian Coast Guard is responsible for ensuring security of the maritime zones of India, and protection of maritime and other national interests therein.[77] It has been additionally designated as the authority responsible for coastal security in territorial waters, including waters to be patrolled by the State Marine Police.[78] The Director General Indian Coast Guard, also designated as the Commander Coastal Command, is responsible for overall coordination between Central and State agencies in all matters relating to coastal security.[79] The Naval Commanders-in-Chief (Cs-in-C) have been additionally designated as Cs-in-C Coastal Defence.

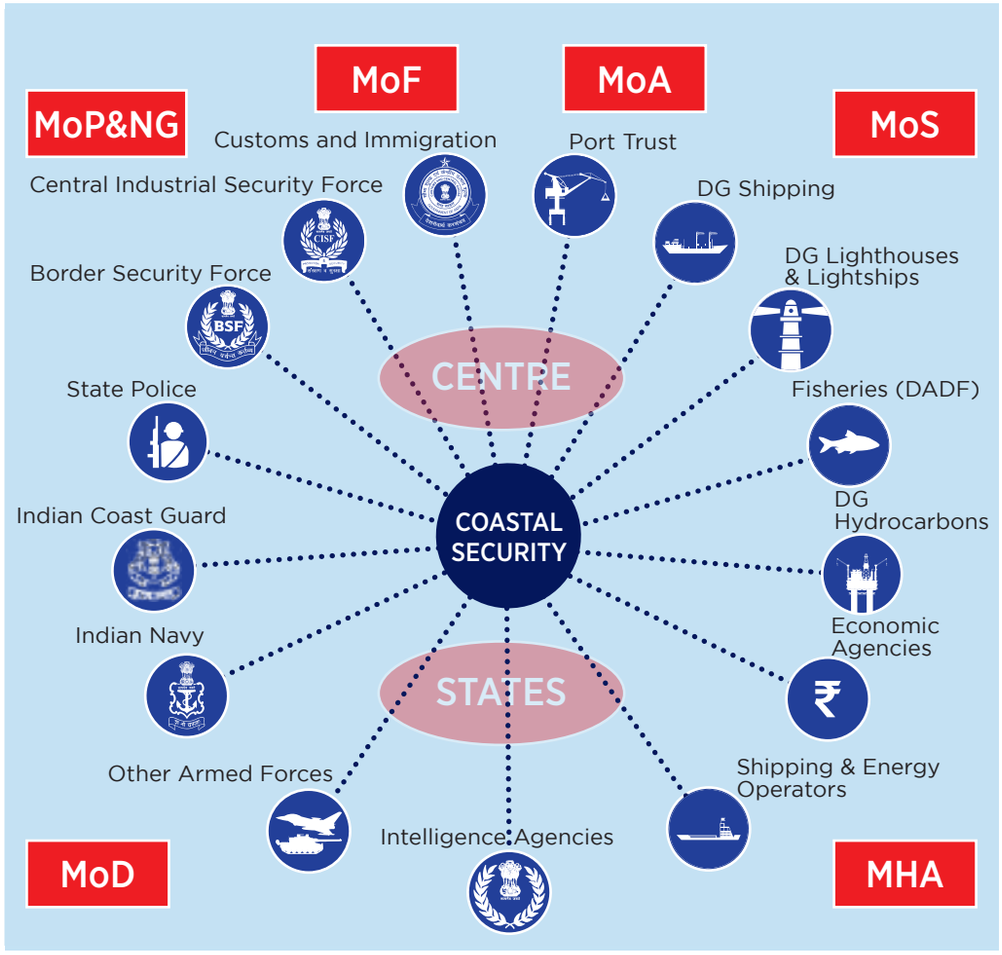
The Indian Navy is entrusted with the responsibility for overall maritime security, including coastal security and offshore security

The Indian Navy is assisted by the Indian Coast Guard, State Marine Police, and other Central and State agencies for the coastal defence of the nation, and controls all Navy – Coast Guard joint operations.

Coastal Waters. The context of coastal security is in relation to the *coastal waters zone*, in which it is to be principally applied. This is considered, for the purpose of this strategy, as the water area seawards of the Indian coast upto the limit of India's contiguous zone, or the IMBL in case the latter is nearer.[80] However, threats can move swiftly across open waters from the high seas into India's maritime zones and coastal waters. This necessitates monitoring of sea areas extending beyond the coastal waters, in order to secure this zone and ensure timely detection and response to emergent threats.

Diagram 6.1: Coastal Waters

Diagram 6.2: Agencies Involved in Coastal Security



Coastal Security. *Coastal security* is a subset of maritime security, focused on the coastal waters. It is ensured through coordinated efforts amongst multiple stakeholders at the Centre and States, towards provision of comprehensive security against traditional and non-traditional threats. Coastal security has a wide connotation encompassing maritime border management, island security, maintenance of peace, stability and good order in coastal areas and enforcement of laws therein, security of ports, coastal installations and other structures, including Vital Areas and Vital Points (VAs/ VPs), vessels and personnel operating in coastal areas. An effective organisation for coastal security also facilitates coastal defence.

Immediate Support Vessels conduct coastal and offshore defence patrols

Offshore Security. *Offshore security* relates to the safety and protection of offshore assets, including artificial islands, offshore terminals, installations and other structures and devices in the EEZ. It is a primary responsibility of the Indian Coast Guard,[81] which would be supported by the Indian Navy as required towards overall maritime security. Indian naval ships, including dedicated Immediate Support Vessels (ISVs), conduct regular offshore defence patrols in the Offshore Development Areas (ODA) in support of offshore security. The seaward approaches are sanitised by other ships and aircraft of the Coast Guard and Navy.

Coastal and Offshore Defence. The actions for coastal and offshore defence have been covered under the strategy for conflict. There is a close linkage, and some overlaps, of these actions with components of the strategy for coastal and offshore security, particularly those related to the threat of sub-conventional armed attack.

Coastal and Offshore Maritime Domain Awareness

The complexity of MDA in coastal and offshore areas is very high due to the larger numbers and types of vessels operating therein, which are mostly exercising the freedom of action and navigation prevalent in peace time, in the legitimate pursuit of maritime activities at sea. Development of effective MDA in coastal and offshore waters is being done by maximising use of available systems, creating new means and interfaces amongst the various agencies, and developing advanced information management, analysis and decision-support systems.

Position Reporting Systems. Indian and foreign vessels report their positions by various means, including manual and automatic, under voluntary and mandatory mechanisms. This is done to improve security response, search and rescue, and collision-avoidance. These systems and processes also assist the maritime agencies in maintaining MDA for coastal and offshore security, by suitable sharing, linking and correlation of information:-

- Indian Ship Position and Information Reporting System (INSPIRES).[82]
- Indian Maritime Search and Rescue (INDSAR).[83]
- Island Reporting (ISLEREP).[84]
- Pre-Arrival Notification of Security (PANS).[85]
- Long Range Identification and Tracking (LRIT).[86]
- Automatic Identification System (AIS).[87]
- Space-Based Automatic Identification System (AIS-SB).[88]
- Automatic Dependent Surveillance – Broadcast (ADS-B).[89]
- White Shipping Information.
- Air Traffic Information.

New Position Reporting Systems. A dedicated Indian transponder system has been developed for sub-20 m vessels, to close the information gap on their position and movement. This will cater for limitations in the use of existing position reporting

Offshore security relates to the safety and protection of offshore assets, including artificial islands, offshore terminals, installations and other structures and devices in the EEZ

Dynamic surveillance is undertaken by deployment of Indian Navy, Indian Coast Guard and State Marine Police assets, in multiple layers across the coastal waters and seaward approaches

systems, including AIS, due to lesser antenna height and power generation onboard these small vessels.

Fishing Vessels and License Information Management. Verification and monitoring of the identity and ownership of about 2,45,000 fishing vessels in India, amidst a fishing community of about four million, has been greatly eased by creation of the online ReALCraft (Registration and Licensing of Fishing Craft) portal. The information is also available to the Indian Navy and Coast Guard.

Biometric Identity Cards. Issuance of biometric identity cards to majority fishermen and composite card readers to the maritime security agencies has been done, to enable biometric verification of the identity of fishing vessel crews at sea.[90]

Port Vessel Information Management. The details of various vessels in harbour and their planned movements are available with the major ports, which have developed an online information portal, called the Port Community System (PCS). This information is shared with the Indian Navy and Coast Guard. Similar steps would be pursued for the non-major ports.

Static Surveillance. Surveillance radars and AIS receivers have been fitted along the Indian coast, islands and offshore installations. Radars at major ports monitor and manage traffic approaching respective harbours. These various static surveillance systems provide active information on vessels operating in their vicinity (upto 25 nm, or 45 km), and feed into the development of MDA.

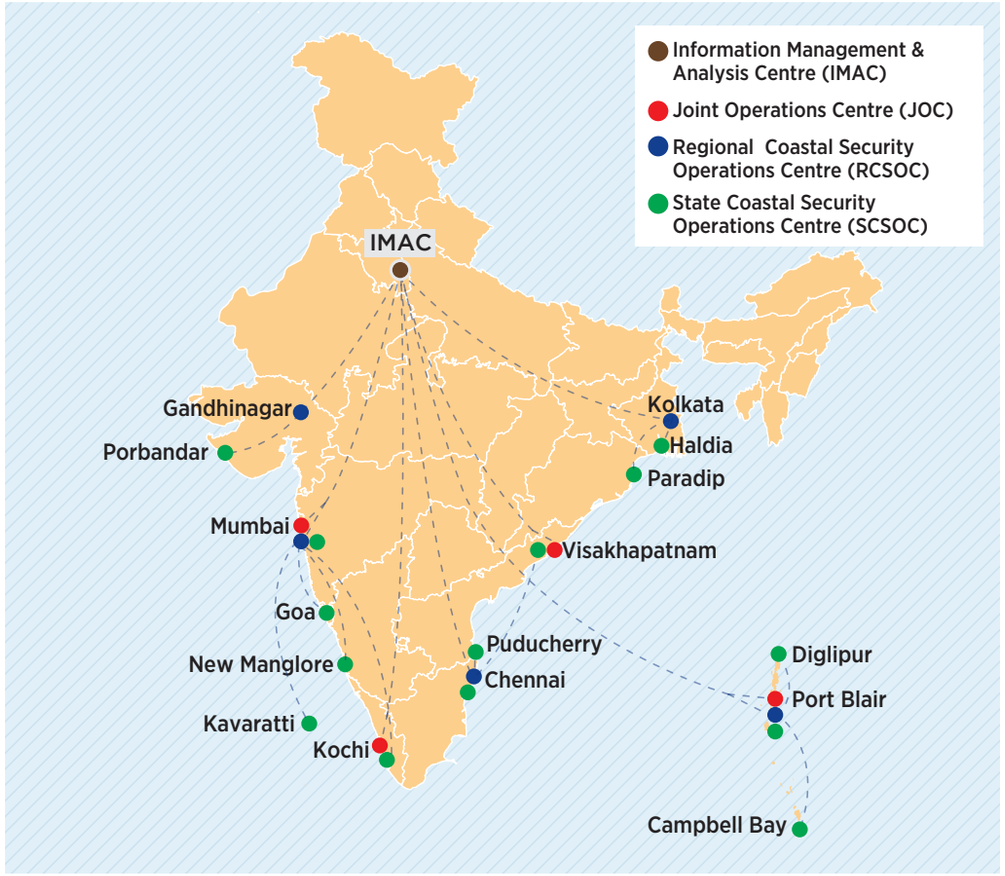
Dynamic Surveillance. Dynamic surveillance is undertaken by deployment of Indian Navy, Indian Coast Guard and State Marine Police assets, in multiple layers across the coastal waters and seaward approaches. These include Long Range Maritime Reconnaissance (LRMR) aircraft in the outer layer, Short Range Maritime Reconnaissance (SRMR) aircraft, Unmanned Aerial Vehicles (UAV) and ships across the interim layers, and patrol vessels and micro-UAVs in the inner layer. These will be aided by space-based surveillance, to increase and intensify the surveillance cover.

Surveillance and information networking is essential for coastal and offshore security

Information Networking and Management. The varying inputs mentioned above are spread over time and space, and need to be correlated so as to develop a composite and coherent MDA. This requires information networking and management in several, simultaneous layers, which is being done through dedicated systems:-

- Vessel Traffic Management System (VTMS) and Vessel and Air Traffic Management System (VATMS).
- National AIS (NAIS) Network.
- Merchant Shipping Information System (MSIS).
- Coastal Surveillance Network (CSN).
- National Command Control Communication and Intelligence Network (NC^{3}IN).
- National MDA (NMDA).

Map 6.1: National Command Control Communication and Intelligence Network (NC³IN)



Intelligence. A relatively lesser reaction time to respond to situations off/ along the coast underscores the criticality of accurate, timely and actionable intelligence. The Indian Coast Guard has been designated as the Lead Intelligence Agency (LIA) for the coastal sea borders since 2003, with the mandate to generate, coordinate and share intelligence with the agencies concerned. A Multi-Agency Centre (MAC) and Subsidiary MACs (SMACs) at state levels facilitate information and intelligence sharing on a continuous basis amongst the intelligence agencies. Measures for improved intelligence gathering, analysis and sharing, have been vital in developing a common understanding of the operating environment and enabling timely, effective response. These measures will be continually strengthened and progressed.

Coastal Community Participation

Coastal and fishing communities are the largest constituents of the coastal security framework and are amongst its core strengths. Effective involvement of the vast four million strong fishing community, and the larger coastal community, has the potential to significantly complement efforts of the security agencies. The maritime security agencies will, therefore, foster the coastal community to serve as the 'eyes and ears' of security agencies.

Community Interaction Programmes (CIP) are being conducted by the Indian Coast Guard at all fishing hamlets, to enhance awareness of the coastal populace and fishermen in particular.[91] Initiatives such as the *Sagar Rakshak Dal* and Village Vigilance Committees, who are a voluntary group from fishing and coastal communities, assist the security agencies in surveillance, intelligence and patrolling, and have contributed to enhancing coastal security in several states.[92]

The coastal and fishing communities are important partners in ensuring coastal security

Coordinated presence and patrolling is carried out across multiple layers, from the coastline to the high seas

Presence and patrol missions are central to the strategy for coastal and offshore security. These are coordinated between the various maritime security agencies, to provide seamless protection

Toll free communication arrangements have been established, with shore-based control centres manned by State Marine Police/ Indian Coast Guard personnel in all states and Union Territories (UTs), in order to facilitate coastal community participation. These measures have not only improved security but have also saved lives, and provide an important link between fishermen and security agencies.

Measures to involve, sensitise and incentivise the coastal community to contribute to the coastal security construct will remain a focus area. Implementation of Best Management Practices for security of vessels and offshore installations will also be promoted.

Coordinated Presence and Patrol

Presence and patrol missions are central to the strategy for coastal and offshore security. Under this strategy, presence is coordinated between the various maritime security agencies, with provision of mutual support and back-up, to provide seamless protection. Presence and patrolling is maintained in multiple layers, by the State Marine Police, Indian Coast Guard and Indian Navy, in their respective zones of responsibility, as per prevalent capabilities and threat perceptions:-

- ***State Marine Police***. The State Marine Police is responsible for patrolling the inner layer from the coastline upto the territorial waters, in coordination with Customs, Central Industrial Security Force (CISF) and respective port authorities, as relevant.
- ***Indian Coast Guard***. The Indian Coast Guard patrols the maritime zones of India, and supports the State Marine Police within the inner layer as required.
- ***Indian Navy***. The Indian Navy supports the Indian Coast Guard within the maritime zones as required, and provides presence, including surveillance and patrol, on the high seas beyond the EEZ. The Indian Navy also undertakes patrolling in the ODA, and its *Sagar Prahari Bal* (SPB) specialised force undertakes patrolling of naval harbours.

