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INDIAN NAVY AND COASTAL SECURITY

The power of a King lies in his mighty arms ...
Security of the citizens at peacetime is very important because State is the only saviour of the men and women who get affected only because of the negligence of the State.

— Chanakya

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We endeavour to sound *ALERTS* and create *AWARENESS* about the myriad dimensions and manifestations of *DEFENCE* and *SECURITY* in India and around the world.

DSA is as much yours, as it is ours!

13 November 2015 will long be remembered for a Friday that brought chaos and carnage to Paris. Much like 11 September 2001 did to New York and some other cities of the United States. Both dates and events, would be recalled in history as the starting point of the endgame in the campaign against Islamic State and Al Qaeda respectively. While 11 September proved to be the trigger that launched the operation which culminated in Abbottabad on a hot May night in 2011, how post-Paris events unfold is anybody's guess, as yet. But it is certain that the war on Islamic State will see fundamental changes.

The fundamental changes were to be expected after the Mumbai attacks of 26 November 2008. Many things changed in India's anti-terror operations, especially against Lashkar-e-Taiba. Many of the changes remain hidden from the glare of publicity, while some are more visible. But what is certain is that India needed to change in many aspects, but most of all in how it manages the security of long coastline. The Mumbai attacks proved that coastal security was as important, if not more, than that of cities and installations in the hinterland.

India has a unique geographical position in that it is virtually shaped like an aircraft carrier jutting into the Indian Ocean. And some of the most important international trade routes pass under its nose, eyes and ears. The responsibility of maintaining the sanctity of these trade routes is of the international community. And India being the nearest and the largest of the countries astride these routes makes it doubly responsible for ensuring safe passage for global cargo and passengers. As the most suitably located country India has to be the lead player in this structure. India's contribution cannot be second to any other country. But to make that a reality there has to be an oceanic security grid in which India takes the lead.

For India to be the lead player it has to make greater effort and investments in its Navy and as a corollary its Coast Guard too. The economic benefits and imperatives of this enhanced funding are obvious, for the Indian growth story requires safe and secure global trade. What is also fundamental is national security imperatives. Any disruption, terrorist or otherwise, has a cascading effect on economic activities and as a result growth. Since India is a coastal country, overlooking Indian Ocean trade routes, has vital installations and cities on the sea and hence is vulnerable to attack from that direction, it is important to secure that front, immediately.

As the lead player in this scheme the Navy has to be bolstered greatly. Just as the Army is the centre of gravity when it comes to manning the land borders, the Navy must remain the key in terms of the oceanic borders. The mistakes that have been made on the land front must not be made in the seas. All border police forces were once under the command of Army officers, not just during hostilities. Now there is a piquant situation wherein an important service like the Indo-Tibetan Border Police, deployed on the Line of Actual Control, doesn't come under the operational command of the local Army formation but reports directly to the Ministry of Home Affairs. The same was sought to be done with the Coast Guard, but that has been thwarted for the time being. It should be stopped completely.

Even as the Coast Guard is a separate service it has to maintain close relations with the Navy. After all both have to operate in the same terrain, so nothing better than to institutionalise cross attachments and postings of the two cadres. That way each gets to know the other better and operate better too. The same logic applies to India's cooperation with the other friendly international navies. The International Fleet Review scheduled for February 2016 is a great contributor to that process.

Even as India must remain the lead player in the ocean that carries its name, it cannot operate all by itself. There are other countries that share the same vision of cooperation and growth, hence, all must be on the same wavelength. But for that to come to fruition India must first establish its own coastal security grid which couples the Navy, the Coast Guard and all agencies of the states which reside on the sea. The future is there and must be secured immediately.

Manvendra Singh

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E-mail: (first name)@dsalert.org
info: info@dsalert.org
articles: articles@dsalert.org
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online edition: online@dsalert.org
advertisement: advt@dsalert.org

Editorial and corporate office
Prabhat Prakashan Tower
4/19 Asaf Ali Road
New Delhi-110002 (India)
+91-011-23243999, 23287999, 9958382999
info@dsalert.org | www.dsalert.org

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INDIAN NAVY AND COAST GUARD
SYNERGY IN MARITIME SECURITY

To understand the importance of maritime capabilities one has to keep in mind the inexorable fact that 70.9 per cent of the globe is water and just 29.1 per cent is land. It is also a historical truism that the British Isles, a little bigger than a speck on the world map, for centuries sustained an empire on which the sun never set because Britain ruled the waves. Britain trawled the empire to sustain its economy and its global hegemony. With the sun having set on the empire decades ago, politicians and geo-strategists surmised that a vacuum had been created 'East of Suez'. For a brief interlude, this vacuum was filled by the US whose aircraft carriers belligerently roamed the oceans causing turbulence in their wakes. After 1990 when the Soviet Union collapsed, US was the sole super power.

The phrase 'East of Suez' always had an implicit ambiance across the vast stretches of water from the Indian Ocean to the Pacific Ocean conjoined by the infamous choke point called the Malacca Strait. Today strategists unhesitatingly refer to it as the Indo-Pacific continuum. A craving to be able to cross these oceans in pursuit of fossil fuels has become the major cause for growing astriction in this region.

The depletion of landbased natural resources has already instigated nations to exploit offshore oil wells. But there are several other forms of mineral wealth on the ocean floor that are waiting to be exploited when market forces demand. Polymetallic nodules with high manganese and cobalt content, sulfides and phosphorites (feedstock for fertilizer factories for sustaining the food chain) has set the clairvoyant Chinese on an expansive and bullish exertion to control these resources. Chinese naval expansionism has unleashed dynamics affecting everyone from the US to India to the many nation states that comprise the ASEAN politico-economic grouping and the nations of the Pacific seaboard. What is emerging is a conflict between global stakeholders in the need for preservation of global commons and China that has been trying to restrict entry into claimed ocean spaces which once again has a pivot 'East of Suez'.

India is surrounded by water on three sides, giving it a peninsular profile that dominates the Indian Ocean. The southern maritime approaches have been placid as compared to the Himalayan frontiers where foreign inspired insurgencies and frequent intrusions have made these snowbound confines real hotbeds of violence and tension. But the dual attack on Mumbai has ordained the nation to prick up ears on India's maritime defence. The Indian maritime security apparatus has been reorganised to give the Indian Navy a pivotal role in designing and maintaining the security architecture. The Indian Coast Guard is a defence network that includes millions of fisherfolk living along coastal states that straddle a 7,000 km long coastline and make their living from the seas.

The Indian Navy has been assigned with the core responsibility of defending the maritime domain with Indian Coast Guard as second line of defence and local police, the third tier that deals with every kind of threat from piracy to drugs, gunrunning and terrorist networks. The Indian Navy is proudly acquiring latest stealth warships that are indigenously designed and constructed and is acuminating its skills with frequent joint exercises with important maritime nations. Eagerly awaited is the commissioning of nuclear armed *Arihant* submarine. The Indian Coast Guard too is rapidly acquiring new fast attack vessels, expanding its ability to intervene anywhere along the vast 200 nautical mile Exclusive Economic Zone at short notice.

Dear Readers, this edition deliberates upon the threats from the seas and challenges they incur. An in-depth analysis of emerging events across the Indian Ocean Region and the adjoining Pacific Ocean with suggestions on what course to follow to protect national interests is thought provoking. I am sure this edition will spawn a feeling of confidence in India's maritime defence capabilities.

We all in Team ***DSA*** greet and salute our Sea Warriors on the Navy and Submarine Days that we celebrate in December.

Jai Hind!

Pawan Agrawal

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MARITIME SECURITY FOR NATIONAL PROSPERITY

Chief of the Naval Staff Admiral Robin K Dhowan PVSM, AVSM, YSM, ADC is the 22nd Navy Chief of India. He is an alumnus of National Defence Academy, Defence Services Staff College and Naval War College, Rhode Island, USA. He has also completed the Sea Harrier Direction Course in the UK. Here is an exclusive and exhaustive interview with *DSA* he shares his perspective and plans for a blue water Indian Navy.

Defence and Security Alert: **Given India's expanding maritime footprint, how do you see the growth of the Indian Navy in the coming decades?**

Chief of the Naval Staff: India is a maritime nation and history is replete with examples that unhindered use of the seas is critical for national prosperity. Over the years, the Indian Navy's endeavour has been towards creating and sustaining a combat ready, technology enabled and networked force, capable of safeguarding our maritime interests and projecting appropriate maritime power in our areas of interest. In line with our vision, the Indian Navy of today is a blue water Navy, operating a balanced force comprising state-of-the-art warships, submarines, aircraft, helicopters and remotely piloted aircraft capable of operations in the Indian Ocean Region and beyond. The importance of offshore and coastal security needs no emphasis and the Navy also has a variety of Offshore Patrol vessels, as also smaller patrol vessels like Fast Attack Craft, Immediate Support Vessels and Fast Interceptor Craft for strengthening our offshore and coastal defence.

Our platform induction projects are on schedule as per our perspective plan and a number of ships, submarines and aircraft would be inducted over the next few years, which would significantly boost our capability. These include the first indigenous aircraft carrier *(Vikrant)*, destroyers, frigates, landing platform docks, corvettes, offshore patrol vessels and cadet training ships, to name a few. The years ahead would also see the growth of submarine fleet with induction of the Scorpene class submarines.

The Indian Navy plans to induct a number of aircraft including deck based fighters, *Hawk* advanced jet trainers, long range maritime reconnaissance *Dorniers*, medium range helicopters, naval utility helicopters and advanced light helicopters to bolster its Naval air arm. The Indian Navy would also continue to operate a variety of remotely piloted aircraft.

DSA: **It is a well-known fact that the nature of warfare is fast changing technologically. While the Indian Navy has made significant progress in acquiring state-of-the-art ships, submarines, aircraft, the critical element of 'man behind the machine' also necessitates availability of human resource. Do you see any challenges in recruiting the right kind of people to man these sophisticated platforms as also is the Indian Navy geared to impart requisite training to these personnel?**

Chief of the Naval Staff
Admiral Robin K Dhowan

CNS Admiral RK Dhowan with Manvendra Singh, Editor-in-chief of *DSA*

CNS: The Indian Navy fully recognises the necessity and importance of trained and capable manpower. Towards equipping for the challenges of the future, we have optimised the educational standards for inducting manpower. Technicalisation of our personnel is indeed a central requirement of the future Navy. Towards this, the Indian Navy provides a four-year B Tech education and training programme at the Naval Academy, to Cadets joining after class 12 and encourages B Tech graduates to join under the University Entry Scheme. The base qualification for sailors to join is also 10+2. Our endeavour is to attract technically sound youth to form the backbone of our future Navy. On an average, we receive approximately three lakh applications for officers and about five lakh applications for sailors every year. These figures are clearly indicative that our youth are keen and eager to join the Indian Navy.

The Navy's operational endeavours have to be underpinned by continuous upgradation of skills, which requires focused attention on quality of recruitment, enhancement of training conditions and infrastructure. We, therefore, have a dedicated Training Command, the Southern Naval Command based at Kochi, for all warfighting, technical, maintenance and logistic domains. Under the watchful eyes of Southern Naval Command, over 30 training institutes, which are spread across the length and breadth of the country, impart high quality training. The training methodologies and curriculum at these training establishments are upgraded periodically, to keep pace with changing technologies and operational requirements.

DSA: The current government has made 'Make in India' its *mantra*. How do you see the indigenous industrial complex support Indian Navy's vision of a 'builder's navy' particularly in the context of weapons and sensors?

CNS: Self-reliance has been the guiding principle of the Indian Navy's 'Plan Papers', which provide the overarching direction for our force build-up. The Indian Navy has also identified the need for strong design support to indigenous shipbuilding programme and has nurtured and developed in-house warship and submarine design capabilities. All our warships under construction today, ranging from an aircraft carrier to submarines, are being built in Indian shipyards, both public and private.

As part of the 'Make in India' drive, we have formulated the Indian Naval Indigenisation Plan (INIP), covering the period 2015 to 2030. This was released by the Hon'ble *Raksha Mantri* in July this year, during a seminar on Innovation and Indigenisation that was hosted by the Indian Navy along with the Confederation of Indian Industry (CII). The indigenisation plan has been uploaded on the websites of both, the Indian Navy and the CII, towards enabling easy access and reference by Indian industry. The INIP enumerates the major technology areas and capabilities, which the Indian public and private sector industry may focus on to meet indigenisation needs of the Indian Navy.

Simultaneously, considerable thrust has been accorded in coordinating efforts of Defence Research

and Development Organisation labs, Defence Public Sector Undertakings and private and public sector partners towards achieving self-reliance, especially in the context of weapons and sensors such as radars, sonars, decoys, EW systems, combat management systems and small and medium calibre guns. With this joint development and production of weapons and sensors in India, considerable progress has been made in the indigenisation of critical components. We have also taken the lead in encouraging the private sector in our efforts for indigenous production of sensors and equipment. Realisation of in-house co-development of such critical technology would be a significant boost to our indigenisation effort.

DSA: Could you help us understand the role of the Indian Navy in India's 'Act East' policy and what has been its contribution to the ASEAN Regional Forum (ARF), East Asia Summit (EAS) and the ADMM-Plus?

CNS: The national approach towards the Indian Ocean Region (IOR) and towards East Asia is enunciated in the Hon'ble Prime Minister's vision of SAGAR – namely, Security and Growth for All in the Region and in the Government's 'Act East Policy' for enhancing security and economic cooperation with countries in East Asia. The Indian Navy, as the prime manifestation of the nation's maritime power, offers a versatile instrument in progressing both, the vision of SAGAR and the Act East Policy. In fact, the Indian Navy has been at the forefront of national efforts to strengthen relations, enhance cooperation and promote maritime security in our areas of interest.

The increased militarisation in the region offers both challenges and opportunities

The Navy's revised strategy defines a new 'strategy for shaping a favourable and positive maritime environment', which envisages a range of measures for engaging maritime forces from friendly countries, so as to enhance cooperation and also develop interoperability. This includes exercises, training and technical cooperation, developing of shared Maritime Domain Awareness and cooperative maritime security operations such as coordinated patrols, EEZ surveillance and patrols, anti-piracy measures and sustained interaction at field, operational and maritime strategic levels. In the last one year, we have seen the addition of institutionalised exercises with Australia and Indonesia and inclusion of Japan in Exercise *MALABAR 2015*.

With regard to our contributions in the ASEAN Regional Forum (ARF), *INS Saryu* participated in ARF coordinated exercises on Search and Rescue named DIREX from 24–29 May 2015 off Penang in Malaysia. The Indian Navy's contribution to ADMM-Plus (ASEAN Defence Minister's Meeting Plus) includes participation in various Expert Working Groups set up under the ADMM-Plus construct and delegation level participation in ADSOM-Plus (ASEAN Defence and Senior Officers Meeting Plus). Our ships have also participated in Field Training Exercise on HADR and Military Medicine and in Maritime Security Exercises conducted under the ADMM-Plus. The Indian Navy has, therefore, been part of the national outreach and contributions to various regional constructs.

DSA: What, in your view, is the likely nature and shape of security in the Indian Ocean particularly in the context of near continuous presence of navies from the US, Australia, Japan, European Union and Russia. Would you consider them as extra-regional powers given that their navies are in the Indian Ocean for their respective national interests such as energy?

CNS: The Indian Ocean has emerged today as the main highway of the world's trade and commerce. Energy and mineral reserves from West Asia and Africa head towards South-East and East Asia. The flow of goods and raw material has resulted in over 120,000 ships transiting through the Indian Ocean annually.

The rise of piracy in 2008 off the Horn of Africa and the security situation in Afghanistan and West Asia, led to naval forces from a number of navies being deployed in the Indian Ocean and the North Arabian Sea. A non-traditional maritime security challenge, such as piracy, is transnational in nature and has an adverse impact on both, regional and global economy. This is particularly so since the shipping routes through the Indian Ocean are principal global economic highways. Moreover, no one Navy has the capability and capacity to deal with pervasive maritime piracy, as had developed off the Horn of Africa, single-handedly. Overcoming such threats, therefore, necessitates a multinational coordinated response, so as to maximise effect and ensure economy of effort.

The increased militarisation in the region offers both challenges and opportunities for cooperation. The Indian Navy, in its revised maritime strategy, has enunciated its perspective towards 'shaping a favourable and positive maritime environment'. This envisages positive engagement with maritime forces from friendly nations, so as to enhance mutual understanding, build interoperability, strengthen shared perceptions and develop opportunities for maritime security cooperation. This can help in strengthening the net maritime security in the region, for all-round benefit.

DSA: How do you see the Indian and US naval cooperation unfolding in the Indian Ocean given that the US considers India as a 'provider of net security' in the region?

CNS: There has been a 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 Indian Ocean Region has been in strong evidence over the past decade. There has also been a 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 our maritime neighbourhood, including deployments for anti-piracy, Non-combatant Evacuation Operations (NEO) and HADR operations.

The Indian Navy's revised strategy document, which was released by the Hon'ble *Raksha Mantri* during the Naval Commanders' Conference on 26 October 2015, has incorporated the dynamics of a net maritime security provider in the new 'strategy for shaping a favourable and positive maritime environment'. This strategy envisages a range of measures for engaging maritime forces from friendly countries, so as to enhance cooperation and also develop interoperability. These entail sustained interaction at field, operational and maritime strategic levels and include exercises with foreign navies, training, technical and hydrographic cooperation, sharing of information and developing of regional Maritime Domain Awareness and various cooperative maritime security operations, such as coordinated patrols, joint EEZ surveillance and patrols and anti-piracy measures.

Our strategy to shape a favourable and positive maritime environment is derived from our national approach towards the Indian Ocean Region enunciated in the Hon'ble Prime Minister's vision of SAGAR – viz, Security and Growth for All in the Region, for enhancing security and economic cooperation. As the prime manifestation of the nation's maritime power, the Indian Navy offers a versatile instrument in progressing the vision of SAGAR and the Act East Policy. The Indian Navy will therefore continue to be at the forefront of national efforts to strengthen relations, enhance cooperation and promote maritime security in our neighbourhood.

DSA: Today Indian Navy is proud to be a 'Builder's Navy'. What has been the contribution towards this by the DPSU yards? And what has been the contribution of the private sector yards?

CNS: 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. The contribution of DPSU yards in making the Indian Navy a 'Builder's Navy' has been immense. Warship building in our country commenced in the 1970s with construction of the Leander class frigates and, thereafter, there has been no looking back. From a modest beginning in the 1970s, state-of-the-art world-class ships have been delivered recently, such as the Kolkata class destroyers, Shivalik class frigates, Naval Offshore Patrol Vessels (NOPVs) and ASW corvettes. These are testimony to the excellent workmanship and capabilities that the DPSU yards possess. These platforms have been exploited with a high degree of satisfaction and have enhanced the combat capabilities of our blue water navy.

India's private shipyards have also started participating in shipbuilding and have received orders to build Naval Offshore Patrol Vessels, cadet training ships and floating docks. Private yards have so far been on the forefront in delivering various types of support craft to the Navy. They have now also stepped into major warship building projects. The Indian Navy is, therefore, pursuing a multi-pronged plan to harness national capabilities and enhance support structures.

The 21st century will be the 'Century of the Seas' for India and the seas will remain a key enabler in her global resurgence

DSA: India is galloping to be amongst the foremost centres of power in the world and her economic strength and technological prowess would need to be underpinned by concomitant military power, of which maritime muscle will be a critical component. How do you view this emerging scenario?

CNS: 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. I have no doubt 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 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 geoeconomic and geostrategic circumstances.

Threats and challenges to India's maritime interests emanate from both, traditional and non-traditional sources. The strategic assessment of the probable and possible sources of threats to India is a continuous process, which is carried out by various national agencies, including the armed forces. The Indian Navy will continue to contribute to national power and discharge its functions by pursuing requisite capability, maintaining appropriate posture and progressing actions under its overall maritime security strategy. For this purpose, the Indian Navy will maintain and further develop as a combat ready, technology driven and networked force, which is capable of providing net maritime security across India's areas of interest. This will be achieved by developing multi-mission, operational and tactical capabilities, across all dimensions and for the full spectrum of naval combat power. DSA

DSA DECEMBER 2015

INDIAN NAVY AND COASTAL SECURITY

THE THEME

We live in an age of globalisation and it is now accepted wisdom that the risks we face are more catastrophic than those of the past because they are global. Though coastal and maritime security has been accorded top priority following 26/11, countering threats and challenges require consistent cooperation between the states affected and the associated maritime agencies. 26/11 had instigated a significant increase in the coastal surveillance patrols by Naval and Coast Guard ships, boats, aircraft and UAVs etc. Patrols by the Indian Navy and Coast Guard along with Marine Police and CISF units deployed in major ports are closely coordinated so as to optimise their efforts and keep the entire coast under surveillance and ensuring maritime security for the nation.

THE COVER

Magnificent blue sea represents in the ascendant Blue Water Indian Navy. Naval Compass signifies that the Indian Navy is headed in the right direction and the Anchor manifests the inherent stability and resolve of the Indian Navy to stay anchored in turbulent waters securely. Vibrant colours of the National Flag and beautiful logos of the Indian Navy and the Indian Coast Guard top up the visual as delectable icing on the cake!

COASTAL SECURITY OF INDIA OPPORTUNITIES AND CHALLENGES

We have a vast expanse of seas before us that presents us with an opportunity as well as a challenge. It is an opportunity if it is fully exploited; and a challenge, if it is allowed to be used by hostile powers.

Talking of the obligation of Kingship, famed Tamil poet, Tiruvalluvar, says in the Chapter titled, The Rule of the Sceptre, in Tirukkural that "it is but the duty of a flawless King to protect his citizens from external enemies as well as internal enemies and to mete out such punishment as to stamp out crime from their midst". The authority of a King would be undermined if he cannot overcome his external and internal foes alike and uphold the Rule of Law by punishing the wrongdoer. It is a moot point whether our Rulers are aware of this important lesson in statecraft. Our history is testimony to the crucial fact that the beautiful civilization of India, the wonder that India was, could not thwart alien invasions for lack of proper defence. Such an inadequacy in defence continues to propel an untenable military myth about the Indian soldier. India, unified as a Nation both by the British Rule and by the strong sense of Nationalism that swept across the country, faces a host of challenges because of its strategic geopolitical situation. The strategic challenges for India, the world's most populous, most free and most liberal democracy, are rather too ticklish to be handled since the Nation has opted for a multi-party parliamentary democracy.

The Indian peninsula juts out into the Indian Ocean flanked by the Bay of Bengal on the East and the Arabian Sea on the West. Nearly two-fourths of the international border of India comprises of its long coastline of about 6,100 km in the mainland and with the Andaman and Nicobar and Lakshadweep Islands, it extends up to 7,517 km.

Needless to reiterate that India has one of the longest, warm-water coastlines abutting the world's most crucial and the busiest sea lanes. The Indian coastline is actually a valuable asset. It can be home to the world's most far-reaching blue water navy; to the most rewarding shipbuilding activity and to the busiest harbours. But it is a continuing sad saga that we not only failed to utilise the potential of the natural gift of the warm coastline but have developed a pathological mental attitude of considering it as a grave risk to our security.

The Economy And Defence Co-relation

The face of India is changing from that of teeming hungry millions into a billion-strong scientific manpower. The Indian diaspora is making its presence felt in every sphere of human activity globally. India is progressing rapidly towards a hitherto unknown economic prosperity. In a matter of some years, India could become a global economic super power. Unless its defences are shored up and well in order, the likelihood of India's continued status of economic superiority would be under serious threat as in the case of Japan. For all its economic growth and its extraordinary wealth, Japan, a self-avowed defensive power, in the wake Hiroshima and Nagasaki, now stands terrified by the show of militaristic muscle-flexing by China. India imports about 70% its oil requirements through the sea. Major imports for the country arrive through the sea lanes. Though there are 200 ports in India, of

them 13 are the major ports: Kandla, JNPT, Mumbai, Mormugao, Mangalore, Kochi, Tuticorin, Chennai, Ennore, Vizag, Paradip, Kolkata and Port Blair, which handle large volumes of imports and exports.

The Indian Ocean, the third largest ocean in the world, is of utmost strategic importance to world trade. The Indian Ocean region is in a particularly all-weather warm region. It is home to one-third of the entire world population. It has two-thirds of world oil reserves and one-third of natural gas. The Indian Ocean contains some of the most important international sea lanes. More than 80% world's oil exports from the oil-rich Middle Eastern countries transit through Indian Ocean. More than 90% of China's oil needs and that of the Japanese pass through these sea lanes. These crucial oil routes have several choke points, namely, the Cape of Good Hope, Strait of Hormuz, Suez Canal Bab-el-Mandeb in Arabia, Malacca Strait near Malaysia, Sunda Strait in Indonesia and the Lombok Strait in Indonesia. Thus the Indian Ocean Region acquires considerable significance not only because of its economic potentiality but also because of its strategic fragility. In the Indian calculus, the security of India is integrally connected with the stability of this region.