Coordinated Operational Response

Coastal security involves multiple stakeholders with both, independent and shared responsibilities. Coordination amongst these agencies will be maintained through a cooperative approach that will focus on the key aspects described below, whilst remaining sensitive to any limitations and constraints of partner agencies. This takes into consideration the specific needs of changing threat levels, including conditions wherein a coastal security operation may need to translate rapidly into a coastal defence operation, with joint deployment of forces from multiple maritime agencies.

Operational Control and Coordination. Unified control of joint operations enhances the efficiency and effectiveness of response, with optimal utilisation of all assets. Control and coordination of joint operations will be exercised through the Joint Operations Centres (JOCs), which have been suitably equipped for the purpose, utilising the NC^{3}IN. Towards this, four JOCs have been set up under the respective Naval Cs-in-C, at Mumbai, Kochi, Visakhapatnam and also under the C-in-C ANC at Port Blair. These JOCs are jointly manned by the Indian Navy and Coast Guard, with inflow of information from all stakeholders through the Regional Coastal Security Operations Centres (RCSOCs), State Coastal Security Operations Centres (SCSOCs) and


Joint operations are conducted to improve overall response and optimally utilise all assets

Area Coastal Security Operations Centres (ACSOCs). The RCSOC, SCSOC and ACSOC have been activated by the Indian Coast Guard for coordination with Central and State agencies, at regional, state and area levels respectively, through corresponding Coast Guard formations. Each operations centre has suitable representation from the agencies concerned. All stakeholders operate in a 'hub-and-spoke' model.

Interoperability, Flexibility and Response. SOPs for ensuring interoperability and synergy in coastal security operations have been established between the various agencies, taking into consideration respective capabilities, characteristics and operating conditions. The SOPs will be periodically reviewed and updated, with the experience gained. Good interoperability will also strengthen flexibility in catering to rapid changes that may occur during the conduct of operations. These include transition of control from first responder to lead agency, from single-agency to multi-agency operations, and from security to defence operation, with the insertion of additional forces, in a coordinated and mutually supportive manner. The response mechanisms will also be prepared for operating under conditions of possible information and intelligence gaps, capability mismatch and operational 'fog', through training, communication and interoperability. Appropriate RoE will govern the use of force, in relation to the threat perceptions and prevailing circumstances.

Visit, Board, Search and Seizure. Conduct of VBSS is the primary method by which the bona fide character of a vessel can be ascertained. VBSS operations will be undertaken in coastal waters primarily by the Indian Coast Guard and State Marine Police, which are law enforcement agencies. The Indian Navy will also exercise VBSS under certain conditions, such as during conflict and under its mandate for coastal and offshore defence.

Coordinated Security Measures. Credible proximate/ onboard security measures, including passive and active, commensurate with the threat assessment, are essential prerequisites for security of vessels, offshore assets as also coastal assets ashore. These will be regularly strengthened, reviewed and refined, both independently and in a coordinated manner. The mechanisms of the Offshore Security Coordination Committee (OSCC), under the chairmanship of Director General Indian Coast Guard, and the Joint Venture Offshore Protection Advisory Committee (JVOPAC), a sub-committee of the OSCC under chairmanship of the Flag Officer Offshore Defence Advisory group (FODAG), would continue to be strengthened and employed. Initiatives for strengthening security by public sector and private players will continue to be encouraged, and measures for improving their coordination with security agencies will be facilitated.

SOPs for ensuring interoperability and synergy in coastal security operations have been established between the various agencies, taking into consideration respective capabilities, characteristics and operating conditions

Cooperative Capability Development

Training and Technical Assistance. The various agencies operating in the coastal security framework will need to develop respective maritime capacity and capability. The Indian Navy will provide assistance, as required by the other maritime security agencies, for their capability development. This includes training support for development of expertise in joint maritime security operations, and technical support in the development of their maritime force levels and infrastructure.

Exercises. Joint coastal security exercises have been carried out regularly in all coastal states and UTs, to test the coordinative mechanisms, identify voids, streamline procedures, and provide operational training. Coordinated by the Indian Coast Guard, with participation by the Indian Navy, State Marine Police and other Central and State agencies, these exercises have graduated steadily to more complex levels and across a wider maritime front. Joint coastal security exercises will be progressed as a central means of enhancing preparedness and coordinated operational response, amongst the multiple agencies.

Operational Infrastructure. The efforts for strengthening operational infrastructure will be progressed in a joint and coordinated manner. The Indian Navy and Coast Guard have included their capability and infrastructure needs for coastal security, under the revised mandate post-'26/11', in respective perspective plans. The capability development for coastal and offshore security needs will be further coordinated between the two forces, to optimise financial value, maximise operational gains, and ensure interoperability, as has been done for the JOCs, CSN and NC^{3}IN.

Joint Preparedness. Joint preparedness necessitates a gamut of activities across multiple agencies. While these would mostly remain independent responsibilities of each security agency, a high degree of cooperation and interagency coordination will need to be maintained, with mutual awareness of capabilities and, especially, any limitations

that may impact the overall operational response. This will be attained by fostering jointness and synergy, strengthening interagency communication and operational mechanisms, and working closely together to promote evolution in organisational structures for joint functioning.

Maritime Governance

Maritime governance relates to the structured and coordinated actions to govern the maritime domain under India's jurisdiction, with multiple agencies and functions involved. These include aspects of apex-level policy and review, interagency monitoring and coordination, and legislative and regulatory framework, which govern the conduct of various maritime activities that also bear upon maritime security. Maritime governance, therefore, plays an important role in, and contributes to, maritime security, including both coastal and offshore security. The Indian Navy shall continue to participate in various mechanisms and contribute to measures for strengthening maritime governance, as per its designated role, responsibilities and tasking.

Policy and Review. In keeping with the multitude of agencies and the complexity of maritime governance, the functions of policy and review are handled at various levels and forums.

Eternal vigilance and preparedness are the key enablers for security

The Indian Navy shall continue to participate in various mechanisms and contribute to measures for strengthening maritime governance, as per its designated role, responsibilities and tasking

- ***Single Agency, Multiple Functions***. Each agency has its own structure, with policy and review functions handled at respective apex levels, with appropriate representation from other agencies. Regular reviews are carried out by each agency, with necessary interactions and information to the other agencies concerned.
- ***Single Function, Multiple Agencies***. Specific functions that affect multiple agencies are addressed by dedicated multi-agency mechanisms, such as National Shipping Board (NSB) for shipping issues, Maritime States Development Council (MSDC) for coastal states issues, and OSCC for offshore security issues.
- ***Multiple Agencies and Functions***. National apex level policy and review of maritime security, covering all maritime agencies and domains, is undertaken through the 'National Committee for Strengthening Maritime and Coastal Security against Threats from the Sea' (NCSMCS), constituted under the chairmanship of the Cabinet Secretary in 2009. This has representatives from all the ministries, departments, and organisations concerned in the Government of India, as well as the Chief Secretaries/ Administrators and senior police officials of the coastal states and UTs.

Apex Monitoring and Coordination Functions. The monitoring and coordination tasks are carried out by each agency, for their respective domains. However, multi-disciplinary issues also require substantial interagency coordination. Given the diversity of issues, a central body for guiding activities, monitoring implementation of policy decisions, and facilitating interagency coordination would be desirable.

Legislative and Regulatory Framework. Maritime governance includes legislations, regulations and rules for conduct, control and monitoring of activities in the maritime domain, with consideration to extant international conventions, customary laws and related national legislations. The legislative and regulatory framework for the maritime domain requires regular review and revision, to identify and address any limitations. These would also strengthen the legal empowerment of various agencies for maritime security.

7

STRATEGY FOR MARITIME FORCE AND CAPABILITY DEVELOPMENT

7

Strategy for Maritime Force and Capability Development

Maritime Security Objective

To develop requisite maritime force levels and maintain the capability for meeting India's maritime security requirements

The Indian Navy has evolved as a balanced, multi-dimensional, multi-spectrum force, with a mix of ships, submarines, and aircraft (manned and unmanned), with dedicated satellite and information systems. The purpose of this strategy is to maintain and further develop the Indian Navy as a combat ready, technology driven, networked force, which will remain capable of safeguarding India's evolving national maritime interests in the future and of providing net maritime security across India's areas of interest. This will be done primarily by developing multi-mission, strategic, operational and tactical capabilities, across all dimensions and for the full spectrum of naval combat power.

While developing appropriate maritime force levels and capability, the Indian Navy looks at three interrelated elements that can be seen in the form of an equilateral triangle - Conceptual, Human and Physical.[93] While this strategy covers all three elements, it is focused on the development of the physical element, viz. the maritime force levels and ensuing capability.

Conceptual Capability Development

In the initial decades after independence, the Indian Navy's conceptual element was provided through its 'Plan Papers', which gave the overarching direction for envisaged force levels, capabilities and capacities. These plans have been regularly aligned to meet the emerging challenges posed by changes in the geo-strategic environment, advent of new technologies, and related concepts of force deployment and employment. The conceptual element was progressively strengthened over the years, and led to the enunciation of the first *Maritime Military Strategy* in 1988.[94]

The 1990s witnessed major global geo-political changes and a reorientation of India's national and economic strategies. There was also progressive recognition of the significant role of the maritime environment. These were reflected in revision and refinement of naval strategy and plans, and conduct of several studies such as the navy-wide *Indian Navy's Vision 2020* study in 1997. The conceptual capability development on maritime issues was further strengthened by the institution of dedicated structures and bodies, in 2005-2006, including the *Flag Officer Doctrines and Concepts (FODC)* and the *Maritime Doctrines and Concepts Centre (MDCC)* at Mumbai; and the *Indian Naval Strategic and*

A balanced, multi-dimensional force is required for ensuring maritime security across the full spectrum

The Indian Navy is poised to grow substantially over the next decade, with increasing operational footprint and rapid technological transformation, which necessitate detailed, comprehensive planning and preparation at all levels

Operational Council (INSOC), *Directorate of Strategy, Concepts and Transformation (DSCT)*, and the Navy-supported think-tank *National Maritime Foundation (NMF)* at New Delhi.

The institutionalisation of the conceptual element has provided stronger intellectual underpinnings to the development and employment of maritime capability. This is also seen in the publication of several strategic-level documents and their regular revision, including the *Indian Maritime Doctrine* (2004 and 2009), *Science and Technology Roadmap* (2004, 2009 and 2015), *Maritime Capability Perspective Plan* (2005 and 2011), *Indian Navy Vision Document* (2006 and 2014), *India's Maritime Military Strategy* (1988 and 2007, further revised by this document), *Strategic Guidance for Transformation* (2006 and 2015), *Foreign Cooperation Roadmap* (2011 and 2014), *Human Capital Strategy* (2013), *Indian Navy Space Vision* (2014), *Maritime Infrastructure Perspective Plan* (2015), and *Indian Naval Indigenisation Plan* (2015).

The Indian Navy's capability development plans are, therefore, well founded on comprehensive study of the various factors affecting India's maritime environment, along with development and examination of several options for the way ahead. The naval conceptual thought process has also evolved significantly over the past two decades, with substantial development and revision of concepts and doctrines. The efforts in maintaining and enhancing the conceptual element will be continued and kept contemporary. These will support the development of capabilities and capacities, and employment of India's maritime forces for ensuring maritime security.

Human Resource Development

The Indian Navy is poised to grow substantially over the next decade, with increasing operational footprint and rapid technological transformation, which necessitate detailed, comprehensive planning and preparation at all levels. As always, our men and women will play a pivotal role in these efforts, and the Indian Navy will lay highest priority on developing its human resources into 'human capital'. The concept of People, Assets and Combat Efficiency (PACE) will remain central to human resource development.

The Indian Navy has formulated its *Human Capital Strategy* (in 2013), along with its *Training Doctrine* (in 2014), to guide the way ahead. These documents cover the range of activities from recruitment, training and grooming, to progressive employment with attendant skills-development and, finally, retirement and resettlement.

The inductions and developments, as per the maritime capability and infrastructure perspective plans, will be supported by recruitment of quality manpower. The *Human Capital Strategy* will guide the maintenance of a professional and motivated human resource base, with constant development of expertise and warfighting skills, and their optimum employment. The human resource development efforts will cater for the sharp increase in the Navy's manpower strength and technical skills, which are required for meeting India's growing maritime security requirements, and will also support similar needs of the Indian Coast Guard and other maritime security agencies.

Force Levels and Capability Development

The strategy for force level and capability development will remain cognisant of the long lead time and high investment costs required by maritime forces. It will maintain assessment of the future threat environment and technological trends, to identify the major thrust areas and required critical capabilities. This will enable the planners to monitor, update and review the *inter-se* priority, make appropriate decisions to refine capability perspective plans, and allocate necessary financial, technical and human resources to aid the procurement and development process.

The major thrust areas under this strategy are as follows:-

- Indigenisation for Self-Reliance and Self-Sufficiency.
- Standardisation and Modularity.
- Maritime Domain Awareness.
- Network Centric Operations.
- Enhanced Reach and Sustainability.
- Power Projection and Sea Control.
- Force Protection.
- Joint Operations.
- Special Forces Operations.
- Force Maintenance.
- Infrastructure and Logistics.
- New and Evolving Technologies.

Indigenisation for Self-Reliance and Self-Sufficiency

The Indian Navy is committed to indigenisation and self-reliance, and will continue to build upon its substantial achievements in this regard over the past several decades. It has steadily evolved from being a 'buyer's navy' in the initial years, to a 'builder's navy' and, thence, a 'designer's navy' in recent years.[95] Sustained efforts will be invested in maximising self-reliance, for both strategic and economic reasons. Indigenisation of advanced naval weapon systems, missiles and ammunition will be given focus. Naval efforts will also be directed towards striving for self-sufficiency in the coming years, so as to enhance strategic autonomy.

At the same time, force capabilities and capacities must remain modern, and be maintained at adequate levels to deal with the range of threats and challenges. Capability gaps cannot be allowed to occur, as these will create vulnerabilities in India's maritime security.

A multi-pronged plan will, therefore, be pursued to harness national capabilities and enhance support structures. This is based on identifying and building upon the core national strengths in the maritime domain, with a view to focus investment in niche areas and best practices for longer term developmental gains. The Indian Navy's efforts will supplement those of other government agencies, as also the private sector. The *Science and Technology Roadmap* (2015-2035) and *Indian Naval Indigenisation Plan (2015-2027)* will steer the efforts to synergise overall Research and Development (R&D) efforts in the maritime sector.

The Indian Navy's partnership with the Defence Research and Development Organisation (DRDO) will be further strengthened, in continuation of sustained joint achievements over the past several decades. Maintenance of close relations with designers, maintainers and users has been the key to these past achievements, and will continue to be accorded the highest attention.

Sustained efforts will be invested in maximising self-reliance, for both strategic and economic reasons. A multi-pronged plan will be pursued to harness national capabilities and enhance support structures

Table 7.1: Indigenous Projects on the Horizon

Indigenous Aircraft Carrier (IAC) INS *Vikrant* is being built at Cochin Shipyard Limited (CSL), Kochi. Feasibility study for IAC-2 project is being progessed.

Project 15A Indigenously designed, these three ships follow-on to the *Delhi* class destroyers, with construction by Mazagon Docks Limited (MDL), Mumbai. The first ship, INS *Kolkata*, was commissioned in 2014.

Project 15B Project 15B consists of four ships that follow-on to Project 15A. Under construction at MDL, the first ship INS *Visakhapatnam* was launched in 2015.