The Arabian Sea into which major Indian ports open up is one arena infested with hostile elements. Not only that India's inveterate enemy, Pakistan, shares the Arabian Sea with India but most oil imports to India do cross this sea. Pakistan too has major ports opening out into the Arabian Sea. It has surrendered the use of its most natural harbour, Gwadar, to the Chinese use. The Bay of Bengal shared amongst India, Bangladesh and Myanmar (Burma), is relatively peaceful area. It is economically exploited. The Chinese made some attempts to befriend Myanmar and Bangladesh with a view to their unfriending India but did not quite succeed.

Unfulfilled Ambitions

We have a vast expanse of seas before us that presents us with an opportunity as well as a challenge. It is an opportunity if it is fully exploited; and a challenge, if it is allowed to be used by hostile powers. The great seas present India with an opportunity of being a global power. We know from history what destiny awaits the nations that rule the seas. In 2007 the Indian Navy proposed a plan of setting up a Blue Water Navy. But it still remains an unachievable end. A strong naval presence in the Indian Ocean would give Indian diplomacy a hitherto unforeseen strength. A strong Indian Navy operating in the waters of the Indian Ocean is a welcome insurance for many democracies of the free world. But since the strategic planners for India have rather the Bania mentality than the Kshatriya makeup of mind, all their vision and endeavour are directed at making India richer rather than a potentially powerful country. It is cold fact that economic prosperity alone does not ensure that the country will be safe. Economic prosperity may help the nation stay out of the reach of hunger but that does not necessarily mean that it would stay out of the reach of strong enemies.

Hostile Neighbours

The challenges to Indian coastal security come from i. Hostile Neighbours; ii. Terrorism; iii. Piracy; and iv. Economic Offenders engaged in smuggling, poaching in territorial waters etc. India has two inveterate enemies on its Western and Northern borders. Pakistan shares the Arabian Sea with India. Despite the outward show of diplomatic relations, Pakistan is intent on destabilising India, whose achievements it cannot bear to tolerate. The evil mechanics of ISI are tuned to wreak havoc in our country. None but the most naïve novice would proclaim that the ISI means well by India. A lamb has the discretion to trust the butcher and pay for its foolhardiness. If the lamb happens to be Union Minister of India, then the consequences do not stop with the lamb. The measure of the resident evil and dissemblance in the Pakistani Inter-Services Intelligence establishment can be fathomed by that the ISI harboured the world's most wanted terrorist, Osama bin Laden, within a stone's throw of its HQ in Abbottabad. Ironically, the Pakistani economy and military were thriving on the aid doled out by the US for its fight against terrorism. To the Pakistani ISI, India was instrumental in dismembering Pakistan. It suffered a further ignominy when about 93,000 strong Pakistani troops led by Gen Amir Abdullah Khan Niazi surrendered to a much smaller force of India. The pages of history of Pakistan contain this disgrace. Its collective ego is seared by these instances for which it would want to have its revenge. Pakistan would explore every weakness in the Indian defence to exploit it to its maximum advantage. Pakistani military is India-specific. If relations between India and Pakistan

Pakistan would explore every weakness in the Indian defence to exploit it

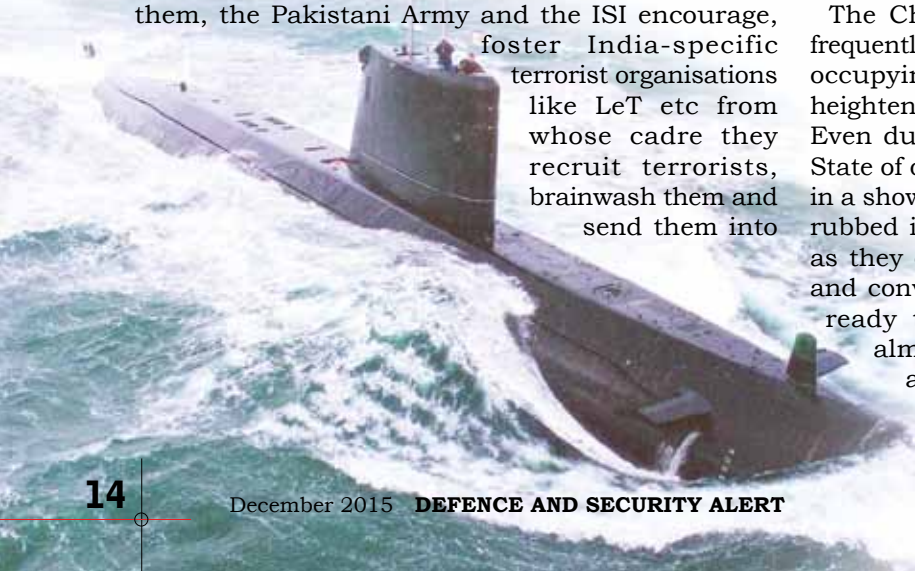
Senguttuvan Balasubramanian

The writer is AIADMK Member of Parliament representing the Vellore Lok Sabha Constituency, Tamil Nadu. He has Master Degrees in English Literature and Law.

become normal, as wished for by the peace-loving and sensible peoples of both countries, the Pakistani military and ISI would lose their relevance. In fact, both would lose their *raison d'etre*. The tinpot stuffed shirts would not enjoy pride of place in society. In a conventional war, the Pakistani forces would only receive a drubbing; and, therefore, the Pakistani forces and its Frankenstein Monster, the ISI, would engage in covert war in every which way available. Pakistan is a nuclear power. According to the Western assessment, it probably has more than a hundred atomic bombs, many more than India. It admitted recently that it has nuclear-tipped tactical weapons for use against the Indian armed forces. This is to counter the Indian strategy of Cold Start. In addition, Pakistan has close strategic relations with China. It receives arms from the US and China which are aimed at India. Pakistan has given the use of its natural harbour in Gwadar in the Arabian Sea to the Chinese who carry the oil-imports from the Gulf of Persia from Gwadar via pipeline through the PoK. This gives the excuse to the Chinese to bring their subs into the Arabian Sea. It is too close for our comfort since most ports in the West Coast are within the striking distance of the subs. Since the PoK is of strategic importance to the Chinese, the stability in Afghanistan is also of importance to the Chinese. Thus the Chinese acquire a stake in the Afghan affairs. The Chinese dragon may tempt the Afghans with economic development giving itself a role to meddle in the affairs of Afghanistan much to our consternation. The Chinese not only have an access to a warm port in Gwadar, which cuts down on the long haul of its oil tankers through choke points, but they also invest heavily in strategic economic highway in Pakistan. The corridor through which the oil pipelines would be laid is part of the disputed territory so far as we are concerned. The offer to the Pakistanis comes with assurance of economic development, particularly investment in its power sector and logistical infrastructure. We will soon see an additional complex challenge for India in the Arabian Sea as well as on the Western frontier.

Pakistan's Seaborne Forays

Fomenting trouble in India is the fulltime occupation of the Pakistani Army as well as the ISI. The Taliban that they fathered has now turned against them; and have been worsting them. But instead of uprooting them, the Pakistani Army and the ISI encourage, foster India-specific terrorist organisations like LeT etc from whose cadre they recruit terrorists, brainwash them and send them into India through the porous Kashmir border and of late through Punjab border. To our consternation and shock, we subsequently learnt that the well-trained 26/11 terrorists who reached India via the sea-route, which was then relatively risk-free,were sent by Pakistani establishment, to strike at and paralyse the commercial nerve centre of India, Mumbai. On the Eastern Coast too, a vessel with arms was detained when snooping around Tuticorin. Since then the coastal surveillance has been somewhat hiked.



China Containment Policy

The economic boom in China in the past three decades together with its ambitious military planning has made it a world power. Realising the fact that its oil imports by large tankers pass through a considerable long sea route at several vulnerable choke points, China with a view to ensuring the smooth flow of its oil trade and keeping the growing Indian naval power in check, innovated the so-called strategy of 'String of Pearls' by investing in military presence at the vulnerable points from its mainland to Port of Sudan as well as in the small countries in Indian Ocean region, Bangladesh, Sri Lanka and Pakistan. It has now advanced another version of influence and containment called Maritime Silk Road by which China wants to massively invest in the smaller countries in the Indian Ocean along its sea lanes so as to bring them under its sphere of influence and to keep Indian ambitions in check. In this context, the Indian Prime Minister's visit to Seychelles and Mauritius is of some significance. In Sri Lanka, during the presidency of Rajapaksa, who was playing China against India, China invested 1.4 billion dollars in setting up a controversial port. These Chinese companies are alleged to have bribed Rajapaksa Government into giving them many concessions. The Rajapaksa Government even allowed a Chinese submarine to dock in its harbour. But with the fall of Rajapaksa, in which India may have had a hand, the Chinese influence and economic activity in Sri Lanka has waned considerably. China's naval ambitions are limitless. The Chinese fancy themselves as a super power. Without losing time, they mass-produced flotilla after flotilla of warships mainly nuclear powered submarines. Their boast is that a few of these subs would paralyse the activities in the Indian harbours.

The Chinese Army has conceived of a tactic of frequently making incursions into the Indian Territory, occupying it for some length of time, leading to heightened tensions and face-off before decamping. Even during the visit of its President to the home State of our Prime Minister, when both were engaged in a show of exceptional bonhomie, the Chinese Army rubbed it in that the border disputes were as alive as they ever were by entering the Indian Territory and conveying the message that they are militarily ready to resolve them. These incursions have almost become a hardy annual particularly after the nuclear blast in Pokhran-II. It is an affront to our pride. India shares

3,488 km of the most difficult terrain with China as its northern border. The Peoples' Liberation Army of China has been massively building-up logistical and infrastructural facilities of all kinds along this border. On the other hand, the development on the Indian side is pathetically poor. To the credit of NDA, huge budgetary allocations have been made to improve the border roads. But the modernisation of the army, procurement of suitable weaponry and putting up an effective defence along the borders appear to be tied down by the Chinese moves. The diversionary tactic of Chinese intrusions cost enormously for India in keeping its forces on the alert. It also causes tremendous delay in execution of infrastructural and military modernisation. This prevents India from investing in naval hardware.

The coastal challenges in India are not merely restricted to those arising from seaborne terrorist related activities and the naval might of the hostile neighbours but extends to those arising from piracy, acts of smuggling by crime syndicates and economic exploitation by aliens. Piracy is rampant in the Indian Ocean region near the Horn of Africa. However, these are not in themselves such a serious threat. Post-liberalisation, the smuggling activities have come down considerably. Poaching occurs in our territorial waters few and far between. The one challenge that India has to face comes from the naval might of our hostile neighbours. In order to subdue and conquer the threat, India has to have a consistent strategic planning. The strategy should not chop and change according to the political ideology of the party in power which leads to complete disarray. But it should be based on the immutable constants. The present scenario is not an altogether happy one.

India has to go for modernisation of its existing fleet of submarines

India's Naval Strength

The long coastline of India is safeguarded by the Coast Guard and the Navy. The Indian Coast Guard is a relatively small organisation which is engaged in round-the-clock vigil. It is headed by the Director General with his Headquarters in New Delhi. It is divided into five Coastal Regions, North West, West, East, North East and Andaman and Nicobar, with each region being commanded by an Inspector General. Indian Navy is headed by the Chief of Naval Staff, usually an Admiral, assisted by Vice Admirals. It has three commands, Western, Southern and Eastern Commands. It has set its sights on becoming a blue water navy. With that object in view, India wants to have 200 warships by the year 2027 for fulfilling its objectives; and presently has about 137 ships. It is reported that the Navy would add 4-5 ships every year with many more retiring each year.

India, wracked by imputations of corruption in the purchase of military hardware, seems to have gone into a long hibernation during which it chose to ignore the vast Chinese naval asset acquisitions. In the result, the Chinese have an array of nuclear-powered submarines, some of which made their presence felt in the Indian Ocean and Arabian Sea by berthing in Colombo and Karachi harbours. If India were to have an edge, it has to go for modernisation of its existing fleet of submarines. India is in the process of acquiring six new nuclear-powered submarines but that would take about 15 years to come. India is reported to be in talks with Russia for leasing one more submarine.