Project 17A Seven stealth frigates follow-on to Project 17 (*Shivalik* class) under this project. Four ships will be constructed by MDL and three ships by Garden Reach Shipbuilders and Engineers (GRSE).

Project 28 Four ASW stealth corvettes are being constructed by GRSE, Kolkata. Indigenously designed, the first ship, INS *Kamorta* was commissioned in 2014 and the fourth launched in 2015.

Project 75 Six Scorpene submarines are under construction at MDL in collaboration with DCNS of France. The first submarine, INS *Kalvari*, was launched in 2015.

Project 75(I) This project envisages construction of six submarines in Indian shipyards with foreign collaboration.

Naval Offshore Patrol Vessel (NOPV) Five ships are under construction at Pipavav Shipyard, Gujarat.

Training Ship – Three ships are under construction at ABG Shipyard, Surat.

Survey Vessel – Order for six catamaran hull survey vessels has been placed on Alcock Ashdown, Bhavnagar. The first ship, INS *Makar*, is already in service.

Landing Craft Utility (LCU) Eight LCUs are under construction at GRSE. Four of these have been launched.

Fast Attack Craft (FAC) Four FACs are under construction at GRSE. Three of these have been launched.

Immediate Support Vessel (ISV) Order for 14 ISVs was placed on SHM Shipcare, Mumbai, and 11 of these have been commissioned.

Light Combat Aircraft (Navy) The first prototype (NP1) successfully completed ski-jump tests at the Shore-Based Test Facility (SBTF) at Goa in 2014. This aircraft would operate from the IAC.

Naval procurement plans will endeavour to support indigenous defence industry, as part of the 'Make in India' national strategy, for meeting naval requirements by designing and producing state-of-the-art platforms, equipment and systems, within globally competitive timelines and costs. These may require Indian industry to progress formation of consortia, joint ventures and public-private partnerships with foreign collaborators, involving transfer of technology (ToT), in accordance with government policy. Niche technologies and specific thrust areas in various developmental fields will be identified and shared with the industry, such as metallurgy, ship and aircraft design and construction, manufacturing of weapons, design and development of sensors and communication systems, and integration of maritime systems.

In specific areas, where domestic industry has not developed adequate capacity for meeting naval requirements within the timelines required, the Indian Navy will seek necessary import, as per government guidelines, to maintain its combat readiness and close critical capability gaps.

Standardisation and Modularity

The Indian Navy fields a vast inventory, procured from diverse foreign and indigenous sources. This is as much a legacy of the past, as due to the inherently long service life of naval ships and systems. Efforts to move towards increasing standardisation have been initiated in recent years, and will be given further thrust. The aim is to standardise equipment, weapons and sensors, to progressively reduce inventory variations to optimum levels. This will ease requirements of maintenance, repair, training, stock and spares, and logistics management, while improving interoperability. Efforts towards modularity will also be pursued, with encouragement to Indian shipyards to develop and expand their capacities for modular construction and repairs. These will cater for upgrades, address technological obsolescence issues, and reduce replacement time, towards operational and financial benefits. The efforts for standardisation and modularity will also endeavour to enhance interoperability with the other armed forces, Coast Guard and various maritime agencies.

Naval procurement plans will endeavour to support indigenous defence industry, as part of the 'Make in India' national strategy. Niche technologies and specific thrust areas will be identified and shared

The launch of INS *Kalvari*, the first Indian Scorpene, was a significant milestone for indigenisation

Maritime Domain Awareness

The centrality of MDA in maritime operations has been highlighted in the preceding chapters. Improvement in capability for developing MDA covers the sources of information, their networking for information-exchange using secure multiple-media communication, correlation for identification, and provision of decision-support, based on advanced information technology and computing systems. All elements that contribute to MDA will merit attention and development. Amongst these, the main thrust areas will include:-

- ***Surface and Aerospace Surveillance***. Effective surveillance of the surface and aerospace dimensions in our maritime zones and areas of interest will require investments in advanced technologies, as a priority area. These include satellite-based surveillance, aircraft, UAVs, and ship-borne and shore-based surveillance systems. Advances in electronic and optronic technologies will be harnessed with these systems, to improve situational awareness and resolve identification challenges at sea.

- ***Sub-surface Surveillance***. The increased presence of submarines in India's areas of interest, with weapons capable of striking military and strategic targets at stand-off ranges, necessitates development of our sub-surface surveillance systems. These include both mobile and static systems, for use onboard ships, submarines, aircraft, and in vantage positions at sea.

- ***Identification***. Joint and single service identification systems, with an ability to discern between friend, foe and neutral, will be pursued in conjunction with the surveillance effort.

- ***Information and Communication Technology***. National advancements in information and communication technology will be harnessed, for maintaining secure, reliable and rapid information exchange. These will also aid development of networked operations, and provide greater efficiency and effectiveness.

- ***Cyber Space***. Capability for safeguarding, and also obtaining, information in cyber space is critical, and will be continuously developed.

While MDA is enabled by networking, it is NCO that gives it full effect

Airborne Early Warning aircraft enable networked operations

Network Centric Operations

NCO encompass the networking of all units, with real-time/ near real-time secure exchange of operational information between sensors, decision-makers and 'shooters', so as to enable rapid, accurate actions across wide areas and in all dimensions. While MDA is enabled by networking, it is NCO that gives it full effect. The Indian Navy will develop itself as a network centric force, wherein the following aspects will be accorded focused attention:-

- ***Satellite Capabilities***. The launch and operationalisation of India's GSAT-7 satellite has provided a pivotal boost to our maritime Command, Control, Communications (C^3) and NCO capabilities across the IOR. Satellite capabilities for maritime and joint operations will need augmentation, to cater to the needs of NCO, offset vulnerabilities and increase redundancy.

- ***Communications***. Secure and reliable communication, connecting all hierarchies of the operational organisation, using high bandwidth networks over multiple media with layered redundancy, will be accorded continued investment with exploitation of advancing technology.

- ***Cooperative Engagement Capability***. Integration of various information systems will be essential for developing Cooperative Engagement Capability (CEC). This will cover sensors, weapons and communication equipment, across the Navy and also with the other armed forces and the Coast Guard. Technologies for Multi-Platform, Multi-Sensor Data Fusion (MPMSDF) will be pursued.

- ***Network Integrity***. Exchange of operational data and information for targeting and cooperative engagement will require establishment of secure and high Quality of Service (QoS) networks, with assured integrity and adequate bandwidth for a high tempo of operations. The networks will be developed over multiple media, and upgraded periodically to meet contemporary operational requirements. Development of robust, multi-layered security systems will be accorded focused attention.

- ***Data Analysis***. Data analysis capabilities will play a critical role in networked operations and MDA. The establishment of IMAC has been a major step in this regard. This will be progressed and further developed in terms of technology, with linking of systems for sharing of data, and computer-automated correlation, filtering, selection and dissemination of relevant information.

- ***Geographical Information and Position Fixing Systems***. The use of common data across different units requires a common, geographical information system, with adjustments for inherent errors across dispersed spaces and dimensions. This will be pursued along with indigenous satellite-based position fixing system, to provide requisite accuracy to enable precision weapons engagement, for maritime and joint operations.

Enhanced Reach and Sustainability

In order to ensure sustained presence, the Indian Navy will comprehensively address the twin issues of 'reach' and 'sustainability' of naval forces. This would be undertaken in both, the design of platforms and the acquisition of equipment. Emphasis will be placed on the enabling aspects.

The Indian Navy will comprehensively address the twin issues of 'reach' and 'sustainability' in both, the design of platforms and the acquisition of equipment

Launch of INS *Visakhapatnam* – Designed for the future Navy

- ***Longer 'Sea Legs'***. Design and induction of ships with improved reach and sustainability, in terms of type of propulsion, fuel economy and capacity, continuous-operation periods of equipment with high performance and reliability, reduced maintenance needs, inbuilt redundancies, and enhanced onboard repair/ replacement capacity.

- ***Longer Operational Cycles***. Measures to support increased intervals between maintenance and docking cycles, to enable longer deployment patterns for ships, submarines and aircraft.

- ***Force Mix Ratio***. Preponderance of ships with longer sea legs in the overall force structure, with improved ratio between capital ships and minor war vessels.

- ***Logistics Support***. Induction of tankers and afloat support ships with enhanced capacity to replenish fuel, ammunition and provisions at sea, and provide onsite maintenance and medical support in distant areas for ships and submarines.

- ***Extended Air Reach***. Induction of aircraft with longer endurance and extension of aerial reach by facilities for in-flight and 'hot' refuelling, including induction of suitable Flight Refuelling Aircraft (FRA).

- ***Operational Turn Round Facilities***. Improved OTR facilities for the range of naval forces and inventory, at all naval harbours and select ports in India, with focus on the island groups.

- ***Cooperative Logistics***. Logistic support arrangements for OTR and Underway Replenishment (UNREP), in the farther reaches of our areas of interest, in cooperation with friendly maritime forces operating therein.

- ***Through Life Support***. Provision of Through Life Support (TLS) for all new equipment and systems, catering to the faster obsolescence and shorter supportability of modern technologies against requirement for their utilisation over longer time frames.

Power Projection and Sea Control

India's growing maritime interests, across wide geographical spaces, underscores the central importance of adequate power projection in and from the seas, and for sea control capability in 'blue waters', to safeguard interests and counter threats before they can bear upon India. The primary means for this will be potent, balanced naval fleets supported by strong, integral and shore-based, maritime air power. The Indian Navy presently has two fleets, each with multi-dimensional power projection and force protection capabilities. Development of the future naval fleets will be focused on the following force capabilities:-

- ***Carrier Battle Groups***. Development of three CBGs, each centered on an aircraft carrier with multi-mission escort and support ships, with integral anti-air, anti-surface and anti-submarine warfare capabilities.

- ***Carrier Task Force***. Develop an operational capability of two CTFs, each comprising one or more CBGs and other specialist forces, to meet the growing requirements of protecting India's maritime interests.

- ***Surface Action Groups***. Induction of requisite multi-mission ships, which can function with the CBG for its protection or be detached as SAGs from the CTF, for maritime strike operations.

- ***Anti-Submarine Warfare***. Stronger ASW capability in both, coastal and oceanic waters by all-round development of capabilities. This would include shore-based ASW aircraft and helicopters, ASW ships with integral ASW helicopters, submarines, and advanced sub-surface surveillance systems.

The future naval fleets will be centered on two CTFs

- ***Naval Air Power***. Enhancing and progressively indigenising naval aviation capability, covering integral and shore-based aviation assets, including UAVs, for surveillance and strike missions in all dimensions.

- ***Submarine Capability***. A mixed force of conventional and nuclear powered submarines, for operations in both near and far areas, with thrust on developing indigenous capability.

- ***Sea Lift and Amphibious Capability***. Enhancing sealift capability, which would be essential for Amphibious Operations, HADR and NEO. The induction of Landing Platform Docks (LPDs), with associated combat and support forces, and development of a Marine force will be progressed in coordination with the Indian Army and Air Force.

- ***Long Range and Precision Strike Weapons***. Longer range and precision strike weapons, for use by surface, air and underwater platforms for conduct of maritime strikes into and from the seas, so as to effectively engage targets at sea and on land.

Force Protection

Force protection is an essential, integral part of naval forces in both offensive and defensive operations, and would be incorporated into force development. There are two areas, however, where dedicated force protection capability will be pursued:-

- ***Mine Counter Measures***. Robust Mine Counter Measures (MCM) capability is an essential requirement for a maritime country like India. The Indian Navy is focused on modernising its mine hunting and clearance capability, including Remotely Operated Vehicles (ROVs) and Unmanned Underwater Vehicles (UUVs) for this specialised operation.

- ***Asymmetric Threats***. The Indian Navy will strengthen its defence against asymmetric threats, especially in restricted spaces such as harbours and airfields. This will include harbour defence systems, air defence framework (in conjunction with the Army and Air Force), expansion of the SPB, Marine Commandos (MARCOs) and Quick-Reaction Teams (QRTs), supported by helicopters and fast craft, including ISVs and Fast Interceptor Craft (FIC).

Achieving operational synergy through joint training

Joint Operations

The centrality of jointness in military operations is well established and accepted. The Indian Navy will remain committed to achieving synergy in operations by pursuing further measures for developing joint capabilities, interoperability, infrastructure, training and organisation. Development of common doctrines, coordination of strategies, joint planning and perspectives, commonality of equipment and common standard operating procedures are essential, and will continue to be focus areas.

Special Forces Operations

The Indian Navy is cognisant of the strategic and operational potential of SF operations. The Indian Navy's MARCOs have significant capabilities for undertaking SF operations in the maritime domain, as well as on land and by air. They can operate independently and in conjunction with Army and Air Force SF, including against non-state actors. Development of MARCO capabilities will remain a thrust area for the Navy.

Force Maintenance

The Indian Navy possesses mature and robust force maintenance structures to undertake effective materiel management and technical maintenance of operational platforms. Ship design and modelling capabilities are also integral to the Navy's growing indigenous framework. It will be a constant endeavour to reinvigorate the existing maintenance mechanisms, by harnessing modern technology and incorporating total quality management. The strategic approach to force maintenance will take into account modern trends in design, production, logistics and refitting of naval platforms, in order to optimise operational cycles, enhance self-reliance and minimise cost and time overruns. Focus will be accorded to modernisation of dockyards and upgradation of facilities therein, to meet the growing requirements of force maintenance.

The centrality of jointess in military operations is well established. The Indian Navy will pursue measures for developing joint capabilities, interoperability, infrastructure, training and organisation

Infrastructure and Logistics

The ability to develop, maintain, sustain, train and operate force levels is dependent on the incumbent support infrastructure. As force levels and technologies are enhanced, the support infrastructure will also need to be developed and upgraded, with necessary allocation of land and budget to enable wider naval shore support across all coastal states and UTs. This covers the span of maintenance, logistics, medical, administrative, personnel and family support. To cater for increasing numbers, diversity of operating assets, and areas of operation, the Indian Navy has formulated its *Maritime Infrastructure Perspective Plan*, in tandem with the *Maritime Capability Perspective Plan*. Infrastructure development will also cater to the need for resilience against damage from both, traditional and non-traditional threats, including natural disasters.

Maritime logistics is all pervasive and impacts all naval functions, in peace and conflict. The logistics supply chain will be strengthened commensurate with the growing force levels, related increase in inventory and support infrastructure, envisaged higher tempo of operations, and simultaneous support to maritime forces operating in dispersed areas. This will be achieved by augmenting existing infrastructure and creating additional logistics nodes, enhancing or restructuring organisational and functional hierarchies where required, reinforcing human capital, and harnessing technologies, including software, to enhance agility and responsiveness.

New and Evolving Technologies

The Indian Navy will opt for 'leapfrogging' technologies, to ensure that a high percentage of assets with contemporary equipment remains capable of combating emergent threats. This will be pursued by encouraging building of partnerships with suitable organisations, both national and foreign, and supporting focused investments in R&D of new technologies, preferably with a compatible market interface for product support.

As force levels and technologies are enhanced, the support infrastructure will also need to be developed and upgraded, with wider naval shore support across all coastal states and Union Territories

These aspects would also entail participation of the private sector, which will aid development of an indigenous defence industry and a strong R&D base. Some of the new and evolving technologies that will need investment are:-

- ***Future Satellites***. Satellites are a force multiplier and are central to communications, MDA and NCO. The Indian Navy has been at the forefront of seeking development of indigenous satellites for uses in the maritime domain. It shall continue to give thrust to this vital element, in accordance with its *Space Vision 2014-2027*.

- ***Precision Weapon Technologies***. In view of our dense maritime and air environment, accurate and precise weapons and systems will be essential. Induction of suitable technologies to aid precision attack will be a thrust area, especially acoustic, laser and signal processing. Focus will be given to development of inertial navigation systems, fibre-optic gyros, micro-miniature electronic modules, digital cartography and homing technologies.

In line with the growing global and national requirement to balance environmental and security concerns, the Indian Navy will progress incorporation of sustainable green technologies

- ***Electromagnetic and Laser Technologies***. Electromagnetic technologies for aircraft and projectile launch, and directed energy systems using solid-state/ fibre-optic lasers, are being developed by the leading navies in the world. Induction of these technologies for our next generation naval systems will be a focus area.

- ***Propulsion and Power Technology***. The emphasis will be to provide assets with increased reach and sustenance, longer operational periods, and reduced maintenance. Air Independent Propulsion (AIP) for submarines, and nuclear propulsion for both submarines and ships, constitute the next evolutionary step. The option of electrical propulsion will also be examined, for reduction of noise levels and provision of power for next generation weapons and systems.

- ***Unmanned Marine Systems***. The applications of unmanned marine systems (UMS) in warfare have been steadily growing in recent years. Investments in UMS (air, surface and underwater) technology and military application systems will, accordingly, be pursued towards uses for maritime security.

- ***Computation and Automation Technologies***. Exponential growth in computing capabilities has aided improvements in performance of processor-based sensors, reducing the sensor-to-shooter cycle. To further augment naval systems, niche technologies in system architecture, artificial intelligence, computing (molecular, quantum and cloud) and 3D printing, will be explored.

- ***Cyber Security Technologies***. The increasing role of cyber space and technologies in our security architecture makes cyber security of critical importance. The development of cyber security technologies and systems will be a priority area for the Indian Navy.

- ***Green Technologies***. In line with the growing global and national requirement to balance environmental and security concerns, the Indian Navy will progress incorporation of sustainable green technologies, towards achieving a zero carbon footprint. In this regard, the Indian Navy has already implemented an 'Environment Conservation Roadmap' for its bases, which seeks to achieve charted 'green initiatives'. These include Green Rating for Integrated Habitat Assessment (GRIHA), Leadership in Energy and Environmental Design (LEED), and Indian Green Building Council (IGBC) norms. Also, technologies adaptive to climate change will be amalgamated into suitable designs and systems.

- ***Nano-Technology***. Nano-technology will have significant implications for military forces, particularly in the fields of information exchange, sensors and mechanical systems. The technology would serve to increase capability and enhance capacity, by reducing size, weight and signature, with increased tensile strengths using new materials. The Indian Navy will encourage research and development in nano-technology, in recognition of its strategic effect, and in consideration of the time and resources required to be invested.

Newer technologies and assets will enhance combat power and potential – LCA (Navy) undertaking ski jump tests at SBTF, Goa

8

EPILOGUE

8

Epilogue

The Indian philosophical perspective of *"vasudhaiva kutumbakam"* (Sanskrit for *"the world is but one family"*) describes the inextricable linking of nations by the seas, in terms of resources, trade and maritime security. It leads on to the strategic need to preserve peace, promote stability and maintain security within a regional and global framework, so as to alleviate poverty and promote all-round socio-economic development. Considering the peninsular character and maritime nature of India, it follows that the nation's well being, prosperity and development are closely linked to security of the seas. This has been in increasing evidence over recent decades, wherein the maritime consciousness and outlook of India have also been evolving. As India moves forward in the 21st century, the importance of the seas to its national interests will continue to rise, with corresponding attention on the role of the Indian Navy in safeguarding the same.

The Indian Navy has grown, steadily and surely, from a fledgling surface flotilla at Independence, into a potent, multi-dimensional, balanced and professional force, capable of undertaking the full spectrum of maritime operations. At the same time, maritime threats and challenges to India's national interests have also been increasing. While the scope of traditional threats has become more complex, the spread of

As India moves forward in the 21st century, the importance of the seas to its national interests will continue to increase. The threats to these interests and national security in the maritime domain will need constant appraisal, and measures to prevent and counter their rise

The Indian Navy has grown into a potent, multi-dimensional, balanced and professional force, capable of undertaking the full spectrum of maritime operations

Review of strategies and development of force levels will be a continuous process

non-traditional threats has been increasing, particularly over the past decade. These include maritime terrorism, piracy, natural disasters and regional crises, which have acquired greater incidence and prominence. Operating largely away from the public gaze, the task of the 'silent service' has become more challenging in recent years.

Ensuring Secure Seas: Indian Maritime Security Strategy has been developed after a comprehensive review of India's maritime environment, including prevailing threats, challenges and future trends. A wide consultative process was undertaken, both within the Navy, and with the Army, Air Force, Coast Guard, joint organisations, and experts in the strategic and academic community. This provided a holistic perspective, which served to guide the revision process and crafting of the current strategy.

The maritime security strategy comprises five constituent strategies, each of which employs multiple doctrinal roles, with their associated objectives, missions and tasks, in an interrelated manner to provide an integrated, holistic approach to ensuring India's maritime security. The foundational strategy amongst these remains deterrence, to prevent conflict and coercion against India. The Indian Navy will contribute to deterrence in the maritime domain, as part of national and joint military efforts, by

focusing on its capability, readiness posture and communication of intent. In order for deterrence to be credible and succeed, the Indian Navy will remain prepared for conflict, in synergy with the other armed forces and in pursuance of higher directions for national defence and security.

The seamless nature of the maritime domain enables ready flow of threats and challenges from one area to another. In order to ensure secure seas, the Indian Navy will endeavour to build a favourable and positive maritime environment, and enhance net maritime security in our neighbourhood, in cooperation with maritime forces from friendly nations. However, to safeguard against these threats reaching Indian shores, especially maritime terrorism, substantive steps have also been taken in recent years to revamp our coastal and offshore security framework. These shall be strengthened, so as to prevent, repulse and eliminate threats to India's security in coastal and offshore areas. The Indian Navy shall pursue a collaborative and coordinated approach in this regard, with a central and growing role for the Indian Coast Guard and other maritime agencies.

The Indian Navy will also continue to develop its force levels and capability for undertaking the range of missions and tasks, to provide overall maritime security and safeguard national maritime interests into the future. The efforts to develop all three elements of naval combat power, viz. conceptual, human and physical, will be progressed. The focus will remain on developing and maintaining the Navy as a continually formidable, multi-dimensional, balanced and networked force, capable of countering the full range of maritime threats and challenges.

The maritime security strategy shall continue to be reviewed and refined, in relation to developments in the maritime strategic environment, so as to remain contemporary and relevant.

The Indian Navy will continue to develop its force levels and capability for undertaking the range of missions and tasks, to provide overall maritime security and safeguard national maritime interests into the future

Notes

Chapter 1

1 Address at ceremonial reception of INSV *Mhadei*, at Mumbai, on 06 April 2013.

2 As per directives of the Cabinet Committee on Security (CCS), in February 2009. See www.mod.nic.in/forms/Mainlinks.aspx?lid=1529&Id=0 and mha1.nic.in/par2013/par2014-pdfs/rs-171214/2701.pdf, last accessed on 01 August 2015.

3 The Maritime Zones of India have been defined in the 'The Territorial Waters, Continental Shelf, Exclusive Economic Zone and other Maritime Zones Act, 1976'. There are four maritime zones measured in nautical miles (nm) from the promulgated baseline – Territorial Waters (12 nm), Contiguous Zone (24 nm), Exclusive Economic Zone (200 nm), and Continental Shelf (upto 350 nm). The areas of maritime interest have been defined in the *Indian Maritime Doctrine*, 2009, pp. 65-68, and have been amplified in Chapter 2 of this strategy.

4 *Indian Maritime Doctrine*, 2009, Chapter 7, pp. 89-122.

Chapter 2

5 KM Panikkar, *India and the Indian Ocean: An Essay on the Influence of Sea Power on Indian History* (George Allen and Unwin (India), 1946), p. 19.

6 As per previous surveys, India's coastline was calculated at 7,516.6 km with 1,197 islands. However, these are likely to increase based on current surveys.

7 National Centre for Antarctic and Ocean Research, Ministry of Earth Sciences, Government of India. www.ncaor.gov.in/pages/researchview/8#, last accessed on 16 June 2015. India's total land mass area is 3.274 million sq. km

8 The five tenets of *Panchsheel* are - mutual respect for each other's territorial integrity and sovereignty, mutual non-aggression, mutual non-interference in each other's internal affairs, equality and cooperation for mutual benefit, and peaceful co-existence.

9 www.indiaculture.nic.in/project-mausam, last accessed on 29 July 2015.

10 www.pib.nic.in/newsite/erelease.aspx?relid=0, last accessed on 29 July 2015. In hindi, '*sagar*' means 'ocean'.

11 www.investindia.gov.in/oil-and-gas-sector/, last accessed on 29 July 2015.

12 Sagarmala Press Release dated 25 March 2015, by Press Information Bureau, Government of India/ Cabinet. www.pib.nic.in/newsite/PrintRelease.aspx?relid=117691, last accessed on 29 July 2015.

13 *Ibid*.

14 As noted by DG Shipping, this 6.6% comprises around 30,000 officers and 80,000 ratings. www.dgshipping.gov.in/content/ourstrength.aspx, last accessed on 17 July 2015.

15 Major port comes under the jurisdiction of the Union Government, and non-major port under the respective coastal state where it is located.

16 *The Economic Times* dated 27 March 2015. www.articles.economictimes.indiatimes.com/2015-03-27/news/60475179_1_waterways-varanasi-haldia-port-led-development, last accessed on 29 July 2015.

17 dahd.nic.in/dahd/WriteReadData/Animal%20Husbandry%20English%202014-2015%20(1).pdf, Chapter 5, last accessed on 08 August 2015.

18 *Ibid*. Marine fish production increased from 2.447 million tonnes in 1991-1992 to 3.443 million tons in 2013-2014. The export value of fish products was INR 30,213 crores (about USD 4.9 billion) during 2013-14, recording a growth of 5.98% in quantity and 60.23% in monetary value over the previous fiscal year.

19 There are around 3,937 fishing villages, 1,896 traditional fish landing centres, 33 minor fishing harbours and six major fishing harbours, which serve as bases for India's fishing fleet.

20 www.moes.gov.in/programmes/polymetallic-nodules-programme-pmn, last accessed on 08 August 2015. Seabed mining areas in the Indian Ocean have also been allocated to China (South-West Ridge) and the Republic of Korea (Mid-Indian Ridge).

21 As per data updated till January 2015, by the Ministry of Overseas Indian Affairs, there are around 11,379,746 NRIs and 17,075,280 PIOs residing in 206 nations/ territories. www.moia.gov.in, last accessed on 26 June 2015.

22 In 1993, RDX explosives were smuggled by sea to India's West coast, by a criminal-terrorist nexus. These were used for conducting serial blasts in Mumbai on 12 March 1993, which killed 257 civilians and injured over 700.

23 In November 2008, ten Pakistani terrorists from the *Lashkar-e-Taiba* (LeT) group, sailed out from Karachi and commandeered an Indian fishing boat *Kuber* to Mumbai. After killing all its crew members, the LeT terrorists proceeded ashore to carry out a series of twelve coordinated shooting and bombing attacks between 26 and 29 November 2008, killing 166 civilians and wounding more than 300, including both Indian and foreign nationals, besides causing considerable damage to civilian property. Nine terrorists were killed and one captured by Indian security forces. The terrorist attacks were revealed to have extensive links to Pakistani agencies and handlers (many of whom remain at large in Pakistan, including in public view).

24 These include explosives attacks against USS *Cole* off Aden in 2000, MV *Limburg* off Yemen in 2002, and Philippine *Superferry 14* off Manila in 2004, and rocket attacks against MV *Cosco* in the Suez Canal in 2013, and an Egyptian naval vessel off Sinai in 2015.

25 Attempted hijacking of Pakistan Navy Ship *Zulfiquar* in Karachi in September 2014 by Pakistani terrorists, and of an Egyptian Missile Boat in the Mediterranean Sea in November 2014, exemplify this new threat.

26 The cost of piracy to the global economy has been estimated by the World Bank to be around USD 18 billion a year in increased trade costs, with an estimated USD 53 million average ransom paid annually. See '*The Pirates of Somalia: Enduring the Threat, Rebuilding a Nation*', Executive Summary, p.xxiii. www.worldbank.org/africa/piratesofsomalia, last accessed on 17 July 2015.

27 Fisheries constituted an export industry for Somalia, but the collapse of the Siad Barre government in 1991 forestalled foreign investments and development of this industry.

28 The Maritime Zones of India (Regulation of Fishing by Foreign Vessels) Act, 1981 covers the regulations and related aspects for fishing by foreign vessels in the maritime zones of India. Enforcement under this Act is a responsibility of the Indian Coast Guard, with empowerment also accorded to the Indian Navy.

29 The International Maritime Organisation has issued revised interim recommendations for Flag States regarding use of PCASP, apropos publication of International Standard ISO 28007-1:2015 (Ships and marine technology – Guidelines for PMSC), on certification of PMSC. See IMO MSC.1/ Circ.1406/Rev.3 dated 12 June 2015. This is expected to assist the development of regulatory and standardisation frameworks for PMSC and PCASP functioning. However, grey areas may still continue in the interim and in case of non-adherence.

30 See IPCC, 2014: Summary for policymakers. In *Climate Change 2014: Impacts, Adaptation, and Vulnerability.Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [C.B. Field, V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 4.

Chapter 3

31 Article 2(4) of Draft Report on *India's Nuclear Doctrine*, released on 17 August 1999 by the National Security Advisory Board (NSAB). The Cabinet Committee on Security (CCS), upon reviewing the progress in operationalising this doctrine, on 04 January 2003, promulgated a summary of the doctrine that, in effect, constitutes the nuclear policy. www.mea.gov.in/in-focus-article.htm?18916, and www.pib.nic.in/archive/Ireleng/lyr2003/rjan2003/04012003/r040120033.html, last accessed on 31 July 2015.

32 *Ibid*. CCS Review, Article 2 (ii), 04 January 2003. However, in case of a major chemical or biological weapons attack, the option for retaliation with nuclear weapons would be retained.

33 *Idem* and Article 2(v).

34 Cold War experience has shown that reduction in the first-strike and increase in the second-strike (retaliatory) component considerably stabilises and strengthens deterrence. The rationale is based upon the survivability of an SSBN in a first-strike, which makes the command system confident that retribution can be made in an assured, planned manner.

35 NSAB Report, *Op Cit.*, Article 2(4) and 2(7).

36 *Indian Maritime Doctrine*, *Op Cit.* p.26, 123-131

37 NSAB Report, *Op Cit.*, Article 2(7).

38 A state of unstable deterrence would exist when the adversary is not convinced of the credibility of the deterrent value, or perceives or observes a reduction in it and, therefore, pursues conflict or coercion due to the inherent incentive of accruable gains over cost of conflict.

39 Strategic communication can be defined as the transmission of integrated and coordinated themes, messages and actions that advance national interest and policies through synergised efforts of all the agencies involved.

Chapter 4

40 The inherent right of self-defence, as enunciated in Article 51 of the UN Charter and examined in various rulings by the International Court of Justice (ICJ), covers armed attacks not only by regular armed forces of another state, but also armed attacks carried out by armed groups, bands, irregulars, terrorists, mercenaries, who may be sent by or on behalf of a state. See Dieter Fleck (Ed.), *The Handbook of International Humanitarian Law* (UK, Oxford University Press, 2014), p.6.

41 *Indian Maritime Doctrine*, *Op Cit.*, Chapter 9, pp.135-154.