Aside from USA, India and Italy alone have more than one aircraft carriers. At present, India has two operational aircraft carriers, *INS Viraat* and *INS Vikramaditya*. *INS Viraat* is a relatively small carrier which was commissioned in 1959 by the United Kingdom. It entered service with the British Navy as *HMS Hermes* and was the flagship of the British Navy during the Falkland War. It proved its mettle in the Falkland War that Britain waged thousands of kilometres away from its mainland and won it. It was sold to India after some refits; and has been in service since the late 80s. It is all set to retire in 2016. India purchased another aircraft carrier from Russia, *Admiral Gorshkov*, commissioned in 1981, after protracted negotiations over price and considerable delay, about which the CAG criticised, with refits to suit Indian specifications. It has been rechristened as *INS Vikramaditya*. It was formally dedicated to the Nation by Prime Minister, Narendra Modi last year. More aircraft carriers are being indigenously built, namely, *INS Vikrant* and *INS Vishal* and once the sea trials are over, they would be pressed into service to lend lethal edge to the Indian Navy.

We can go on and on about the naval assets of India. Suffice it to say that Indian Navy has the potential of becoming world-class, a world leader and a super power. But there are a few major issues that haunt the Indian defence establishment, to which the Navy is not an exception. These issues are of immense concern to every Indian citizen. The first of those issues is that the acquisitions of military/air force/naval assets have been dogged by inordinate delays. Almost a decade passes between the decision to acquire an asset and its actual acquisition. In some cases, the negotiations alone go on for a decade without anything materialising. In the result the gap in the defence ever keeps widening. India seems to follow a ten-stage decision-making process. The red tape involved consumes years of waiting. For the Navy the acquisition of 15 Japanese Amphibian aircraft, ShinMaywa, the Black Shark Torpedoes for the *Scorpene* submarines and the Surveillance planes, namely, *Phalcon* AWACS is taking an eternity to acquire. These are some that are overly delayed. Rather than the delay, the acquisitions are plagued by the allegations of bribery that accompany them. Such allegations are almost routine. It is an unnerving aspect that the defence of India means nothing to those decision-makers. It is monstrous that those entrusted with the defence of India have no patriotic fervour in them. All of India's military, naval and air force acquisitions in the past few decades have been dogged by allegations of kickbacks. There has not been a single defence deal that has come off without either the taint of bribery or without some manner of litigation. It is said that the middlemen, some of whom are retired defence officers, influence the purchases of military hardware, which are either overpriced or worthless.

Unfortunately for India, the defence research institution of DRDO, a white elephant, has not lived up to its expectation. The NDA Government has lost all patience with the institution. The fact that indigenous ordnance factories have hardly any presence in India, we are constrained to make our purchases overseas. The private sector in India was totally excluded from the arms production during the license raj. India is one of the largest importers of defence equipment in the last few years. Since the overseas purchases are often accompanied by arm twisting conditionalities, the Modi Government has envisaged a role for the private players under the 'Make in India' initiative. Though more than a year has lapsed since the initiative has been set afoot and many private players along with their foreign collaborators have applied for license, as of today not a single defence project has been cleared.

The Modi Government has envisaged a role for the private players

So far as the navy is concerned, the last but not the least issue, is the astounding number of naval accidents that hamstrings it. It sometimes leads one into thinking whether these accidents are the handiworks of saboteurs. The year, 2014, was particularly unlucky for the navy as the maximum number of naval accidents happened. They are particularly demoralising when they are attributable to human error. The navy would do well to eliminate the causes of these accidents and reduce it to zero level.

In fine, the sum and substance of my argument is we need to have a strong blue water navy that has a lethal force. It is not for the purpose of waging any war but to cause deterrence. Such a Navy would protect the precious freedom of our nation and that of the free world assuring us the right to live without fear. The fact that India has a mighty array of naval forces would be sufficient deterrence for the hostile nations to meddle with our affairs. The military might is a surest passport to the Security Council. For that, we have to be the best innovators, quick decision-makers, fast acquirers and above all be true patriots of our Motherland. DSA

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INDIAN COAST GUARD
SENTINELS OF INDIAN MARITIME ZONE

Vice Admiral HCS Bisht AVSM Director General Indian Coast Guard is an alumnus of the National Defence Academy Khadakvasla, Pune and the Naval Academy, Kochi. He is a graduate of the 1992 batch of the Royal Naval Staff College, Greenwich (UK). He was Chief of Staff, Southern Naval Command, Flag Officer Sea Training at Kochi and Flag Officer Commanding Eastern Fleet at Visakhapatnam. He has assumed the appointment of the Director General of Indian Coast Guard (DGICG) on 01 Feb 15. Here in an exclusive and wide-ranging interview with *DSA* he shares his views and vision for the Indian Coast Guard.

Defence and Security Alert: **Soon after 26/11, there were some issues of coordination with the Indian Navy nominated as the lead agency for maritime and coastal security and also with other agencies of the state governments. Have you been able to overcome these challenges? What measures have been taken so far to prevent a repeat of 26/11?**

DG Indian Coast Guard: Coastal Security is a multi-agency responsibility that involves the Indian Navy, Indian Coast Guard, Coastal Marine Police, State Police, Customs, CISF, Fisheries, Intelligence Bureau and a host of other Central and State agencies. Key functions in ensuring security of our coastline include surveillance, intelligence gathering, dissemination of information and actual interdiction /interception. It is fairly obvious therefore that for an effective security framework, there needs to be seamless coordination between all agencies with optimum use of resources to achieve the common objectives.

There has been a focused attention to achieving a high degree of synergy among all agencies involved in Coastal Security operations. At the level of the Government, delineation of responsibilities is fairly unambiguous, with inherent flexibility that is necessary in the

complex security environment. At the operational level, there are multiple channels of communication between all agencies at any given time, so as to deal with emerging situations and threats. We carry out a number of joint patrolling, surveillance and interdiction missions all along the coast together with the Navy and other agencies, as required. A number of information sharing and coordination interactions are also held on a regular basis. We have periodic high level review meetings that resolve policy issues with the aim of streamlining cooperative efforts between all agencies. The most important development however, in my opinion, is that all of us involved in coastal security operations are aware that no single agency can expect to fulfil this national requirement by itself. The necessity for a cooperative and collaborative process is understood, accepted and acted upon by all concerned.

At the same time, when you ask, 'have we overcome these challenges?' I must say that it is an ongoing process. The aim is to continuously build upon our strengths in this area, work on the weak links and keep setting higher goals. Our aim is to achieve an impregnable 24x7 deterrent posture. We cannot and do not intend to rest upon our past or present milestones.

Vice Admiral HCS Bisht

DSA: **The Marine Police forces of coastal states are responsible for security of the entire 12 nautical-mile swathe of Indian territorial seas in coordination with the Customs, CISF and port authorities. However, at present, the ICG is undertaking much of this task due to the lack of capacity of state Marine Police. By when do you think the Marine Police would be capable enough to undertake its mandate effectively?**

DG ICG: The establishment of coastal police stations and the Marine Police force in all coastal states was institutionalised at the national level with the implementation of Coastal Security Scheme (CSS) Phase I in 2005. This phase was completed in March 2011 and it involved the establishment of basic infrastructure and institutional wherewithal for the raising of Marine Police units in all coastal states. Significant investment in basic infrastructure that

includes a dedicated training school for the coastal police, provision of adequate manpower and procurement of operational equipment is part of phase II of CSS, which is likely to be completed by 2018. A dedicated Marine Police Training Academy is coming up in Devbhoomi Dwarka, Gujarat which is expected to resolve most training and competency related issues of the force. We have also started deputing Coast Guard Officers to Coastal Police units in states, with the first such officer being appointed in Tamil Nadu. Our aim is to do this in all coastal states progressively. I am also aware that cases for procurement of necessary equipment are progressing satisfactorily. It is therefore anticipated that by the turn of this decade, the marine police force in each state will be adequately equipped and capable of fulfilling their charter.

Notwithstanding all this, it must be borne in mind that the area of responsibility of the Coast Guard overlaps with that of the coastal police in each state. So whilst we assist in training and working up the coastal police organisation, the Coast Guard will continue to ensure security and good order in the territorial waters of India.

DSA: On 08 October, the Contact Group of Piracy off the Coast of Somalia (CGPCS), announced the revision of the limits of the piracy High Risk Area (HRA) in the western Indian ocean with effect from 01 December 15. What does this imply for maritime security off India's western coast?

DG ICG: The recent revision of the limits of the piracy High Risk Area (HRA) in the western Indian Ocean is a testimony to the effectiveness of sustained operations by the Indian Navy and Coast Guard to eliminate the scourge of piracy close to our shores. The Government of India had taken up the issue repeatedly based on the results achieved by concerted efforts of the Navy and Coast Guard, which finally yielded results in the form of this notification.

Essentially, the western limit of the HRA has moved away from the West Coast of India. This has multiple implications for us. Firstly, shipping traffic that was required to deviate and operate close to the coast of India, for reasons of safety, will now be able to take a more direct route to their destination. Secondly the reduction in shipping density close to Indian coasts would come as a relief to Indian fishermen who would be able to operate with greater safety in the area. Thirdly, it reduces the burden of surveillance and investigation of ships transiting close to Indian coasts by security agencies. Fourth, insurance premiums for ships passing through the area will reduce drastically and lastly, it will significantly reduce the employment and presence of Private Maritime Security Companies (PMSCs) by merchant ships transiting close to the west coast.

DSA: What is the insecurity to India caused by Private Maritime Security Companies (PMSCs) and 'floating armouries' operating in Indian Waters? How are we dealing with this?

DG ICG: Floating armouries, besides stowing large quantities of arms and ammunition, employ personnel from varied backgrounds as 'Armed Guards', whose credentials cannot be verified by us. These personnel may pose a serious threat to the security of our nation given the resources (arms) at their disposal and their employment in the 'Open Registry' vessels particularly from countries that harbour inimical intentions. We are aware of the risks involved and are enforcing strict measures to avoid any unwanted entry of such vessels in our Territorial Waters.

This is being achieved by maintaining a constant surveillance in our waters by ICG ships and aircraft besides electronic surveillance using 'Coastal Surveillance Network'. Further, the shifting of the High Risk Area (HRA) westwards, as stated earlier, will also reduce the number of such vessels operating close to our shores.

DSA: Two important bills – Anti Piracy and Coastal Security – are pending in the Parliament for long. How are these effecting the operations of our maritime forces?

DG ICG: It is notable that, unlike land, the jurisdiction of a state has significant limitations at sea. Crimes like piracy and terrorism are internationally recognised offences but dealt with varying severity in different countries. When we talk of offences on the high seas, any power to act is derived from various instruments of law accepted internationally and translated into national laws designating and authorising agencies to execute the statutes contained therein.

The Coastal Security bill is presently being vetted by various ministries for an in-depth study of different Acts and Rules governing Maritime Zones of India and constitutional issues involved in its implementation, as requested by the MHA.

DSA: What mechanism do you have in place so that the ICG or marine police can provide urgent assistance to the fishermen in Indian maritime zones? What is the progress on the plan of installing Distress Alert Transponders (DATs) on all fishing vessels? Have you promulgated any radio frequencies or even mobile numbers, just like the police stations do to help the local people in emergencies?

DG ICG: Assistance to fishermen is one of the primary charters of ICG. Towards this, Maritime Rescue Coordination Centres (MRCCs) at Mumbai, Chennai and Port Blair are manned round the clock to respond to any incidents/accidents

at sea involving shipping and fishing traffic in the Indian Search and Rescue Region (ISRR). A toll free helpline number 1554 has been established for Maritime Search and Rescue. Coastal Security Operations Centres at ICG Stations, District Headquarters, Regional Headquarters and the National Headquarters are also manned 24x7 for responding to incidents impinging on security or safety of fishermen. A toll free coastal security helpline number 1093 is operational at police control rooms in coastal states for real time reporting of suspicious activities in coastal waters.

Fitment of Transponders as recommended by ICG for tracking of fishing boats less than 20 mtrs is under implementation by MHA. So far we have distributed nearly 2,000 DATs free of cost to fishermen.

DSA: The fishing communities and other people engaged in maritime activities could potentially be used as 'eyes' and 'ears' of the Indian maritime forces. What measure has the ICG taken to harness this valuable asset?