42 *Ibid*, Chapter 4, pp.35-45

43 The Indian holy book, *Bhagwad Gita*, is essentially a discourse to the warrior *Arjuna* by the Lord *Krishna* to take up his arms and fight, viz. use force, as a matter of *dharma*, i.e. rightful duty and righteous conduct. The means and methods of warfare in India have always been governed by venerable codes, as evinced in the description of the great epic *Mahabharata*.

44 This would qualify and complement the principles of concentration of force and economy of effort.

45 The term 'laws of armed conflict' is often used synonymously with 'international humanitarian law'. The latter, however, is considered to be broader, as it also addresses peacetime obligations.

46 Also see, Dieter Fleck (Ed.), *Op Cit.,* Chapter 10, 'The Law of Armed Conflict at Sea', pp.463-547.

47 This would qualify and complement the principle of selection and maintenance of aim.

48 *Indian Maritime Doctrine*, *Op Cit*., p.141.

49 *Ibid*, p.42

50 *Ibid*, p.143.

51 *Ibid*., pp.78-83.

52 'A2/AD' or 'Anti-Access/ Area Denial' is a relatively recent term, which is essentially sea denial itself, but includes aspects of air-space denial as well. However, while the concept of sea denial focuses on the 'sea area', the use of air assets, including sea-based, are endemic therein.

Chapter 5

53 Prime Minister's address on the commissioning of Mauritian Coast Guard Ship *Barracuda*, at Mauritius on 12 March 2015. www.narendramodi.in/text-of-the-pms-remarks-on-the-commissioning-of-coast-ship-barracuda, last accessed 08 August 2015.

54 During his address to the Naval Commanders Conference on 12 October 2011, Shri AK Antony, the then Defence Minister, stated that the Indian Navy had been mandated to be a 'net security provider' to island nations in the IOR. www.pib.nic.in/newsite/erelease.aspx?relid=76590, last accessed on 29 July 2015. Noting India's contributions to regional stability, on 23 May 2013, the then Prime Minister Shri Manmohan Singh, noted that India was well positioned to become a net provider of security in our immediate region and beyond.

55 NSAB Report, *Op Cit,* Article 1(4).

56 The Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia (ReCAAP) is an inter-governmental initiative. The Indian Coast Guard represents India at ReCAAP meetings, and is our focal agency for information sharing and coordination of actions under ReCAAP.

57 The Contact Group on Piracy off the Coast of Somalia (CGPCS) provides a forum for cooperation amongst governments, industry and maritime forces, in efforts to counter piracy. The Indian Navy participates in CGPCS interactions, along with the Ministry of External Affairs (MEA) and Directorate General of Shipping.

58 The Shared Awareness and Deconfliction (SHADE) mechanism facilitates tactical coordination and information sharing on conduct of anti-piracy operations in the Gulf of Aden, amongst the various maritime forces and agencies deployed in the region. The Indian Navy regularly participates in SHADE interactions.

59 *Indian Maritime Doctrine*, *Op Cit*., p.30. Persuasion is convincing another state, by diplomatic means and without the threat or use of force, to carry out certain actions that are in its own interests, by emphasising the benefits of the actions to that state. Dissuasion is convincing another state, by diplomatic means and without the threat or use of force, to desist from carrying out certain actions that are inimical to our interests, by emphasising the disadvantages of the actions to that state.

60 Bengaluru Communiqué, 11th Meeting of the Council of Ministers of the IORA, 15 November 2011. www.iora.net/documents/communique.aspx., last accessed on 17 July 2015.

61 Perth Communiqué, 13th Meeting of the Council of Ministers of the IORA, 01 November 2013, and 14th Meeting on 09 October 2014. www.iora.net/documents/communique.aspx., last accessed on 17 July 2015.

62 The term also extends to heads of designated principal agencies responsible for maritime security, in states where there is no formally constituted 'navy'.

63 www.mea.gov.in/in-focus-article.html?23037/NSA+level+meeting+on+trilateral+Maritime+Security+ Cooperation+between+India+Sri+Lanka+Maldives, last accessed on 31 July 2015.

64 These are mostly under the ambit of the Indian Technical and Economic Cooperation (ITEC) programmes, under the Ministry of External Affairs (MEA). Over the past four decades, the Indian Navy has trained more than 11,000 foreign naval, coast guard and marine police personnel from about 40 countries. Presently, the Indian Navy offers around 25 training courses for officers and 100 courses for sailors, covering a variety of disciplines.

65 For example, in 2011, the UN Commission on Limits of Continental Shelf approved a joint submission of Mauritius and Seychelles, under Article 76 of UNCLOS, on Limits of the Continental Shelf concerning the Mascarene Plateau. The submission was based upon hydrographic survey undertaken at Saya de Malha bank for Mauritius, by INS *Investigator* (2008). Commissioning of a Hydrographic Technical Support Team (HTST) at Mauritius in 2013, the first of its kind overseas, is another example of the growing hydrographic assistance and cooperation.

66 Waters beyond territorial waters of 12 nm are termed as international waters, while waters beyond the EEZ of 200 nm, are termed as high seas.

67 The Republic of Singapore Navy (RSN) has set up an Information Fusion Centre (IFC) in 2009, which links 65 agencies across 35 countries. It houses 16 International Liaison Officers (ILOs), including one officer from the Indian Navy, and facilitates information sharing and collaboration amongst these countries to enhance maritime security. Seychelles has also set up a Regional Fusion and Law Enforcement Centre for Safety and Security at Sea (REFLECS3) in 2013, which includes sharing and development of intelligence against piracy and other transnational organised crimes, to augment maritime security.

68 The Indian Navy commenced CORPATs with the Indonesian Navy in 2002, with the Royal Thai Navy in 2005, and with the Myanmar Navy in 2013.

69 The coordination is done through mutually established Standard Operating Procedures (SOPs), to enhance the coverage, efficiency and efficacy of patrols by both navies.

70 In the past, the Indian Navy has undertaken MIO against a mercenary group fleeing Maldives onboard MV *Progress Light*, after a failed coup in 1988, and against LTTE movements by sea in the 1990s. It has also deployed ships for conduct of MIO against seaward threats to the African Union Summit in 2003 in Maputo, and to the World Economic Forum and Afro-Pacific-Caribbean (APC) summit in Mozambique in 2004.

71 The Indian Navy has contributed to UN Humanitarian Relief Operations in Somalia, from 1992 to 1994, by conducting seaward patrols, transportation of humanitarian aid, and de-induction of Indian Army troops on completion of their UN PSO mission.

72 The obligation of ships to assist vessels in distress and safety of life at sea is enshrined in tradition and endorsed in international law, vide the International Convention for the Safety of Life at Sea (SOLAS) 1974. This has been augmented by an international treaty covering the responsibilities of governments, with emphasis on regional approach and coordination vide the International Convention on Maritime Search and Rescue (SAR Convention), 1979, with revised Annex 1998. India acceded to the Convention in May 2001.

73 See revised National Maritime Search and Rescue Plan promulgated in 2013. www.indiancoastguard.nic.in/indiancoastguard/sar/SAR%20PLAN%20f2013%20.pdf.

Chapter 6

74 In 1990, the LTTE terrorist threat led to the institution of *IN*-ICG Op *Tasha* off the Tamil Nadu coast, with increased surveillance, patrols and maritime interdiction operations at sea, even as the state police and security agencies adapted to the new threat. The operation is still continuing. Similarly, *IN*-ICG Op *Swan* was launched in 1993, in the wake of the terrorist blasts in Mumbai, to enhance surveillance and patrolling off the coasts of Gujarat and Maharashtra, against criminal-terrorist infiltration, as an interim measure till development of the coastal security structure. This was maintained as a joint *IN*-ICG operation till early 2012, whereupon it subsumed in the revamped coastal security structure in the ICG led Op *Avardhan*, which commenced in end-2011.

75 After the Kargil war in 1999, and review of the national security apparatus, several measures were initiated to revamp India's coastal security, with focus on strengthening the Marine Police and ICG. A new Coastal Security Scheme was approved in 2005, to be implemented over five years. The measures were still being developed when maritime terrorism struck in a new form, with armed terrorists from Pakistan landing on the Mumbai coast on 26 November 2008 ('26/11'), to carry out direct attacks on premeditated targets.

76 CCS Directives, *Op Cit.*

77 Coast Guard Act, 1978, Sections 1 and 14. www.indiancoastguard.nic.in.

78 MoD Annual Report 2014-15, Section 6.5. mod.nic.in/writeraddata/AR1415.pdf.

79 *Idem*.

80 As per UNCLOS, the territorial waters extend upto 12 nm from the normal baseline (low-water line along the coast) or straight baselines (in case of indented coasts and fringe of islands), as applicable, with the sea area on the landward side of these baselines forming part of the internal waters. The contiguous zone extends upto 24 nm from the applicable baseline, i.e. a further 12 nm beyond the territorial waters. The IMBL delimits the maritime zones between adjacent states, from the coast upto the limits of the EEZ. The IMBL between India and Sri Lanka also delimits the 'historic waters' in Palk Bay, which constitute internal waters on each side.

81 Coast Guard Act, *Op Cit.*

82 Coordinated by the Indian Navy, INSPIRES is used by Indian vessels above 100 GRT and on voluntary-basis by foreign vessels operating in the Arabian Sea/ Bay of Bengal.

83 Coordinated by the Indian Coast Guard, INDSAR is a computerised system used by Indian vessels above 100 GRT and on voluntary-basis by foreign vessels operating in the Indian Search and Rescue Region (ISRR).

84 Coordinated by the Coast Guard, ISLEREP is a voice communication system for vessels closing within 20 nm of the islands of Andaman & Nicobar, and the Lakshadweep Group.

85 Coordinated by port authorities, PANS applies to all vessels intending to enter Indian ports. The information is received by respective port authorities, and also relayed to the Indian Coast Guard and Indian Navy.

86 Coordinated by DG Shipping, LRIT is a satellite-based system, promulgated by the IMO, provides information on ships above 300 GRT operating within 1,000 nm of India's coast. The information is also relayed to Indian Navy and Indian Coast Guard.

87 Promulgated by IMO, AIS is applicable to ships above 300 GRT, using VHF radio frequencies with normal 'line-of-sight' ranges of 15-20 nm.

88 The Indian Space Research Organisation (ISRO) Resourcesat-2 satellite has been fitted with AIS-SB. It relays information received from shipborne AIS systems to the *IN* and other maritime agencies, and provides an updated picture of global shipping traffic at regular intervals.

89 ADS-B is a satellite-based system that provides information of an aircraft, to other aircraft, ships and ground stations.

90 In addition to issuance of fishermen biometric identity cards by the Department of Animal Husbandry, Dairying and Fisheries (DADF) to the fishermen, the coastal village community of about 6.5 million has been issued with biometric identity cards by the Registrar General of India (RGI), which has also developed a composite card reader *Pramanika*, compatible for both types of cards.

91 Since 2009, the ICG has conducted more than 3,652 CIPs along all coastal villages/ hamlets. Inputs from CGHQ, July 2015.

92 *Sagar Rakshak Dal* was set up in Maharashtra in 1999, with *IN* assistance. Similar initiatives have been progressed in recent years in other states, including Gujarat, Karnataka and Tamil Nadu.

Chapter 7

93 *Indian Maritime Doctrine*, *Op Cit*., Chapter 8, pp 123 – 131, covers these elements in detail as interrelated components of Naval Combat Power.

94 *Maritime Military Strategy for India 1989-2014*.

95 The Indian naval design organisation was established in 1954, and has a matured capability with a wide range of sophisticated ship designs.

Explanatory Notes

Amphibious Operations. Amphibious operations are joint military operations wherein land forces are projected ashore from the sea. Inherently complex, and requiring the highest degree of jointness and coordination amongst the three armed forces, these operations require specialised capabilities in all dimensions to be synchronised and seamless. The operation would require sea control, which includes Favourable Air Situation (FAS), in the maritime spaces during the transit phase and on arrival in the Amphibious Objective Area (AOA), including maritime approaches, beach-head and landward area of operations. This will ensure safe and rapid movement of the landing force from ship to shore, amphibious build-up ashore, and maintenance of the landing force from the sea.

Anti-Submarine Warfare (ASW) Capability. The submarine, with its stealth features and array of weapons and sensors, projects a potent threat. It is the primary instrument for exercising sea denial against SLOCs and naval operations. Therefore, development of strong ASW capability is essential to counter adversary submarine forces. This includes integral ASW capability within the naval fleet for its protection, and for deployment of dedicated forces in coastal waters and for open ocean ASW. The ASW capability comprises both ships and aircraft, including shore-based and integral.

Carrier Battle Group (CBG). Aircraft carriers are central to fleet operations and the concept of sea control, as they offer flexibility and versatility of a very high order. These mobile airfields combine substantial integral air power with mobility, to provide ubiquitous and enhanced combat power across vast maritime spaces, and the advantage of rapid redeployment. The aircraft carrier operates in a composite CBG with multi-mission ships as escorts against multi-dimensional threats, and with logistics ships for extending their reach and sustenance.

Carrier Task Force (CTF). The CTF is a self-supporting force capable of undertaking the full range of operational tasks in all dimensions. These include Anti-Air Warfare (AAW), Anti-Surface Warfare (ASuW), ASW, Maritime Strike, Electronic Warfare (EW), and Presence and Surveillance Missions (PSMs). The CTF comprises one or more CBGs, with additional Surface Action Groups (SAGs), AAW, ASuW and ASW forces, and integral logistics ships. Dedicated forces may be attached to the CTF as per mission requirements, such as for conduct of Expeditionary, Out-of-Area, or Amphibious Operations.

Coastal Defence. Coastal defence is primarily a military function of defending the nation and citizens against seaborne threat of conventional and sub-conventional armed attacks in coastal areas. It encompasses measures to prevent, counter and neutralise such attacks, both in the coastal areas and further seawards, before the threat can be brought to bear on the coast. Seaborne attacks against our coast, and offshore assets, could include use of missiles, mines, guns and explosives, by ships, submarines, aircraft and marine/ Special Forces, and even by collision or scuttling of vessels. Coastal defence entails protection from such seaborne attacks against the coast and coastal assets, including populace, ports, harbours, infrastructure, Vital Areas and Vital Points (VAs/ VPs).

Coastal Security. Coastal security is a subset of maritime security, focused on the coastal waters. It entails the protection, preservation and promotion of peace, stability and security in coastal waters, against various threats. This would enable the pursuit of legitimate activities in the coastal waters and also adjacent coastal land. The ensuring of coastal security would encompass the maintenance of law and order, measures to monitor and regulate activities with a bearing on security, and aspects related to defence in case of armed threat or attack in coastal waters. In view of the range of activities, directly and indirectly affecting India's coastal security, there are a large number of agencies that are involved in the coastal security framework.

Coastal Surveillance Network (CSN). The Indian Coast Guard has established a CSN, to integrate the surveillance information obtained from the static surveillance chain. The CSN would be further augmented and expanded to cover additional radar sites and sources of information.

Coastal Waters. The term 'coast' implies the land next to the sea, demarcated by the low-water line, while the word 'coastal' means along or near the coast. A coastal area may, thus, cover both, a certain water area seawards of the coastline and also a land area at or along the coastline. The coastal zone would, hence, comprise a 'coastal waters zone' and a 'coastal land zone'. The coastal waters zone is considered, in the context of coastal security, as the water area that is seawards of the Indian coast (low-water line), upto the limits of India's contiguous zone or the IMBL, in case the latter is nearer. The concept of coastal waters extends upto the contiguous zone so as to provide the necessary space and focus on timely detection and response, considering the short time it may take for threats to traverse this distance to the coast. The coastal waters would, thus, comprise any internal waters between India's coast and straight baselines, its territorial waters, and upto the contiguous zone/ IMBL. In some areas, such as in India's island groups and gulfs, the coastal waters may extend to more than 24 nm from the nearest Indian coast, due to larger swathe of internal waters, as per India's straight baselines.

Defence. Defence is defined as protection against attack. The right to self-defence is enshrined in national and international law, and covers both individual and collective self-defence against armed attack. It applies to situations where an armed attack has taken place, and also situations where armed attack is imminent. The concept of defence is the basis for the right to use force, governed by the rules of engagement and the various laws of armed conflict. The concepts of security and defence are interrelated and mutually supportive. While security has a broader connotation, wherein force may or may not be required, in the case of defence there is an intrinsic role and likely requirement for the use of force to counter the armed threat as per the prevalent circumstances and conditions.

Deterrence. Deterrence is the prevention of conflict and coercion, by convincing a potential adversary that the cost of such aggression would be higher than the gains accrued, and hence it would serve his interests better to refrain or resile from aggressive plans and actions. In this, the understanding and interpretation by the potential adversary, of one's capability, resolve and preparedness in relation to his, would remain pivotal. It is essential that such capability and commitment are not only present, but are also convincingly seen as being present, through appropriate communication of one's posture and intent. Strategic communication will, thus, play a key role in deterrence. Deterrence can be achieved in two principal ways – by denying the gains or by raising the costs for the adversary. The former is known as 'deterrence by denial', while the latter is termed as 'deterrence by punishment'.

Deterrence by Denial. Deterrence by denial is based on assurance of being able to prevent the aggressor from accruing the desired gains, regardless of the costs and effort invested by either side. It requires maintenance of requisite capability and portrayal of appropriate posture. This should assure effective defence against any aggression, sustained for the duration, scale and intensity of conflict, while simultaneously applying suitable leverages upon the aggressor. These would include direct and indirect pressures, aimed at rendering the aggressor's actions ineffective by preventing accomplishment of his goals.

Deterrence by Punishment. Deterrence by punishment is based on assurance of imposing high costs and punishment on the aggressor, such as to outweigh any gains that he may accrue. This requires maintenance of a robust and resilient military capability, which can provide assured retaliation. It should be able to absorb and contain the initial aggression, and to take such punitive retaliation that would outweigh the aggressor's envisaged gains. The capability and intent to impose such punishment, in response to aggression, will also need to be adequately portrayed to the potential adversary for deterrence to be effective.

Doctrine. Doctrine is a body of thought on a subject describing established beliefs and principles, which enable wider understanding of the issue, thereby guiding further activities related to that subject. It may include a framework of concepts and considerations, and also practices and procedures, which have been derived and developed over a period of time, based on cumulative study and accumulated experience. For military forces, doctrines exist at the strategic, operational and tactical levels. At the strategic level, doctrine is based on thoughts, beliefs and principles; at the operational level, it is centered on principles and concepts; and at the tactical level, it mainly comprises practices and also the framework for procedures. Tactical level doctrines would, thus, include what are often called Fighting/ Manoeuvering/ Tactical Instructions. While tactical doctrines are generally prescriptive, flexibility and initiative continue to be necessary and important. Doctrines at the strategic and operational levels, however, are mostly descriptive and are to be seen as a set of guiding principles rather than being prescriptive. Whilst such doctrine is authoritative in nature, and provides a common approach to understanding and approaching the subject, it neither prescribes a specific manner of dealing with the subject, nor should it be seen as dogma. Strategic doctrine, thus, guides policy and supports strategy, but does not dictate these.

Indian Maritime Doctrine. The *Indian Maritime Doctrine* describes the foundational concepts, considerations, characteristics and principles related to the understanding and application of maritime power. The maritime doctrine, accordingly, provides the conceptual framework related to the development of maritime power and for the employment of maritime forces, particularly the Indian Navy. It describes the range of activities of the Indian Navy in both peace and conflict across the spectrum of operations, including the broad roles of the Indian Navy, viz. military, diplomatic, constabulary and benign, with their associated objectives, missions and operational tasks. The maritime doctrine therefore 'guides' the ways in which the Indian Navy would be developed, organised, equipped, trained and employed. However, it does not prescribe or describe specific ways, which is to be done by the corresponding strategies and related plans.

Indian Ocean Naval Symposium (IONS). The IONS, conceptualised and activated by the Indian Navy in 2008, is a regional forum of navies, which aims to attain mutually beneficial maritime security outcomes in the Indian Ocean. It is an open, inclusive, consultative and cooperative forum, which functions on consensual basis. It provides a platform to promote shared understanding of maritime issues, formulation of common strategies and cooperative measures, and strengthen capability and interoperability amongst regional navies, to address various maritime security challenges. IONS is a forum wherein the Chiefs of Navy of all littoral states of the Indian Ocean can regularly meet (the term also extends to heads of designated principal agencies responsible for maritime security, in states where there is no formally constituted 'navy'), to share maritime strategic perspectives and promote mechanisms for constructive engagement, to enhance maritime security. The majority of Indian Ocean littoral nations are represented at IONS, with 22 navies as members and four as observers.

IONS has gained momentum since its inception, with a steady growth in activities including biennial Conclave of Chiefs, endorsement of its Charter of Business, conduct of seminars, workshops and essay competitions, and formation of IONS Working Groups (IWGs), to harness areas of expertise and develop common approaches, cooperative solutions and standard operating procedures, so as to address the range of maritime security challenges. The IONS facilitates development of relations and wide consultations between all maritime forces operating in the region. It provides a strong mechanism for developing a favourable and positive maritime environment. The Indian Navy plays a leading role in IONS.

Indian Ocean Rim Association (IORA). The Indian Ocean Rim Association (IORA) was formed in 1997, with India as a founding member. Founded as the Indian Ocean Rim Association for Regional Cooperation (IOR-ARC), the name was changed to Indian Ocean Rim Association (IORA) in 2013. It has 20 member states, six dialogue partners, and two observers, which are expected to increase in the years ahead. All 20 members of IORA also have their respective navies as members of IONS. IORA is primarily an inter-governmental movement, steered by the Ministry of External Affairs (MEA), with participation from business sectors and academia. It is considered the lead body for enhancing regional cooperation amongst nations on the Indian Ocean Rim, towards economic growth and development. Since the 2011 meeting in Bengaluru, IORA has highlighted the key linkage of maritime security with regional economic growth and development. It has also endorsed the role of IONS, and called for IORA's work on maritime security to align with and complement IONS initiatives.

Maritime Domain Awareness (MDA). MDA is an all-encompassing term that involves being cognisant of the position and intentions of all actors, whether own, hostile or neutral, in all dimensions of a dynamic maritime environment, across the areas of interest. MDA is central to the Information-Decision-Action (IDA) cycle in the maritime environment. It is a key enabler for maritime security and lies at the core of all constituent strategies for maritime security, as it governs awareness of what and who is operating in the maritime domain relevant to our security – on, over and under the seas. MDA is never complete or absolute, and requires a constant, continuing effort to maintain and develop. The knowledge is sought to be made up through Intelligence, Surveillance, Reconnaissance (ISR) and sharing of information. It enables early identification of potential threats, timely planning of responses, more informed decision-making with suitable prioritisation of missions and allocation of resources. MDA is essential for effective actions at all levels of maritime operations – strategic, operational and tactical. The development of MDA relies upon various sources of information, including space, air, surface, underwater, cyber, human, and their correlation and constant assessment. Advances in technology of platforms, sensors and weapons, increased density in the maritime environment, changes in the trade flow patterns and interactions between nations and regions, all impact the scope of awareness required, and also corresponding efforts for degrading the adversary's MDA.

Maritime Manoeuvre. Maritime manoeuvre describes the ability of naval forces to employ movement to incapacitate the enemy's resistance and decision-making cycle, through shock and disruption. Maritime forces have inherent attributes of access, mobility, reach, sustenance, flexibility and versatility. These enable their quick deployment and redeployment, to apply combat power across vast maritime spaces, for a range of missions. The utilisation of manoeuvre enables concentration of force at the required place and time, which is essential for countering surprise, gaining the initiative, and obtaining decisive results.

Maritime Security Strategy. The maritime security strategy operates within the broader national security concepts and framework, to protect, preserve and promote national maritime interests, against prevailing and assessed threats and challenges, taking into consideration the risks, vulnerabilities and opportunities. The central theme is to provide requisite freedom to use the seas for the pursuit of maritime activities, in support of national development and prosperity, and promote legitimate use of the maritime global commons. The maritime security strategy provides a set of plans (*ways*) for provision of maritime security (*ends*), by employment and development of suitable elements of national maritime power, especially naval power, including coordinated and cooperative efforts with other maritime forces and agencies (*means*). While it denotes a singular, overarching strategy in effect, it comprises several constituent strategies that overlap in some segments and are distinct in others, but are all interlinked and mutually complementary.

Maritime Strike. Maritime strike is the projection of accurate combat force onto a maritime or strategic target, at sea or ashore, with the purpose of destroying or damaging it. Maritime strike is the primary method by which combat power is exercised at and from the sea. It exemplifies the role of force in the maritime domain, especially reach, mobility and precision. It is qualified by the ability to distinguish and attack the chosen target in the maritime domain with accuracy, usually from longer, beyond visual ranges, which also entails some form of guidance and control logic for initiating arming/ explosion. Maritime strike covers the range of combat strikes at sea, viz. anti-surface, anti-submarine and anti-air, with weapons launched from aerial, seaborne, underwater and shore platforms. The weapons used include missiles (anti-surface, anti-air and land attack), torpedoes, smart bombs, and guns. It is dependent upon MDA and accurate targeting information, provided by either integral sensors or in a cooperative engagement with a consort platform.

Merchant Shipping Information System (MSIS). The data obtained from the National Automatic Identification System (NAIS) network and other sources of AIS-based information, including open source 'white shipping' information, is correlated, fused and disseminated on a dedicated MSIS, developed by the Indian Navy.

MILAN. The word *MILAN* means 'unification', or 'a meeting', or 'a gathering of people', in Hindi. It is the name given to the operational interaction held at Port Blair (Andaman & Nicobar Islands), between regional navies. It is an initiative of the Indian Navy to bring together navies of the region at a common operational forum, where they can interact professionally, socially and culturally. This aims to develop mutual understanding and respect, share operational experiences and promote cooperation, towards strengthening common maritime security. It is a biennial event, held over five days, with participating navies sending their ships, aircraft and delegates. The first MILAN was held in 1995 with participation of five navies, which has steadily increased over the years to 17 navies participating in the 9th MILAN in 2014, from South-East Asia, Asia-Pacific and Indian Ocean Regions.

Mine Warfare. Mining remains an economical and effective way of disrupting movement of naval and merchant shipping, with a disproportionate effect on military and economic activities, especially port operations. Mine warfare, which includes both mine laying and mine clearance, may be conducted defensively off our own coast, or offensively in areas of likely enemy operation, normally harbours and choke points. Mines that are laid would also need to be cleared on completion of hostilities. Mine Counter Measures (MCM) include the use of dedicated MCM forces in synergy with intelligence, route mapping, surveillance at the operational and tactical levels, reconnaissance, and protection of non-MCM forces. Mine clearance by dedicated MCM vessels are carried out both before the outbreak of hostilities and during war, to ensure unrestricted movement of shipping.

National Automatic Identification System Network (NAIS). The Directorate General of Lighthouses and Lightships (DGLL) has developed a NAIS network in coordination with the Indian Navy and Indian Coast Guard, by setting up of shore stations on existing lighthouses, for tracking of vessels equipped with AIS. The new proprietary system developed for smaller (sub-20 m), non-AIS vessels would be compatible with this network.

National Command Control Communication and Intelligence Network (NC^{3}IN). The Indian Navy has established the NC^{3}IN linking 51 stations, including 20 of the Navy and 31 of the Coast Guard, with a nodal Information Management and Analysis Centre (IMAC). Information from various sources, including CSN, Long Range Identification and Tracking (LRIT), NAIS, Space-Based AIS, Vessel and Air Traffic Management System (VATMS), and other, open sources are fused at the IMAC, to develop a correlated picture of maritime traffic.

National MDA (NMDA). Under the NMDA project, the NC^{3}IN system between the Indian Navy and Indian Coast Guard will be progressively extended to other stakeholders for further improving overall MDA and coordination, by linking all maritime agencies, coastal states and union territories. It will augment the present NC^{3}IN with additional information obtained from ongoing and new projects, including information on fishing and merchant vessels.

National Security. National security implies the protection, preservation and promotion of the national interests, against internal and external threats and challenges. Maintenance of national security is critical for providing the necessary freedom, and removing fear and hindrances to the pursuit of life, happiness and prosperity for a nation's populace. India's security is an integral component of its development process. Ensuring national security is, thus, a key element of national strategy.

National Security Strategy. The essence of national security relies upon the availability of appropriate national power, particularly military power, as no nation can be secure unless it possesses the necessary strength to protect itself and its citizens. Comprehensive national power, including military power, therefore, comprises the *means* for providing national security, which represents the *ends* defined in the national security objectives. The suitable *ways* for developing and employing national power, to meet the national security objectives, within the broad contours of the national security policy, would constitute the *national security strategy*. This safeguards national security by optimally developing and appropriately using suitable elements of national power, including military power, in consideration of the prevailing threats and emergent challenges. The term 'grand strategy' has often been used interchangeably to denote both national strategy and national security strategy. The military components of the national security policy and national security strategy are enunciated in the Defence Minister's '*Op Directive*', which provides the basis for development of the *Joint Military Strategy* and the corresponding *Land, Maritime and Air Strategies*.

National Values. National values evolve from a nation's culture and history. They represent a nation's civilisational beliefs, core principles, and 'way of life', which govern and guide its national aims and interests. In India, an ancient, continuing civilisation with rich, varied cultures and a long history, national values are duly reflected in the sustained presence of practically every culture and religion in the country. India's belief in plurality, respect for diversity, centrality of righteousness, necessity of balance, acceptance of social responsibility, pursuance of law, promotion of accountability and justice, are some such principles that find resonance in the nation's culture and societal philosophy over the centuries. These aspects, along with the centrality of human equality, egalitarian ethos and

social justice, have also been reiterated in the preamble, fundamental rights, fundamental duties and directive principles enshrined in the Constitution of India. The national aim evolves from the national values and provides the basis for deriving national interests.

Non-combatant Evacuation Operations (NEO). NEO are operations undertaken, on directions from the Government of India, for the evacuation of non-combatant Indian citizens from foreign nations, when their lives are endangered by conflict, civil unrest or natural disaster, to designated safe havens. NEO are undertaken by the armed forces and other state agencies, essentially maritime and aviation, operating in close coordination with the MEA. In case of large scale NEO, or where safety and security of the embarkation point is not available, and force may have to be used to protect the civilians, the Indian Army may also be involved.

Offshore Defence. Offshore defence entails the defence of India's offshore assets against conventional and sub-conventional warfare, and is closely related to coastal defence. It is provided by the Indian Navy, in coordination with the Indian Coast Guard and Indian Air Force. Command and control over mobile forces and static defences, in the defence of offshore installations, is carried out by the Flag Officer Offshore Defence Advisory Group (FODAG), under the respective Naval Commanders-in-Chief (Cs-in-C), who are also the Cs-in-C Coastal Defence.

Operational Tempo. Operational tempo, also called *op tempo*, refers to the pace of operational activities across the IDA cycle. A high op tempo would require the ability to maintain MDA amidst changes in operational environment and effect of various events, take swift decisions in response to the emerging situation, and undertake rapid operational actions.