DG ICG: The Indian Coast Guard has been organising Community Interaction Programmes (CIPs) for the coastal populace, a large focus of which is the role of the fishing community in strengthening the overall coastal security mechanism. Since 2009, nearly 4,000 such programmes have been conducted. Fishermen are also apprised about the need to alert security agencies regarding any suspicious /foreign boats sighted by them at sea. Our efforts in this direction are yielding the desired results and we are witnessing increasing instances of fishermen reposting suspicious activities at sea and along the coast, thereby acting as eyes and ears for us.

DSA: We have been having regular IMBL (International Maritime Boundary Line) meetings with the Sri Lankan Navy for many years now, but the Indian fishermen continue to be arrested, detained and sometimes even shot at. Why have we not been able to evolve a *modus Vivendi?* Can the Sri Lankan Navy not hand over the fishermen to Indian maritime forces *in situ?*

DG ICG: At the outset, I must emphasise that our regular and cordial interactions with the Sri Lankan maritime security agencies have accrued significant benefits on ground. The Sri Lankan Navy and Coast Guard have been providing immediate and comprehensive assistance to Indian fishing boats drifting into the Sri Lankan waters, due to technical problems. In a recent incident, the Sri Lankan Navy even provided free diesel and repair /towing assistance to an Indian fishing boat upto the IMBL for handing over to Indian authorities. However, in instances of poaching, when Indian fishermen cross IMBL wilfully for the purpose of fishing, the National Maritime Laws of Sri Lanka come into play and strict action is initiated, in the same manner in which we would deal with unauthorised fishing activity from across the IMBL. The repatriation process is however, expedited by the MEA.

We are taking a number of measures to discourage fishermen from crossing the IMBL. During our interaction programmes, we continue to sensitise them of the consequences of such violations. Our ships which patrol the IMBL round the clock, regularly shepherd Indian fishing boats operating near the MBL to our waters. Greater involvement is however sought from state fisheries departments and the local fishing unions which need to discourage fishermen from violating international law.

DSA: Similar problem plagues the Indian fishermen off our western coast also, who continue to be arrested and detained by Pakistan despite the hotline established between the ICG and Pakistan's MSA. What would you say on this issue?

DG ICG: Indian fishing boats cross the notional IMBL with Pakistan in search of a better catch of fish. Since poaching is an economic offence, the crew of the fishing boats are arrested and detained. During my periodic hotline interaction with the DG Pak MSA, we discuss ways and means by which we can reduce this violation on both sides. As I mentioned earlier, greater awareness is the key to eliminating this problem and we are making all out efforts to this end.

DSA: Do you think that the ICG and the Marine Police of coastal states should be capable enough to cater for the security of the entire swathe of Indian maritime zones, so that the Indian Navy can focus on its primary role, besides contributing to security and stability in the Indian Ocean Region and beyond? What are your future plans for capability development of the ICG?

DG ICG: Coastal Security is a subset of Maritime Security which in turn is an important element in the overall national security apparatus of India. Therefore, it would not be correct to view maritime and coastal security in isolation. Hence it is critical for the Navy and Coast Guard to build upon the synergy and pool resources towards the overall national objective of ensuring security of our maritime frontiers.

As regards growth of the Coast Guard,75 surface platforms are presently under construction. Of these, 63 are new acquisitions and 12 are for replacement of aged platforms. Currently, three ship acquisition proposals, namely 14 Fast Patrol Vessels, five Offshore Patrol Vessels (OPVs) and five additional FPVs are in advanced stages and are likely to be contracted in current financial year. In addition, two cases of acquisition for 17 surface platforms are in the pipeline.

In terms of air assets, we are likely to induct six Multi-Mission Maritime Aircraft, 14 Twin-Engine Heavy Helicopters and 16 Twin-Engine Light Helicopters *Dhruv Mk III*, by 2020.

By 2020 or so the Indian Coast Guard is likely to have a fleet of 166 surface platforms and 100 aircraft. DSA

ARE WE READY FOR THE NEXT TERROR ATTACK?

Absence of terrorist attacks does not mean that terrorism has subsided; it could be that terrorists are lying low. Thus figures and statistics can be misleading. Media reports about aborted terror attempts or terrorists' plans to disrupt National Day commemorative functions or religious occasions are equally misleading.

The spectacular and synchronised Paris terror attacks which were a combination of assault and explosives inevitably drew comparisons with Mumbai terror of November 2008. The question most heard was – How well prepared is India against the next terror attack?

Before one begins to answer this question a word or two about terrorism and counter-terrorism in the 21st century are necessary. This may be stating the obvious but needs repetition. We should accept that just as crime in this world will continue no matter how many laws a country may make so will terror no matter how many laws and institutions are put in place. Also crime does not mean only low level burglaries, it includes all the various white collar million dollar scams involving management that also define criminality.

Symbiotic Relationship

Terror is no longer about IEDs and assaults against civilians; it is equally about cyber terror, biological and chemical terror or subversion and guidance through the Internet. The profits that are to be made and the venality of the human being are both equally limitless. There is a symbiotic relationship between terror and crime, each relying on the other for fulfilling and supplementing their objectives. Like crime, terror will continue no matter how meticulous and exhaustive security arrangements. There will be intelligence failures because of the nature of the threat unlike the more easily identifiable and quantifiable conventional military threat.

The counter-terrorist, especially when dealing with international terror, is hamstrung because there is no universal definition of terrorism. The issue has been in the UN for decades and vested interests are unwilling to distinguish between a terrorist and a freedom fighter or between terrorism and a law and order problem and/or a human rights issue. International terrorism needs international cooperation among security agencies, especially intelligence agencies. In the absence of a clear definition of terrorism, this cooperation depends on political expediencies and priorities and is always a less than satisfactory arrangement.

Intelligence Cooperation

For India, this was a problem for decades until September 11, 2001 which brought about a half-hearted acceptance that India had been facing

state-sponsored terrorism by Pakistan. In any case, in the days post-2001, global terrorism was primarily about eliminating terror threat to the West, especially the US. Thus cooperation tended to be one-sided. Without this kind of intelligence delivered in real time, a country facing such threats will always be handicapped and the chances that it will be caught by surprise remain high. One hopes that better systems of co-operation are in position now than they were some years ago.

There is unfortunately only one way to determine if a country is better prepared to handle terrorism. A sudden spurt in engagements with terrorists by security forces does not necessarily mean an increase in terrorism; it could also mean that the security forces are engaging the terrorists more effectively. Similarly, the reverse is equally true. The absence of terrorist attacks does not mean that terrorism has subsided; it could be that terrorists are lying low. Thus figures and statistics can be misleading. Media reports about aborted terror attempts or terrorists' plans to disrupt National Day commemorative functions or religious occasions are equally misleading.

One measure of readiness to handle terror attacks is the number of serious attempts prevented. Authorities are selective about disclosures, especially if it assessed that the plan discovered is part of a bigger conspiracy. The other measure is the systems put into place to secure lives in general. An important aspect of this is that the arrangements made should ideally be such that normal lives of citizens do not get affected. As David Omand, former head of GCHQ, UK says: "Security has become itself a key objective of public policy: national security today should be defined as a state of trust on the part of the citizen that the risks to everyday life, whether from man-made threats or from impersonal hazards, are being adequately managed to the extent that there is confidence that normal life can continue." (Securing the State).

International terrorism needs international cooperation among security agencies

Omnifarious Surveillance

In reality, the magnitude of the assessed and declared threat is proportional to capabilities to handle them. The US has been able to put together a national security mechanism that is estimated to spend a trillion dollars annually. The US always first off the block now has a throbbing military-industrial-intelligence-technology complex which is also financially profitable as it seeks to provide better security to America and Americans at home and abroad. The kind of electronic surveillance systems and apparatus the US has put into use which covers Americans as well, seems to suggest that it has moved from being a democratic protecting state to becoming a secret surveillance state. It thus seems that the US is prepared to pay this price for security. However, being able to download a billion messages a day needs massive expertise and manpower for all downstream activity much of it in real time, in many languages and often in code. The utility of this information overload is doubtful and cannot in any case replace humint. Other nations have necessarily to curtail their threat perceptions according to ability to handle these threats.

Intelligence is not an end in itself but is an essential service provider to the nation and its utility depends on how the nation treats it. Does the nation give it the best means and personnel to handle the threats that will secure the nation and the people? Is the agency best equipped to handle future threats? These are questions that the State needs to ask itself from time to time and rectify. Intelligence works best when it is nurtured and prepared in the fullness of time and not in emergencies because shotgun intelligence can be very unreliable. An intelligence organisation has to be tasked accurately and provided the means to deliver. Intelligence outputs or the organisation must never be politicised nor required to cater intelligence that is politically acceptable. Above all there is societal acceptance of the need for intelligence activity and the restrictions this may impose on individuals at times as well as societal cooperation that is required all the time. Both the media and the judiciary, apart from sound investigations have an equally important role in securing the nation.

In India's case there are several questions that need answers to determine how prepared the country is for the future

Wide Loopholes

Are we ready and prepared to handle normal crime and law and order situations, including the prevention agencies, investigators, media and the judiciary adequately equipped? If the answer is negative then there is little reason to expect that this would be any better in other cases. If justice is delayed for years and then cases are thrown out because of shoddy investigations the terrorist sees no deterrence against him. Ajai Sahni, Director of the Institute of Conflict Management described the situation accurately when he said: "It is useful, here, to understand that security is indivisible: you cannot have a cutting edge response in a degraded system of law and order management; if women are not safe in the streets, then terrorists will also have a free run; if containers full of smuggled goods are sold openly in markets across the country, there is no way to prevent the movement of a few kilograms of explosives and ammunition; if various identity documents can be purchased for a few hundred or thousand rupees, terrorist can easily hide themselves out in the open and transact their business under multiple identities."

Vikram Sood

The writer is former director of Research and Analysis Wing and is currently Adviser, Observer Research Foundation, New Delhi.

How would we handle another spectacular terrorist attack, remembering that there may not be an exact replica of the previous one? Judging from how we, especially the media and the political class reacted in 1999 at the time of the hijacking, the December 2001 Parliament attack and the worst case of Mumbai 2008, one would need strong evidence to conclude that we are better prepared as a nation. Kargil 1999 where the media coverage was overplayed as we tried to copy CNN in Iraq (1991), IC 814 hijack the same year where one saw appalling scenes of protests by the public aired by the media which acted as a pressure on the government to act differently and Mumbai 2008 with crowds and media out of control and the State seemingly helpless, were as much cases of systemic failure as any other individual organisation.

The threat from terror is a constant but individual terror attacks will always be a surprise. Modern warfare including terrorism is not about trench warfare with exclusive military targets. It is about civilians, who quickly become soft targets, either when terrorism is on the ascendancy or in its death throes. The involvement of the civilian in handling terror, especially after an attack, when all efforts have to be made to ensure that the State is seen to be in control, has become important.

No Reforms

If an attack does take place are the State machinery and the system geared to handle this? We may have created some new organisational structures and instrumentalities to handle terrorism, but these measures have been half-hearted and incomplete. It is doubtful if we have succeeded in improving the cutting edge of policing and local intelligence. This mismatch between the situation on the ground and the hi-tech environment in some of these new establishments will lead to inevitable snags. The lowly constable remains ill-equipped, ill-trained and underpaid. He has little incentive to perform. Further, as Sahni points out, the average per capita population expenditure per annum was ₹ 253 or less than 65 paise per day in the States. The figure had increased to ₹ 1.03 in 2014. One might argue this marks a 35 percent increase but it is also one tenth of the cost of a cup of tea at a roadside stall. The number of police personnel deployed per 100,000 persons is among the lowest in India. This is the state of the first responder in a terrorist attack. Despite accepting the need for urgent police reforms and improvement in the police force, there has been very little political interest in this direction. No reforms have been proposed in Parliament.

Are we as a nation preparing to fight last year's war or next year's war? Communications are with the speed of lightning, money transfers are in seconds, weapons and systems surveillance have miniaturised and are more lethal and accurate; the social media and Internet rule our lives.

The Pakistan Conduit

The US and Western nations have so far feared terrorist threats emanating from distant lands with Al Qaeda leading this and now ISIS. They naturally pay more attention to threats perceived to their nationals and interests. That threat is multifaceted and in several layers as can be seen from the mess in Syria and Iraq. Terrorist threats to India emanate from within and from one external source, Pakistan. It is linear; the Pakistan Army with its surrogates and using Islam and hatred for India to keep the terror machine going. It is relatively easier for India to determine whether or not the external threat from terror has reduced. This would be largely determined when Pakistan stops giving assistance and support to terrorists, winds down the terror establishment in its country and there is verifiable evidence to prove this. That will be when Pakistan exhibits a sincere change of heart and policy. Till then we will have to deal with this ourselves.