Patrols. A patrol is the exercise of presence by maritime forces with high operational readiness, within a defined maritime area, so as to maintain and develop MDA, and prevent occurrence or counter activities that are inimical to security in that area. A patrol is different from PSM in that, firstly, patrols are regularly conducted not only by ships, but also by aircraft and submarines. Second, it is conducted in a specific, and mostly smaller, maritime area. Third, it is focused on designated activities, to monitor and prevent their occurrence. Fourth, it is normally sustained over a period of time. This may be done on continuing basis, wherein the patrolling unit would be relieved in the area after regular, specified intervals, or repetitive basis wherein the patrol would be repeated after a specified time interval as per operational considerations. The main types of patrol conducted by our naval, coast guard and marine police vessels include the following:-

- 'General Patrol' for monitoring general activities and augmenting security in the defined area. For example, along a SLOC, in a choke point, or across a barrier line, to monitor the movement of vessels.
- 'EEZ Patrol' to monitor, check and ensure that the activities in the designated area, within the EEZ, are as per those legally authorised, including fishing, scientific and hydrographic survey.
- 'IMBL Patrol' to check unauthorised movement of vessels, cargo and persons across the IMBL into/ from our maritime zones, especially territorial waters.
- 'Security/ Defence Patrol' to ensure security/ defence respectively in defined areas, by preventing/ countering seaborne infiltration of armed anti-national elements, and other actions that may threaten our maritime security. Security/ defence patrols may be carried out in our offshore development areas (ODA Patrol), coastal waters (Coastal Patrol), off islands (Island Patrol), and in harbours and ports (Harbour Patrol).

Policy and Plan. Policy defines the guiding parameters for the strategy and plan. At the strategic level, policy would flow from the values and beliefs, and provides the broad considerations for shaping strategy. At the operational level, policy is reflected in the Higher Commander's Op Directives and Operational Commander's Intent/ Planning Directions, including constraints and restraints, for deriving the operational plan. Accordingly, while thought and action is guided by doctrine, the specific course of action or plan is determined as per the strategy, formulated within the framework of policy, to attain defined objectives, with regard to the available means and prevailing operating environment.

Port Visits. Port visits by warships are the basic method of undertaking defence diplomacy with other nations, and interaction between their maritime forces. A warship is a sovereign instrument of the State, and represents its interests, intent, capability and technological prowess. The crew, as a microcosm of the nation's population, similarly represents their culture, values and attributes. A port visit by a warship to another nation, therefore, projects our nation and people to the host military, government and populace. It also provides bonding and reassurance to Indian diaspora settled there. A port visit is seen as an act of trust, friendship and respect. It paves the way for further interactions and building of 'bridges of friendship'.

Presence. Presence enables ready availability of naval forces in an area of maritime interest, to prevent or respond to crises and be advantageously deployed in case of an imminent confrontation/ conflict. It is a primary means to display intent and commitment, gain operational familiarity, exercise maritime power, encourage good order at sea and adherence to applicable laws, promote stability and provide net maritime security in an area of interest.

Presence and Surveillance Mission (PSM). PSM is an important peace time activity, which entails operational deployment of suitable naval forces in a maritime area, so as to establish presence and conduct surveillance. These are normally carried out by naval ships, and sometimes aircraft, across and beyond India's maritime zones. PSM enables the monitoring of operational conditions in all dimensions, to maintain and develop MDA, display commitment, project deterrence and provide rapid response capability. It can be carried out as an independent action or conjoin with other singular or multiple activities, such as exercises, patrols and deployments. PSM can be done independently by our maritime forces, and also in a coordinated or combined manner with other navies and coast guards.

Sea Control. Sea control denotes a condition where one is able to use a defined maritime space (including surface, underwater and air), for a specific period of time, for one's own purpose, whilst simultaneously denying its use to the adversary. Sea control is *not* equal to 'control of the sea', and is *not* an end in itself. It is, rather, an enabling condition that needs to be established, so as to provide the necessary *freedom of action*, in terms of area, time and nature, which is required for achieving the main operation and purpose. Hence, sea control is considered as a prerequisite for most naval operations, as it qualifies the basic condition of attaining the necessary degree of freedom of action required for undertaking and progressing such operation. Sea control can be attained either by the force undertaking the main operation, itself and at the same time, or by dedicated forces deployed prior to or along with the main operation, such as for larger, complex operations. As it is related to the desired objective and also corresponding naval operation(s) to achieve the objective, the requirements for sea control will vary. For example, the type of sea control required for keeping ports that are outside the primary Area of Operations (AO), safe and free for navigation will be very different from the sea control required for SLOC protection close to the enemy coast, while an amphibious operation would normally require the

highest degree of sea control, including its maintenance by a separate force. In all cases, the focus will be on ensuring that the degree of control and freedom of action necessary to undertake and progress the main operation are available.

Sea Lines of Communication (SLOCs). The sea routes used by a nation for transportation of its essential commodities, including energy, trade and other cargo towards its sustenance, growth and development, and by its maritime forces for conduct of operations, are termed as its SLOCs. These would generally coincide with the International Shipping Lanes (ISLs) in peace time, but may need to be altered as per the threat, especially during conflict. The sea routes used by the maritime forces for conducting and sustaining maritime operations would further vary as per the operational plans. The security of a nation's SLOCs forms part of the principle of war on 'security'. The options for sea routes would depend on maritime geography, navigational conditions, including climate and weather, ships' characteristics, ports/ hubs enroute, security threats in various sea areas, and dependence on specific ports of origin/ destination.

Sea Denial. Sea denial is a concept of denying the adversary the use of a particular maritime space, for a period of time when it is not required for one's own use. It is essentially an offensive action, to reduce the adversary's freedom of action and to degrade his operating capability. It targets the adversary in areas important to him, and disrupts the use of these areas for the adversary's purpose. Sea denial can also be used in a defensive manner, to prevent the adversary from operating in an area from where he can launch strikes against our VAs/ VPs, forces and other assets. Sea denial is distinct from sea control, even though the latter has sea denial as a concomitant attribute. The difference is that, for sea denial, the same area is *not* required for our own purpose. This aspect dictates the ways and means of exercising force. In sea denial, the choice of force deployments can be less overt, and also less concentrated, whilst keeping the adversary in doubt as to the degree and quantum of our presence. This would additionally serve to inhibit his freedom of action, as force could be applied against units operating in the area.

Security. In the broadest sense, *security* can be understood in terms of the presence of freedom and the absence of fear and want – with regard to the pursuit of the core purpose and values governing the existence and evolution of a society and state. In traditional Indian thinking, the great aims of human endeavour (*purusharthas*) were centered on *dharma* (righteous conduct), *artha* (material well-being), *kama* (worldly pleasures and happiness) and *moksha* (salvation). To pursue these rightful goals, the individual and society needed security, which was a core duty and responsibility of the Ruler (State). The modern idea of human rights and social security is in consonance with these traditional Indian thoughts. The concept of human security entails the presence of freedom, equality and the essentials of life, in a safe, peaceful, and stable environment, so as to facilitate societal and economic growth. Accordingly, national security is viewed in a holistic framework, which extends to all aspects of societal well-being and growth, including physical, economic, energy, food, water, health and environment. These factors also influence and shape the core national values, aims and interests that need to be secured, and play an organic role in the determination of national strategy. Security can be the objective or end-state of a certain strategy. In such case, it defines the purpose of that strategy and describes what the strategy seeks to secure. Security can also be the enabler for some other, related strategy, as part of the ways and means employed. The concept of security, therefore, shapes, governs and guides strategy.

Strategy. A strategy provides the *ways* for suitable development and employment of the *means*, to achieve the desired *ends*. It caters to trends and changes, including risks and opportunities that may emerge. It also looks at enhancing and augmenting the means, and developing the most effective and efficient ways for their employment. A strategy is developed at the single armed force, joint and national levels, with the assistance of instruments such as net assessments, threat assessments, scenario building, technology forecasting, and wargaming. Such a plan at the apex, national level that seeks to harness national means and power, to meet the national aim and aspirations, would constitute the *national strategy*. The national strategy itself flows from a clearly stated or implied *national policy*. In a similar manner, the plan by which a state would harness all elements of its national power to attain various maritime objectives, in support of the national strategy and attainment of the national aim and interests in the maritime domain, would constitute its *maritime strategy*.

Submarines. Submarines are the most potent instruments for exercising sea denial against the adversary. These are offensive weapon platforms, which can apply strategic leverage with their increased ranges of weapons and power projection capability. Submarines are also used for other tasks, including land-attack, ISR, ASW, and 'silent presence', as per their equipment and weapon capabilities. Air Independent Propulsion (AIP) and nuclear-powered submarines (SSN), which can operate submerged for longer periods, enhance the potency of submarine operations.

Surface Action Groups (SAG). These are dedicated task groups formed for the purpose of carrying out specific ASuW tasks at sea. These are generally destroyers and frigates, attached to the main Task Force/ CTF, for undertaking specific surface actions as part of the operational plans and situation. Maintenance of potent SAG capability within the fleet remains essential for maritime operations.

Trafficking/ Smuggling. Smuggling may be understood as transshipment of cargo in evasion of the law, such as avoidance of duty or the lawful procedure, while trafficking covers transshipment of cargo, in direct contravention of the law, where such cargo is prohibited to be imported/ exported by law.

Vessel Traffic Management System (VTMS) and Vessel and Air Traffic Management System (VATMS). The surveillance information from port radars is integrated in a VTMS system, with information relayed to the Indian Navy and Coast Guard. Similarly, the surveillance information obtained in the Offshore Development Area (ODA) is integrated in a VATMS (W) system, coordinated by the Indian Navy.

White Shipping Information. Information is available on merchant shipping position and movements from both, open sources such as the World Register of Shipping database, Lloyd's List Intelligence, etc., and information-sharing arrangements with friendly nations in a cooperative framework. The information is collated by the Indian Navy and feeds into the overall MDA.

Abbreviations

AAW	Anti-Air Warfare
ACSOC	Area Coastal Security Operations Centre
ADA	Air Domain Awareness
ADS-B	Automatic Dependent Surveillance - Broadcast
AIP	Air Independent Propulsion
AIS	Automatic Identification System
AIS-SB	Space-Based Automatic Identification System
ANC	Andaman & Nicobar Command
AO	Area of Operation
AOA	Amphibious Objective Area
ASEAN	Association of South-East Asian Nations
ASuW	Anti-Surface Warfare
ASW	Anti-Submarine Warfare
BMP	Best Management Practices
C^3	Command, Control, Communications
CBG	Carrier Battle Group
CCS	Cabinet Committee on Security
CEC	Cooperative Engagement Capability
CGPCS	Contact Group on Piracy off the Coast of Somalia
CIOB	Central Indian Ocean Basin
CIP	Community Interaction Programme
CISF	Central Industrial Security Force
CORPAT	Coordinated Patrol
COTS	Commercial Off-The-Shelf
CSL	Cochin Shipyard Limited
CSN	Coastal Surveillance Network
CSRS	Coastal Surveillance Radar System
CTF	Carrier Task Force
DADF	Department of Animal Husbandry, Dairying and Fisheries
DGLL	Directorate General of Lighthouses and Lightships
DPSU	Defence Public Sector Undertaking
DRDO	Defence Research and Development Organisation
EEZ	Exclusive Economic Zone
EW	Electronic Warfare
FAC	Fast Attack Craft
FAS	Favourable Air Situation
FIC	Fast Interceptor Craft
FRA	Flight Refuelling Aircraft
GDP	Gross Domestic Product

GRIHA	Green Rating for Integrated Habitat Assessment
GRSE	Garden Reach Shipyard and Engineers Ltd
HADR	Humanitarian Assistance and Disaster Relief
HRA	High Risk Area (Piracy)
HTST	Hydrographic Technical Support Team
IDA	Information-Decision-Action
IFC	International Fusion Centre
IFR	International Fleet Review
IGBC	Indian Green Building Council
ILO	International Liaison Officer
IMAC	Information Management and Analysis Centre
IMBL	International Maritime Boundary Line
IMO	International Maritime Organisation
INDSAR	Indian (Maritime) Search and Rescue
INSPIRES	Indian Ship Position and Information Reporting System
IOC	Indian Oil Corporation
IONS	Indian Ocean Naval Symposium
IOR	Indian Ocean Region
IORA	Indian Ocean Rim Association
ISA	International Seabed Authority
ISL	International Shipping Lane
ISLEREP	Island Reporting
ISR	Intelligence, Surveillance, Reconnaissance
ISRO	Indian Space Research Organisation
ISRR	Indian Search and Rescue Region
ISV	Immediate Support Vessel
ITEC	Indian Technical and Economic Cooperation Programme
IUU	Illegal, Unreported and Unregulated (Fishing)
IW	Information Warfare
IWG	IONS Working Group
JOC	Joint Operations Centre
JVOPAC	Joint Venture Offshore Protection Advisory Committee
LCA	Light Combat Aircraft
LCU	Landing Craft Utility
LEED	Leadership in Energy and Environmental Design
LIA	Lead Intelligence Agency
LND	Local Naval Defence
LPD	Landing Platform Dock
LRIT	Long Range Identification and Tracking
LRMR	Long Range Maritime Reconnaissance
LTTE	Liberation Tigers of Tamil Eelam
MAC	Multi-Agency Centre
MARCOs	Marine Commandos

MCM	Mine Counter Measures
MDA	Maritime Domain Awareness
MDL	Mazagon Dock Limited
MHA	Ministry of Home Affairs
MIO	Maritime Interdiction Operation
MoA	Ministry of Agriculture
MoD	Ministry of Defence
MoF	Ministry of Finance
MOIA	Ministry of Overseas Indian Affairs
MoP&NG	Ministry of Petroleum and Natural Gas
MoS	Ministry of Shipping
MPMSDF	Multi-Platform, Multi-Sensor Data Fusion
MRCC	Maritime Search and Rescue Coordination Centre
M-SAR	Maritime Search and Rescue
MSDC	Maritime States Development Council
MSIS	Merchant Shipping Information System
NAIS	National Automatic Identification System
NC^{3}IN	National Command Control Communication and Intelligence Network
NCAGS	Naval Cooperation and Guidance to Shipping
NCO	Network Centric Operations
NCS	Naval Control of Shipping
NCSMCS	National Committee for Strengthening Maritime and Coastal Security against Threats from Sea
NELP	New Exploration Licensing Policy
NEO	Non-combatant Evacuation Operation
NFU	No First Use
NMDA	National Maritime Domain Awareness
NOPV	Naval Offshore Patrol Vessel
NRI	Non-Resident Indian
NSAB	National Security Advisory Board
NSB	National Shipping Board
ODA	Offshore Development Area
ONGC	Oil and Natural Gas Corporation
OSCC	Offshore Security Coordination Committee
OSD	Overseas Deployment
OTR	Operational Turn Round
OVL	ONGC Videsh Limited
PACE	People, Assets and Combat Efficiency
PANS	Pre-Arrival Notification of Security
PASSEX	Passage Exercise
PCASP	Privately Contracted Armed Security Personnel
PCS	Port Community System
PIO	Person of Indian Origin
PMSC	Private Maritime Security Companies
PSM	Presence and Surveillance Mission
PSO	Peace Support Operation
QoS	Quality of Service
QRT	Quick Reaction Team
R&D	Research & Development
RCSOC	Regional Coastal Security Operations Centre
ReALCraft	Registration and Licensing of Fishing Craft
ReCAAP	Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia
REFLECS3	Regional Fusion and Law Enforcement Centre for Safety and Security at Sea
RIMPAC	Rim-of-the-Pacific
RoE	Rules of Engagement
ROV	Remotely Operated Vehicle
SAG	Surface Action Group
SAGAR	Security and Growth for All in the Region
SAR	Search and Rescue
SBTF	Shore-Based Test Facility
SCSOC	State Coastal Security Operations Centre
SF	Special Forces
SHADE	Shared Awareness and Deconfliction
SIMBEX	Singapore India Maritime Bilateral Exercise
SLOC	Sea Lines Of Communication
SMAC	Subsidiary Multi-Agency Centre
SMC	State Monitoring Centre
SMP	State Marine Police
SOLAS	Safety of Life at Sea
SOP	Standard Operating Procedure
SPB	Sagar Prahari Bal
SPOD	Sea Ports of Disembarkation
SPOE	Sea Ports of Embarkation
SRMR	Short Range Maritime Reconnaissance
SSBN	Ship Submersible Ballistic Nuclear (submarine)
SSN	Ship Submersible Nuclear (submarine)
TLS	Through Life Support
ToT	Transfer of Technology
UAV	Unmanned Aerial Vehicle
UMS	Unmanned Marine System
UNCLOS	United Nations Convention on the Law of the Sea
UNREP	Underway Replenishment
URG	Underway Replenishment Group
UT	Union Territory
UUV	Unmanned Underwater Vehicle
VAs/VPs	Vital Areas/ Vital Points
VATMS	Vessel and Air Traffic Management System
VBSS	Visit Board Search and Seizure
VTMS	Vessel Traffic Management System

Acknowledgements

The task of drafting a revised Indian maritime security strategy was steered by the Directorate of Strategy, Concepts and Transformation (DSCT) at the Integrated Headquarters, Ministry of Defence (Navy), as per the vision and guidance of the Chief of the Naval Staff. In a comprehensive review, inputs were solicited from a wide range of expert organisations and individuals. Their generous provision of time and professional insights were key facilitators for the project, and their substantial contributions are gratefully acknowledged.