Terrorist threats to India emanate from within and from one external source

There will be little or no international assistance for India unlike what the French got from Belgium after the Paris attacks. Seven years after the Mumbai attacks we are still trying to interview the Moroccan wife of David Coleman Headley. It would be unreal to expect the Pakistan establishment to cooperate in the business of providing intelligence or proof about terror attacks planned and conducted by their surrogates. No wonder there is little Pakistani cooperation in the Mumbai terror trials. Only last month India lost Colonel Mahadik to Pakistani terrorism and Jaish-e-Mohammed terrorists were killed in an encounter in Tangdhar. Obviously, there is no change in Pakistani policy. Indians will have to handle insurgencies in the Northeast, the Indian Mujahideen, SIMI or the Left Wing Extremists operating in Central India. On the other hand, Bangladesh has been

pursuing a policy of cooperation in tackling terror and its assistance to India has been in contrast to that of Pakistan.

Terrorist DNA

It is unlikely that Al Qaeda or ISIS will be able to establish their presence in India. Their main objective is the West and their own local leaders seen as autocratic and friends of the West. These are Arab, Central Asian and Caucasian groups, with little interest in India and the region and even less local support. It would be difficult to keep influences out in this age of the Internet and ISIS may thus be able to recruit a few for their activities in West Asia. This will probably continue; it could give rise to local groups fancying allegiance to the Caliphate but there is little chance of the ISIS establishing a genuine cell in India. If it does get established, it will not be Arab; it will be Punjabi, operated by its masters in Pakistani Punjab. It would suit Pakistan if the story that the ISIS is operating in India gains credence. This would enable it to get its protégés like Lashkar-e-Tayyaba and Jaish-e-Mohammed off the hook in the terror attacks in India seeking fulfillment of their dream of caliphates in India. This would provide Pakistan the much needed cover and absolve it against charges of terrorism while it keeps its jihadi forces intact.

Given this situation, India will have to continue to prepare for the continuation of war by other means – terrorism which will continue to evolve and endeavour to stay one curve ahead of the State's abilities. Terror can no longer be fought solely by the State's intelligence, police and security forces. Intelligence and police must lead, undoubtedly but modern day terrorism is so pervasive and invisible that the all instrumentalities of the State and society have to be used. There have to be new guidelines for the media, new urgency in the judiciary and renewed professionalism in the investigation agencies. The State cannot fight terror adequately if it investigates shoddily, legal cases last for decades in overcrowded courts after which the accused are let off for want of evidence. This creates more terrorists than the State is supposed to punish. It is not only the anti-terror combatant who has to be trained but the average citizen too must know. One could see this in Paris 2015 but not in Mumbai 2008. The evacuations were orderly, the media was circumspect, the police was visible and the politician did not score political points. Quite obviously there was considerable understanding about each other's role.

Cut Source Of Funds

Terrorism is no different from all worldly activities. It needs finances to survive. And it uses criminal and other activities to launch itself and then regularises its source of funds through front companies and charities. Unless this is cut off the battle against terrorism has little hope of succeeding. The other faucet that has to be cut off is media publicity which is one of the aims of all spectacular attacks. It is difficult to cut off access to Internet without raising concerns of limiting freedoms.

It is not easy to determine accurately a state's readiness to handle an unquantifiable attack unlike conventional capability of the adversary. Besides, tackling terrorism is not easy. A terrorist attack requires a sustained, co-ordinated national and, at times, international effort. A terror attack is on the entire nation. It targets not only government institutions and structures, but also the country's economy, infrastructure and livelihood; above all it targets the innocent civilian. A counter to this has to be an all-inclusive effort with the State and its leading agencies. A public made aware of the nature of threats and need for cooperation would more readily accept some restrictions. The State must sell its plans astutely.

Unfortunately the only way we will know if we, as a nation, have learnt how to deal with this, is when the next attack occurs. DSA

WHY CHINESE SUBS PROWL
Indian Ocean Region

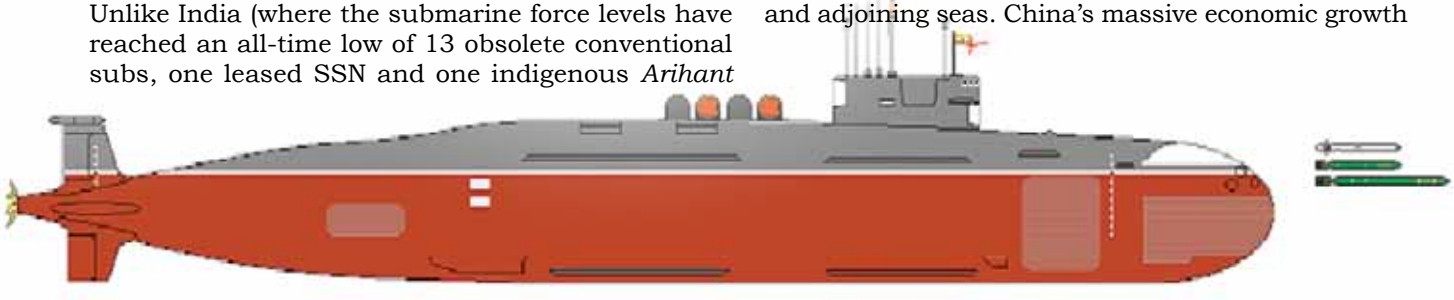
Years of neglecting the Indian submarine fleet, has left us vulnerable to the sea dragon and Indian Navy needs to move fast to secure India's soft and vulnerable underbelly at sea. Submarine induction needs to be put on the front burner.

The Indian Navy celebrates Navy Day on 04 December and Submarine Arm Day on 08 December every year. This year 2015, has been good for the Indian Navy with a number of home built modern surface combatants (corvettes, stealth frigates and stealth destroyers) joining the IN, while another 47 units are under construction in Indian shipyards. Indian warships have been deployed overseas (Indian, Pacific, Atlantic oceans, Mediterranean sea, English channel etc) for exercises with friendly nations and on anti-piracy patrols off Somalia. The IN and Indian Coast Guard ships and aircraft have maintained round the clock anti-maritime and counter-piracy patrols in the Indian EEZ (Exclusive Economic Zone). New, badly needed multirole patrol aircraft and helicopters are being imported. Unfortunately, the picture with regard to the Indian submarine fleet is grim and needs urgent remedial action.

On 14 October 2015, the CNS in a press interview stated that India had invited 87 nations for the second International Fleet Review (IFR) planned to be held at Visakhapatnam from 04 to 08 February 2016. Navies and Coast Guards from over 50 nations, including China are expected to participate in this event which will have 100 warships and 60 aircraft. While the Indian Navy (IN) will definitely have some of its submarines participating, there is no indication if any other nation (especially China) will send submarines. Also, Pakistan, which had not been invited for the first IFR in Mumbai in 2001 (where China declined to attend), has been invited this time, but is not expected to attend, as per signals emanating from Islamabad.

Large Chinese Submarine Fleet

Unlike India (where the submarine force levels have reached an all-time low of 13 obsolete conventional subs, one leased SSN and one indigenous *Arihant* SSBN under trials), the Chinese have always regarded their conventional and nuclear submarines as the spearhead of their long range blue water capability. All Chinese sub classes are named after famous Chinese dynasties eg Xia, Jin class SSBNs, the new planned Tang class SSBN, the Han and Shang class SSNs and the Ming, Song, Yuan, Qing class conventional subs. Today the Chinese Navy has about 50 conventional subs and 10 nuclear subs. More ominously, China has begun exporting its conventional subs at prices which are well below the international price of over one billion US$ for a French or German sub and about 600 million US$ for a Russian sub. Recently Bangladesh has signed a contract to buy two Chinese Ming class subs for a total of 203 million US$, Thailand has decided to buy three Chinese Yuan class subs for 355 million US$ each (while ignoring a German offer), while Pakistan has signed a contract for eight Yuan class or Qing class (improved Yuan class) subs for an undisclosed amount. Four of these subs are to be imported and four to be built in Pakistan. These subs have Air Independent Propulsion (AIP) system and can carry three nuclear tipped 500 km range Chinese designed cruise missiles which will threaten crowded Indian coastal cities with massive destruction, in keeping with Pakistan's new ambiguous nuclear doctrine of 'full spectrum deterrence'. China is aware that any major power needs to have a two ocean navy (a global power like the USA has a three ocean navy, operating in the Atlantic, Indian and Pacific oceans) and its economy has permitted it to build a blue water navy which has played its role in the well publicised coercive diplomacy in the South and East China seas, where China has huge claims over numerous islands and adjoining seas. China's massive economic growth



is fuelled by huge exports and massive oil imports from the Middle East and Africa – both these (like India) are largely based on sea transportation and China is keen to protect its vulnerable sea lanes which pass through the Malacca Straits which can be blocked by the US and Indian Navies in war time. Hence, Chinese warships began nonstop anti-piracy patrols off Somalia in 2008 and by last year reports began surfacing of sightings of Chinese nuclear subs (SSNs) and conventional subs being sighted in the Bay of Bengal and the Arabian Sea.

Chinese Subterfuge

The Chinese have justified these deployments as part of their anti-piracy patrols in the Gulf of Aden, though it is well known that submarines have no role to play in anti-piracy operations which need a combination of helicopter capable ships and shore based aircraft to sanitise the piracy infested waters.

On 03 December 2013, a Chinese Shang class SSN, sailed from Hainan base (Sanya Island), avoided the shallow and high traffic Malacca Straits, proceeded via the Ombai Wetar Straits near Indonesia and reached the Gulf of Aden on 13 December for a two month patrol in the Indian Ocean Region, before returning on 12 February 2014. On 31 October 2014, a Chinese Yuan class conventional sub docked in Colombo for 'relaxation' along with a warship, before it proceeded on 'anti-piracy patrols' off Somalia. Recently on 22 May 2015, alarm bells were heard when a Chinese Yuan class sub, on 'anti-piracy patrols' entered Karachi port for 'relaxation' and sailed out after a week. I have served on submarines for many years during my service in the Indian Navy and can categorically state that submarines have little or no role to play in anti-piracy patrols, which need a combination of ships with helicopters and shore based patrol aircraft to monitor sea traffic and intervene where necessary to deter or destroy the pirates who operate in small fishing trawlers carrying high speed boats. The question now arises, why have Chinese subs begun to prowl the IOR (Indian Ocean Region)?

Identification Signatures

The first reason is for intelligence gathering about noise and electronic signatures of Indian warships, since the Chinese are aware that the Indian Navy is the largest and most powerful regional navy in the IOR. The second reason is gathering hydrographic data about the warm waters of the Indian Ocean where salinity, environmental noise and changing temperature gradients at different depths, make the IOR waters ideal for submarine warfare and a nightmare for anti-submarine warfare. The third reason is to gather enough statistical data on machinery and sensor performance and breakdowns whilst on long range deployments, with the aim of improving future submarine designs and machinery, placing logistics and technical teams in 'friendly ports' of nations who have accepted Chinese economic aid or military equipment and have become a part of the proposed Chinese Maritime Silk Route (connecting China to Europe via the IOR and also for linking up with the similar revived land silk route from China to Europe). The fourth reason is that by selling warships and submarines, the recipient countries will be tied down with Chinese military technicians, trainers and

Vice Admiral Arun Kumar Singh
PVSM, AVSM, NM (Retd)

The writer specialised in conventional submarines and navigation. He was also trained in USSR on nuclear submarines and missiles. His important appointments included Director of Tactics, Flag Officer Submarines, Assistant Chief of Naval Staff (Submarines), Flag Officer Commanding Eastern Fleet, Director General Indian Coast Guard, C-in-C Andaman & Nicobar Command and FOC-in-C Eastern Naval Command.

The Chinese have justified these deployments as part of their anti-piracy patrols

other support staff for maintenance and logistics for decades, thus preparing the ground for China learning valuable lessons about how its equipment operates in warm tropical waters of the IOR. Besides, China having recently promised Pakistan 46 billion US$ economic package and having taken management control of the strategic Gwadar Port, is all set to get its first naval and airbase in Gwadar, which is only 360 nautical miles from the strategic gulf of Oman. Indian oil tankers bringing badly needed gulf oil to India, will be amongst those which would be highly vulnerable to any interdiction during war.