The comprehensive review of the strategy and all factors was enabled by the guidance and directions of the Flag Officers Commanding-in-Chief and Principal Staff Officers at IHQ MoD (Navy). The examination of the draft strategy and revision process was undertaken by the Controllers and Assistant Principal Staff Officers at IHQ MoD (Navy), Commandant Naval War College, and Flag Officer Doctrines and Concepts. Detailed professional insights were provided for examination of fresh aspects and areas for revision by the professional directorates at IHQ MoD (Navy), IHQ MoD (Army), Air HQ, HQ Integrated Defence Staff, and Coast Guard HQ.

The review process benefited immensely from insights and inputs provided by various professional organisations and institutions. These include HQ Eastern Naval Command, HQ Western Naval Command, HQ Southern Naval Command, HQ Andaman & Nicobar Command, HQ Army Training Command, Naval War College, College of Defence Management, Maritime Doctrines and Concepts Centre, National Maritime Foundation, United Services Institution, and Observer Research Foundation.

A holistic revision was possible due to the large number of senior experts in defence and strategic affairs, who spared valuable time and effort to provide wide-ranging inputs, which were very beneficial to the project. These include Adm Arun Prakash (Retd), VAdm Premvir S Das (Retd), VAdm Vijay Shankar (Retd), VAdm Arun K Singh (Retd), VAdm Pradeep Chauhan (Retd), VAdm Anurag G Thapliyal (Retd), VAdm Girish Luthra, VAdm Anil Chawla, RAdm K Raja Menon (Retd), Maj Gen BK Sharma (Retd), RAdm SY Shrikhande, RAdm Monty Khanna, RAdm R Hari Kumar, RAdm Ajendra B Singh, RAdm Ravi J Nadkarni, RAdm Suresh K Grewal, RAdm Biswajit Dasgupta, Cmde Deepak Bist, Cmde Rajesh Singh, Cmde Ajay V Bhave, Cmde Srikant B Kesnur, Cmde Rajesh Pendharkar, Cmde Krishna Swaminathan, Cmde Ajay Kochhar, Capt CR Praveen Nair, Capt Probal K Ghosh (Retd), Capt Gurpreet S Khurana, Prof KR Singh and Prof Sachin Pendse.

The task of examining all inputs, undertaking further research and drafting the revised strategy was undertaken by a core team comprising Cmde Sanjay J Singh, Cdr Sarabjeet S Parmar and Cdr Himadri Das. They were guided in their efforts by RAdm SY Shrikhande, who provided constant support and valuable course corrections to the project.

The task of document design and production was undertaken by M/s Facet Design, and coordinated by Cdr Jasneet S Sachdeva. The photographs used were provided by numerous directorates and offices at IHQ MoD (Navy), Command Photo Sections from Eastern and Western Naval Commands, INS Viraat, Cdr Navtej Singh and Rakesh Poonia POA (PH). Support for collating inputs, managing project timelines, progressing production milestones, overseeing design and layout, and vetting multiple drafts was carried out by Capt Deepak Singhal, Cdr KV Narsimham, Cdr Yogesh V Athawale, Pavittar Pal Singh POR (Tel), Gena Ram LS RC1, Praveen Kumar LS UW2, and Parixit B Singh LS RP2.

The revision of the strategy was a team effort, and owes its realisation to many others who worked behind the scenes, exemplifying the 'silent service' character of the navy. Their efforts and contributions are also gratefully acknowledged.

Bibliography

Documents

A Maritime Military Strategy for India (1989 – 2014), Indian Navy, 1988

Annual Report 2014 – 2015, Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture, Govt of India

Annual Report 2014 – 2015, Earth System Science Organisation, Ministry of Earth Sciences, Govt of India

Annual Report 2014 – 2015, Ministry of Coal, Govt of India

Annual Report 2014 – 2015, Ministry of Defence, Govt of India

Annual Report 2014 – 2015, Ministry of External Affairs, Govt of India

Annual Report 2014 – 2015, Ministry of Shipping, Govt of India

Annual Report 2014 – 2015, Oil and Natural Gas Corporation (ONGC)

A Seaman's Guide to International Law (INBR 1650), Indian Navy, April 1999

Basic Doctrine of the Indian Air Force, 2007

Basic Doctrine of the Indian Air Force, 2012

Comprehensive Marine Fishing Policy – Nov 2004, Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture, Govt of India, New Delhi

Cyber Doctrine, Flag Officer Doctrines and Concepts, Indian Navy, July 2013

Energising the Nation, Annual Report 2014 – 2015, Ministry of Petroleum and Natural Gas, Govt of India

Energy Statistics 2015, Central Statistics Office, Ministry of Statistics and Implementation Programme, Govt of India

Foreign Cooperation Roadmap, Indian Navy, 2014

Handbook on the Law of Maritime Operations (Laws of Peacetime Naval Operations - INBR 1652), Vol I, Indian Navy

Handbook on the Law of Maritime Operations (Laws of Armed Conflicts - INBR 1652), Vol II, Indian Navy

Handbook on the Law of Maritime Operations (Concept and Development of Rules of Engagement - INBR 1652), Vol III, Indian Navy

Human Capital Strategy, Indian Navy, 2014

Indian Armed Forces - Joint Information Warfare Doctrine, Headquarters Integrated Defence Staff (HQIDS), 2005

Indian Army Doctrine, 2010

Indian Maritime Doctrine (INBR 8), Indian Navy, 2004

Indian Maritime Doctrine (INBR 8), Indian Navy, 2009

Indian Maritime Military Strategy, Indian Navy, 2007

Indian Naval Doctrine for Information Warfare, 2000

Indian Naval Indigenisation Plan (2015-2027)

Indian Naval Training Doctrine, 2014

Indian Navy Space Vision (2014 – 2027), 2014

Indian Navy Vision Document, 2014

India's Nuclear Doctrine - NSAB Report and Press Release of CCS Review

Joint Doctrine for Air-Land Operations (JP-10), HQIDS, 2010

Joint Doctrine for Amphibious Operations, HQIDS, 2008

Joint Doctrine for Electronic Warfare (JP-8), HQIDS, 2010

Joint Doctrine for Maritime Air Operations (JP-6), HQIDS, 2009

Joint Doctrine for Perception Management and Psychological Operations (JP-9), HQIDS, 2010

Joint Doctrine for Special Forces Operations (JP-5), HQIDS, 2008

Joint Doctrine for Sub-Conventional Operations, (JP-7), HQIDS, 2010

Joint Doctrine Indian Armed Forces, HQIDS, 2006

Joint Doctrine Indian Armed Forces, HQIDS, 2007

Maritime Agenda 2010 – 2020, Ministry of Shipping, Govt of India.

Maritime Capability Perspective Plan 2012 – 2027, Indian Navy, 2011

Maritime Infrastructure Perspective Plan 2015 – 2027, Indian Navy, 2015

Mine Counter Measures (MCM) Doctrine (INBR 1836), Indian Navy, 2009

Science and Technology Roadmap, Indian Navy, 2015

Strategic Guidance for Transformation, Indian Navy, 2015

Technology Perspective and Capability Roadmap (TPCR), HQIDS, 2013

"Vision 2030" Natural Gas Infrastructure in India, Report by Industry Group for Petroleum and Natural Gas Regulatory Board.

Books

Works of Chanakya, Mahan, Corbett, Richmond, and Panikkar

Under Two Ensigns: The Indian Navy 1945 – 1950, and *Blueprint to Bluewater: The Indian Navy 1951 – 65*, both by Rear Admiral Satyindra Singh (Retd), AVSM

Transition to Triumph: The Indian Navy 1965 – 1975, Transition to Eminence: The Indian Navy 1976 – 1990, and *Transition to Guardianship: The Indian Navy 1991 – 2000*, all by Vice Admiral GM Hiranandani (Retd), PVSM, AVSM, NM, PhD

The Handbook of International Humanitarian Law, Third Edition (Ed), Dieter Fleck, Oxford University Press, Oxford, 2013

India's Security in a Turbulent World, Jasjit Singh, National Book Trust, New Delhi, 2013

Index

A

ACSOC 120
Amphibious Operations 70,162
Anti-Piracy 8,87,90,96,97
Anti-Air Warfare 71,162
Anti-Submarine Warfare 138,162
Anti-Surface Warfare 71,162
Application of Force 11,63
Areas of Maritime Interest 31,34
Armed Security 41,42
Asymmetric Threat 140

B

Battle-Space Dominance 64,69
Best Management Practices 39,118
Biometric Verification 112

C

Capability Development 121,127,129
Capability Enhancement 82,91,92
Capacity Building 81,82,91,92
Carrier Battle Group 138,162
Carrier Task Force 138,162
CGPCS 90
Choke Points 18,20
Climate Change 42
Coastal and Offshore Defence 70,71
Coastal Community 118
Coastal Defence 67,108,110,162
Coastal Security 10,104,109,162
Coastal Security Mandate 107
Coastal Surveillance Network 163
Coastal Waters 108,163
Computation and Automation Technologies 144
Contingency Planning 50,54,66
Conventional Deterrence 48,50
Cooperative Engagement Capability 136
Coordinated Patrol 96
Cyber Security Technologies 144

D

Defence 163
Deterrence 8,10,11,163
Deterrence by Denial 163
Deterrence by Punishment 163
Dynamic Surveillance 112

E

Electromagnetic and Laser Technologies 144
Energy Security 4,24
Escalation Management 74
Exclusive Economic Zone 17
Exercises with Foreign Navies 85

F

Fishing Community 26
Force Maintenance 129,141
Force Mix Ratio 137
Force Projection 13,69
Force Protection 71,129,138,140
Force Structure 43,50,51,137

G

Green Technologies 144

H

Hub and Spoke Model 120
Human Resource Development 130
Humanitarian Assistance and Disaster Relief 43,86,98,139
Hydrographic Cooperation 94

I

Illegal , Unreported and Unregulated Fishing 41
Information-Decision-Action Cycle 64,66,68
Indian Diaspora 31
Indian Search And Rescue Region 101
Indigenisation 130
Information Security 74
Information Warfare 74
Infrastructure and Logistics 142
International Fleet Review 84,86
International Maritime Boundary Line 87,90,96,108
International Shipping Lanes 17,18,170
Indian Ocean Naval Symposium 90,91,164
Indian Ocean Regional Association 90,165

J

Joint Operation 67,96,108,119,129,135,141
Joint Operations Centre 119
Joint Venture Offshore Protection Advisory Committee 120
Jointness 43,57,67,105,141

L

Lead Intelligence Agency 114
Logistics Support 138

M

Maritime Boundaries 22
Maritime Domain Awareness 54,64,134,165
Maritime Economy 24
Maritime Engagement 81,82,84,85,101
Maritime Geography 17,70
Maritime Governance 12,22,106,122
Maritime Interdiction Operation 96,100
Maritime Manoeuvre 69,165
Maritime Neighbours 4,22,23,41
Maritime Outlook 8,16
Maritime Relations 23,24,86
Maritime Rescue Coordination Centre 100
Maritime Security Objective 4,8,10,80
Maritime Security Strategy 166
Maritime Stakeholders 12,55
Maritime Strike 69,71,72,138,166
Maritime Terrorism 38,96,104,150
MILAN 87,166
Mine Counter Measures 140
Mine Warfare 166
Multi-Agency Centre 114
Multi-Platform Multi-Sensor Data Fusion 136

N

NAIS 167
Nano-Technology 145
National Maritime Interests 4,9,10,64,166
National Security 167
National Security Strategy 167
National Values 167
Naval Air Power 139
NMDA 167
Net Maritime Security 81,82,95,101,126,151
Network Centric Operations 135,143
Networked Operations 43,64,65,75,134
No First Use 48
Non-combatant Evacuation Operations 30,99,139,168
Non-Traditional Threats 37,50,84,104,109,142
Nuclear Deterrence 48

O

Offshore Defence 70,110,168
Offshore Security Coordination Committee 120
Operational Actions 68,69,160
Operational Enablers 11,64,69
Operational Principles 62,69
Operational Tempo 68,168
Overseas Deployment 82
Overseas Indians 30
Overseas Maritime Investments 29,34

P

Panchsheel 22,46
Passage Exercise 86
Patrols 82,96,118,168
Peace Support Operations 96,100
Personnel Exchange 84
Piracy 37,39,40,41
Policy and Plan 169
Port Community System 112
Port Visit 84,169
Power Projection 60,138
Precision Weapon Technologies 143
Preparedness 11,43,50,56,66
Presence 169
Presence and Surveillance Mission 82,169
Propulsion and Power Technology 144

R

RCSOC 119
ReCAAP 90
Regional MDA 82,95
Remotely Operated Vehicle 140
Rules of Engagement 63,163

S

Sagar Prahari Bal 118
Sagarmala 27
Satellite 135,143
SCSOC 119
Sea Control 68,71,129,139,169
Sea Denial 68,72
Sea Lines of Communication 28,32,65,70,170
Search and Rescue 43,96,100
Security 170
SHADE 90
SLOC Interdiction 69,70
SLOC Protection 69,70,73
Special Forces Operations 129,141
Staff Talks 84,85
Standardisation and Modularity 132
State Marine Police 104,107,112,118,120
Static Surveillance 112
Strategy 171
Strategic Communication 57,74,101
Strategic Effect 63,64,145
Strategic Situational Awareness 54
Surface Action Group 138,171

T

Technical Cooperation 93
Technologies 127,129,134,136,138,142,143,144
Threat Assessment 54
Through Life Support 138
Traditional Threats 33,37,50,81,148
Trafficking/ Smuggling 170
Training Cooperation 92
Trilateral Cooperation 91

U

Unmanned Marine System 144
Unmanned Underwater Vehicle 140

V

VBSS 71,120
VTMS/ VATMS 171

W

White Shipping Information 95,111,171

INDIAN NAVY

www.indiannavy.nic.in