We need a fleet of conventional and nuclear subs which can provide us a blue water deterrent capability

Indian Dilemma

India, which has been busy with diplomacy in improving relations with Bangladesh, Nepal, Bhutan, Sri Lanka, Mauritius and Seychelles needs to focus on bolstering its navy in general and its outdated submarine fleet in particular. We need a fleet of conventional and nuclear subs which can provide us a blue water deterrent capability in the IOR against future Chinese navy aircraft carrier deployments and also the ability to deploy our subs in the western Pacific off China's coast. In addition we also need an SSBN based second strike strategic deterrent capability. While the recently announced 'Make in India' plans for indigenous building of conventional and nuclear subs (SSNs and SSBNs) is welcome news, unfortunately these new programmes are yet to take off and will need another 15 to 30 years to fructify. Also the tragic sinking in Mumbai harbour of a Kilo class sub *Sindhurakshak* on 14 August 2013, due to an explosion, again exposed the urgent need for a viable sub rescue system for each coast.

Time is not on India's side and despite money needed for other well-known commitments like smart cities, dozens of new nuclear power plants, aid to other countries, infrastructure, competing needs of the Army, Air Force etc there is a dire need to urgently import at least two each, conventional subs, SSNs and Submarine Rescue Vessels (SRVs). Since Russia is the only nation which can deliver conventional subs in 30 months (others take 60 months) and the only nation which is willing to supply us SSNs and also has a modern SRV capability, hopefully PM Modi will discuss this 'sub list' with President Putin when he visits Russia in December 2015, for a formal visit to Moscow. Years of neglecting the Indian submarine fleet, has left us vulnerable to the sea dragon and Modi needs to move fast to secure India's soft and vulnerable underbelly at sea. Submarine induction needs to be put on the front burner, under the PMO. DSA

MANOJ BHATT IPS
Director General
Rajasthan Police

In 1996, he was inducted in the Olympic Security Team selected for the Atlanta (USA) Olympics. For his remarkable work in the same, he was awarded with Appreciation Letters by the Chiefs of 'United States Secret Services' and 'International Olympic Committee'. He was awarded the Indian Police Medal for his Meritorious Services in the year 1997 and with the prestigious President's Police Medal for his Distinguished Services in the year 2007.

Manoj Bhatt is a 1981 batch IPS officer of the Rajasthan Cadre. In the initial training at the National Police Academy, Hyderabad, he was declared as the 'Best Trainee' and was awarded with Prime Minister's Baton and Revolver by the Home Ministry, Government of India.

He has served as Superintendent of Police of various districts such as Sirohi, Alwar, Chittorgarh, Bhilwara and Kota City. He has also worked as Superintendent of Police, Anti-Corruption Bureau and Asst IG of Police (I).

After promotion as Dy IG of police he was posted as Dy IG of police in (Security), (Intelligence) and (HQrs) branches in PHQ and also in Bharatpur Range and Ajmer Range. In the year 2002, he was promoted to the rank of IG of Police and worked as IG of Police (Intelligence) and (Personnel).

In April, 2007, he was promoted to the rank of Addl Director General of Police and was given the important task of heading the CID (Special Branch) in the State. He also worked as Addl Director General of Police in various important branches like Planning & Welfare, HQrs, Training and Traffic.

On Jan 6, 2014 he was promoted to the rank of Director General, Anti-Corruption Bureau of the State. On Mar 2, 2015 the State Government appointed him as the Director General of Police, Rajasthan.

CAPABILITY GAPS

IN THE NAVAL HELICOPTER FLEET

Armed Forces procurements, which should be executive decision, has become hostage to non-technical and non-professional approach of MoD Finance, which has just one parameter ie that the quoted price is higher than what it should be.

Typically Naval helicopters now have multiple roles which began as simple search and rescue (SAR) airborne platform. When the aircraft carriers came in service, it was realised that in the event of a fixed wing aircraft experiencing an emergency which necessitates bailing out or ejection of the crew, it will be essential to quickly recover the crew from sea and save lives. If one imagines an emergency of this nature in the North Sea, the water temperatures being near zero leads to onset of hypothermia very quickly which could cause loss of life.

In a maritime scenario our naval helicopters are deployed in all of following roles:

- Search and rescue
- Personnel transfer
- Vertical replenishment of submarines
- Anti-submarine warfare
- Anti-surface vessel warfare
- Electronic Support Measures (ESM)
- Casualty evacuation
- Marine commando operations
- Airborne Naval Gunfire Support Controller
- Anti-piracy operations
- Limited maritime air patrol

Rotary wing aircraft is a force multiplier at sea which the Commander at sea utilises on spot. Helicopters are usually ready for launch at very short notice from the deck of a ship except while fuelling and turn-around servicing. The aircrew awaits orders to be briefed for the mission and launched. They are the extension of ship's eyes and reach at sea in their area of operations. It provides for immediate response to any developing situation which could turn into a bigger and more complex security operation if not addressed.

Shortfall In Peacetime Operations

Essentially the roles which fall under this category are search and rescue, casualty evacuation, personnel transfer and vertical replenishment at sea for submarines. The Navy's backbone was and has been the *Chetak*, which is license-produced *Allouette Mk III* of French origin. This helicopter has done yeomen service to the fleets as well as shore establishments and it still does. The number of lives of aircrew and others it has saved at sea is enormous and decorates the crew rooms of every SAR flight. The Headquarter Squadron is numbered 321 and located at Mumbai. Virtually all ships are expected to carry a flight of SAR helicopter. However, with the passage of time the numbers of these helicopters dwindled and even HAL stopped its production. The maintenance and logistics support kept becoming tougher. Every attempt to find a replacement has remained in knots of MoD for some reason or the other. In 2007, the Navy was compelled to pool in all its *Chetak* shipboard flights at the Headquarter Squadron and provide helicopters to only few ships of the fleet whenever they sailed on deployments. Simultaneously, the effort at NHQ to get a replacement remained at the mercy of Ministry officials – knowing fully well that the ALH or the indigenous *Dhruv* had failed to meet the essential requirement of shipborne helicopter ie ability to fold the main rotor blades prior to stowage in the hangar. An attempt was made to see if the manufacturing of one basic helicopter by HAL could meet the requirements of all three Services. The Ministry, which is professionally challenged, continued to insist on a positive outcome on account of every factor other than technical feasibility. Ultimately HAL indicated that

Vice Admiral Shekhar Sinha
PVSM, AVSM, NM, BAR, ADC (Retd)

The writer is a combination of Naval Aviator and surface Warfare Officer. A Sea Harrier Pilot with approx 2,700 hrs of flying experience, he has commanded four warships and been Flag Officer Goa Area and Fleet Commander of Western Fleet. As Vice Admiral, he was Deputy Chief and the Chief of Integrated Defence Staff guiding Policy, Planning and Defence Acquisition. He retired in 2014 as Flag Officer Commanding-in-Chief Western Naval Command.

they could not meet Navy's technical requirements. The ALH could be used for SAR from shore bases. This helicopter took many years to resolve the issue of auto-hover essential for a twin engine helicopter which has a strong downwash from main rotors. These helicopters also meet the necessity of personnel transfer, vertical replenishment for submarines and casualty evacuation. Even to date the Service does not have enough utility helicopters to provide one each for her surface ships. The Government has taken initiative of inducting *Kamov 226* helicopters for the Army/Air Force. Naval helicopters fall in a different category since they need some more equipment for associated tasks such as limited maritime patrol for search, electronic support measure which is essential today for all airborne platforms, suitable pedestal mounted gun for low intensity maritime conflict, anti-piracy, anti-terrorism etc roles at sea. This gap should not have been allowed to occur. It will be in fitness of things to procure a selected helicopter under Buy and Make category. Under buy component certain numbers can be purchased outright and rest be manufactured by a private aerospace company which is capable of investing the desired finances and produce results in very limited time frame. Getting HAL to manufacture is a non-starter and defeats the premise on which 'Make in India' is desired to function ie meeting requirements in specified time frame.

Operational Gaps

These are serious shortages which should have been addressed 10-15 years ago. This category includes helicopters for anti-submarine, anti-surface vessel, Marine Commando Operations and amphibious operation support. The shortages are in full maritime operations regime and hence they affect the effectiveness of our Navy. The fact that Chinese submarines have regularly been venturing into Indian Ocean and they are to supply eight submarines to Pakistan, nation cannot afford to have a Navy with such severe limitation of anti-submarine helicopters. Helicopters are most potent platforms to restrict a submarine's movement underwater by forcing her to stay bottomed and not carry on with sonar search or torpedo/missile attack on a surface ship. In 2006-7 NHQ was very close to getting the upgrade of existing ageing *Sea King* helicopters with state-of-the-art sensors and weapons but for the common denominator MoD which thought it could be done cheaper. The proposal for 16 multirole helicopters, which has seen the corridors of MoD for many years, is yet to see the daylight. Armed Forces procurements, which should be executive decision, has become hostage to non-technical and non-professional approach of MoD Finance, which has just one parameter ie that the quoted price is higher than what it should be. If the question is put back with a request to find a cheaper and efficient equipment, it will expose the mandarins. Majority of capability gaps have been created in this manner. The Government will have to provide executive decision if the capability gaps are to be filled pronto, or else we as a country will not be able to look into the eyes of other nations which our Prime Minister is rightly intending to achieve. The helicopters of this type in their various modes of operation are designed for anti-surface vessel roles as well, they being capable of carrying air-to-surface missiles which can be urgently used against threatening targets at sea. These are essential in the advancing screens which are placed ahead of the fleet. The helicopter selection is a complex process which not only calls for selection of a suitable platform but many high-end electronic fit, the dunking (capable of being dipped into the sea) sonar, fire control system, suitable torpedoes and depth bombs, short-range air-to-surface missiles, fire control system for missile, a high definition radar, electronic support measure equipment, compatible data link, adequate

Security should not be priced to the extent that we have no security

number of well-trained air and technical crews and so on. The decks of various ships have a maximum limit of weight which dictates the max All Up Weight of the helicopter to be chosen. The helicopter must also have reasonably wide range of operating parameters for strong wind and rough sea operations. These are the parameters which are considered in selection of naval helicopter only to be objected by bureaucracy on account of financial viability. Security should not be priced to the extent that we have no security.

Maintenance And Logistics Support

The aspect of maintenance and logistics support is an embedded need along with capability gaps in Navy's helicopter fleet. The force levels cannot be effective and cannot be supported unless we have a steady source of spare part supplies and modern robust repair yards. Very little has been done for their upgrades. While ship repair yards have been modernised and manned with adequate personnel, same cannot be said for aircraft, helicopters and submarines which are the platforms of first response for the Navy. This is more of internal issue of the Service and certainly is either being addressed or should be addressed. Our helicopter fleet has suffered mostly on account of obsolescence of electronic and engineering equipment fitted onboard. The aircraft repair yards have always lagged behind in creating workshops with latest tools and test/repair apparatus and depended heavily on the original equipment manufacturers, making it an expensive proposition and subject to roadblock by Financial Advisers. With every induction of the future in the helicopter fleet, associated workshops, trained manpower, their accommodation and other administrative arrangements need creation. Small and Medium Enterprises can play a major role in maintaining flowing source of spare parts, repairs and replacement. The weapon electronic workshops should be upgraded to repair the critical components in-house as far as possible.

Our helicopter fleet has suffered mostly on account of obsolescence

Transparent Technical Advice

In our system of procurement, which is under revision, the professional and technical inputs and proposals are scrutinised by non-technical and expert of all bureaucrats and finance personnel. They miss the essence that their own professional and technical expertise lies with Service headquarters and therefore to question matters like necessity, club it with some other platform, how was the Service managing so far etc creates unnecessary complications. The hurdles could be anything under the sun. It is the approach and attitude of bureaucracy which needs overhaul. Vertical specialisation, integrated Ministry of Defence wherein professional Service officers provide transparent technical opinion to the executive for better understanding and timely procurement. Last 10 years has been a stumbling run by various departments of the MoD for creating these gaps in all three Services. The present government is taking steps to fill those gaps. But the underlying reform that of bureaucracy needs redressal first or else any of the sincere effort of the present polity may not achieve desired results. The naval helicopter fleet needs immediate recovery. DSA

DELIVERING COASTAL SECURITY IN THE INDIAN OCEAN LITTORAL

Dr Vijay Sakhuja

The writer is Director, National Maritime Foundation, New Delhi.

The Indian Navy has successfully delivered coastal security to several Indian Ocean States through dialogue, training and by supplying naval/military hardware. It is fair to say that the smaller Indian Ocean States have benefited in the past and would continue into the future.

Seven years ago, in 2008, Pakistan based terrorists successfully carried out attacks in India 'from the sea' and the incident is referred to as the 'Mumbai terror attacks' or '26/11 attacks'. The incident had clearly exposed the porous nature of the Indian coastline which enabled the terrorists to use fishing boats and make landfall at unprotected waterfronts to carry out attacks. Post the 2008 Mumbai terror attacks, the Indian government set up the National Investigative Agency (NIA) to investigate terrorism-related crimes, established Coastal Command (CC) and announced Maritime Defence Zones (MDZs) and set up Joint Operation Centres. Other initiatives included: The mandatory registration of fishing boats; issue of biometric identity cards to fishermen; formation of State maritime boards; designation of fishing lanes in ports; survey and monitoring of fish landing points along the coast. The Indian Navy and the Coast Guard have now acquired cutting edge technologies to enhance littoral security and these have bridged the gap in maritime surveillance and reconnaissance.

Coastline More Secure

India has also set up a robust national level Maritime Domain Awareness (MDA) system which receives maritime related information and intelligence to ensure that India's defensive perimeter is pushed further into the seas making the coastline much more secure. In 2014, the Indian Navy commissioned the National Command Control Communication Intelligence (NC3I) network which includes the Information Management and Analysis Centre (IMAC). The Centre receives inputs from nearly 50 radar systems located along the coast and on the island territories. These are operated by the Indian Navy and Coast Guard and are designed to obtain critical intelligence and information about 'unusual or suspicious movements and activities at sea' for collation and dissemination to various maritime security agencies and other stakeholders.

Security Assistance To Littoral States

After successes at home, India has begun to share its experiences with other countries in the Indian Ocean particularly the island States which do not possess the necessary capacities and capabilities to undertake round the clock surveillance of their Exclusive Economic Zones (EEZs). In fact the Indian Navy is not new to providing maritime security support to African States in the past. For instance in 2003, the Indian Navy deployed its warships for water front security and surveillance assistance during the African Union Summit held in Maputo,

Mozambique in July 2003 and since 2008, the Indian Navy has been deployed for counter piracy operations off Somalia in the Gulf of Aden.

Indian Navy's engagement with the island States in the Indian Ocean dates back to the 1970s. Indian naval ships have on regular basis called at ports in Mauritius and Seychelles and India supplied a patrol craft and provided crew to the Mauritius marine wing of the police force. It also undertakes hydrographic survey of the Mauritius territorial waters and Exclusive Economic Zones. The Indian Prime Minister during his visit to Mauritius in 2015 has stated that "We are committed to work with the government of Mauritius to jointly fight piracy and enhance security in the Indian Ocean through mutually agreed measures ... [India] will help the Mauritian government in setting up an anti-terrorism cell".

The Indian Navy and the Coast Guard have now acquired cutting edge technologies to enhance littoral security

Exemplary Partnerships

Indian Navy ships have undertaken anti-piracy and counter terrorism patrols in Seychelles waters. Seychelles President James Alix Michel during his visit to India in 2015 stated that "Seychelles is committed to working closely with India in responding to security threats and ensuring the safety of our sea lanes, the arteries of trade with the outside world. Today we have with India an exemplary partnership in the defense and security sectors ... Seychelles will continue to act decisively with India against all forms of transnational crimes."

Likewise, India and Mozambique too have agreed to work together to improve maritime security in the Indian Ocean. The bilateral engagement includes 'joint activities including maritime patrols along the Mozambican coast, mutual training in military institutes, supply of Defence equipment/services and establishment of partnership and transfer of knowhow and technology for assembling and repair of vehicles, aircraft and ships as well as rehabilitation of military infrastructure.'

Closer home, Maldives and Sri Lanka have benefited from their maritime cooperation with India. For instance, in November 1988, Maldivian dissidents in Colombo and Tamil mercenaries of People's Liberation Organisation of Tamil Eelam (PLOTE) had attempted to overthrow the Gayoom regime. A quick air and sea response from India resulted in the capture of mercenaries who were fleeing with hostages in a vessel resulted in the restoration of the legitimate regime in Male. In Sri Lanka, the LTTE was decimated by the Sri Lankan military in May 2009 with the assistance of the Indian Navy. At the functional operational level, the Indian Navy has engaged both the Maldives and Sri Lankan Navies through bilateral naval exercises code named 'Dosti', regular ship visits, training, transfer of naval hardware and sharing of intelligence. In the above context, the Indian initiative of trilateral maritime cooperation among India, Sri Lanka and Maldives through a number of maritime security related initiative is noteworthy. In 2015, Prime Minister Modi observed that 'We deeply appreciate the cooperation that exists with Sri Lanka on matters of security. We should expand the maritime security cooperation between India, Sri Lanka and Maldives to include others in the Indian Ocean area', the trilateral cooperation has now been expanded to include Mauritius and Seychelles.

Enhanced Security Through Best Practices

The Indian Navy and the Coast Guard have been at the helm and have developed a sophisticated strategy that involves maritime domain awareness, exchange of intelligence, exercises and training with a number of navies in the Indian Ocean. These initiatives have proved successful and contributed to maintaining order at sea. However, as part of capacity building, India needs to consider providing help to smaller States through a number of technological, operational and capacity building measures. These are:

Technological Solutions

(a) Unmanned aviation platforms such as the UAVs are capable of providing real or near-real time tactical pictures of sea areas, monitor maritime activity and also possess the capability to destroy suspected targets. These would need to be integrated with the maritime security architectures of the smaller island States.

(b) Aerostats and balloons can carry a variety of payloads including radar, communication systems and other sensors.
(c) Compulsory AIS (Automatic Identification System) on smaller vessels, mandatory registration of all fishing vessels and biometric identification cards given by the three partners can enhance maritime security.

Operational Efficiency

(a) Operational interoperability with neighbouring navies, coast guards and marine police would result in enhanced understanding, foster mutual trust and coordination among the partners.
(b) A common doctrine and standard operating procedures (SOPs) for greater cooperation and improving communications for interoperability.
(c) Education of coastal communities including fishermen of the dangers lurking in the littorals and promoting the idea of them being important stakeholders in the surveillance network is critical.

Capacity Building

(a) As part of capacity building, India can enhance maritime security through training exercises and the Indian Coast Guard can take the lead in this aspect.
(b) Indian Navy can play an active role in promoting further cooperation with African navies by strengthening existing relationships, expanding training and education assistance and help develop a regional maritime information database.
(c) Cooperation to improve surveillance and enforcement of fisheries in coastal areas which can be expanded to Exclusive Economic Zones.
(d) Develop cooperative mechanisms for search and rescue, assistance to the fishing community and disaster relief activities.

Multilateral Cooperation

Currently, India is an active member of several international and regional arrangements for maritime cooperation at both government and non-government levels. It is signatory to the UNCLOS III, member of Indian Ocean Rim Association (IORA), ASEAN Regional Forum (ARF), East Asia Summit (EAS), ASEAN Defence Ministers' Meeting (ADMM) Plus, Association for Bangladesh-India-Myanmar -Sri Lanka-Thailand Economic Cooperation (BIMSTEC), South Asia Association for Regional Cooperation (SAARC), Council for Security Cooperation in Asia Pacific (CSCAP), as an observer in the Western Pacific Naval Symposium (WPNS), Regional Cooperation Agreement On Combating Piracy And Armed Robbery Against Ships In Asia (ReCAAP). At another level, the Indian Navy conducts events such as MILAN, Indian Ocean Naval Symposium (IONS), International Fleet Reviews (IFR), symposiums, seminars and conferences as part of its engagement in naval diplomacy. Among these, the IONS is a pan-Indian Ocean initiative and is attended by naval delegations from twenty-nine countries of the Indian Ocean.

IN has responded to different crises in 'waters far away from home' and building maritime bridges

Benefits

The Indian Navy has successfully delivered coastal security to several Indian Ocean States through dialogue, training and by supplying naval/military hardware. It has responded to different crises in 'waters far away from home' and building maritime bridges through operational engagements and capacity building. In the future, the Indian Navy can be expected to continue to support a variety of missions involving international cooperation such as disaster relief and humanitarian assistance, counter terrorism, anti-piracy and also preventing illegal migration. It is fair to say that the smaller Indian Ocean States have benefited in the past and would continue into the future from India's expanding naval and maritime capabilities which have been brought to bear during various crises in the Indian Ocean.

COASTAL SECURITY CHALLENGES FOR INDIA

An important aspect of coastal security is that it does not start at the coast but has multiple layers of maritime security commencing from the outer periphery of the Exclusive Economic Zone (EEZ).

The challenges of coastal security did not start with the Mumbai terror attacks. On the contrary, it only accentuated the age-old problem faced by India with a long coastline, more than 1,200 islands and a neighbour for whom, supporting terrorism across the borders over land and sea is a state policy. With the successful attack by seaborne terrorists who killed about 166 innocent personnel including foreigners in the commercial capital of India, on 26th November 2008, India had to re-examine its own preparedness and subject the existing means and methods to scrutiny with a view to improving the maritime security architecture.

Again, many seem to believe that the slew of coastal security measures implemented were as a result of the Mumbai terror attacks which is not the case. Various measures for augmenting border security were recommended by the Group of Minister's Committee after the Kargil debacle where the role of intelligence agencies and the State apparatus to prevent surprises came in for serious questioning. Many of the measures implemented post Mumbai terror attacks were long overdue actions from the GoM report that was submitted in 2000 and perhaps forgotten. The example of not creating the Coastal Security Group and equipping it with high speed boats and trained crew is only one such in the series of non-implemented recommendations. It required another catastrophic incident to reinvigorate the process.

A simple examination of the present scenario will reinforce the view that coastal security continues to challenge the Law Enforcement Agencies (LEAs), Intelligence agencies and both Central and State machinery tasked with the daunting job of coastal security. Some of the issues that will continue to engage the attention of the stakeholders charged with coastal security are contained in the subsequent discussions.

That there are well established smuggling routes which can be used by anti-national elements for bringing in the material and trained terrorists is no secret. This was proved way back in the 1993 Mumbai blasts. All the RDX came from the sea using the routes used by the smugglers and were landed in Mumbai with the connivance of the border security agencies and the Customs. These were used in the serial blasts in Mumbai.

Continuous Problem

Complexities of managing growing fishers who are competing to earn their livelihood in an era of dwindling fishing stock are indeed enormous.The fishermen in South Asia cross over in pursuit of livelihood with utter disregard to the maritime boundaries and pose immense difficulties for the LEAs. In the case of Pakistan, Sri Lanka and Bangladesh, there are frequent incursions on either side by fishermen and it is physically impossible to check each and every boat that is in the area of interest.

Addition of new major/minor ports, fishing harbours and economic initiatives along the coast are ongoing processes in a growing economy such as India. These installations and infrastructure do bring in their own challenges in terms of regulating the activities and ensuring physical security. In the case of the major ports, by and large the International Port and Security Code that was implemented on 01 July 2004 has provided the impetus for ensuring minimum levels of safety and security at the major ports that service international traffic. However, the minor ports in India that are managed by the State Maritime Boards which do not come under the purview of the International Shipping and Port Facilities Security Code and hence need special attention in terms of managing the traffic and security from these small but important destinations in a blue water economy.

Presence of extra-regional players with the increasing importance of Indian Ocean not just for trade and commerce but also for meeting long-term strategic objectives in the warm waters of Indian Ocean has become an increasing phenomenon. Despite clarion calls, Indian Ocean has never remained a zone of peace. The warm water ports in the Indian Ocean have always attracted the extra-regional players from the West. China is a new player and is making inroads in the maritime neighbourhood which brings in its own security challenges as both India and China are jostling for power in the Indian Ocean. With dwindling resources overland there is increased activity for harnessing both the living and the non-living resources in the EEZ of India.

The challenges of providing Search and Rescue efforts in the Search and Rescue Region are enormous as India is a signatory to the M-SAR convention and manages an area double the size of its EEZ for providing a credible SAR architecture.

The risk of marine pollution has risen manifold due to the density of shipping and presence of vessels of all descriptions in addition to the activities overland.The contingency plans are drawn up by the Indian Coast Guard which is the nodal agency for drawing up the National Oil Spill Disaster Contingency plans (NOSDCP). This can be anywhere in the area of responsibility from the coast to the islands to distant areas in the EEZ.

Strengthened Security Architecture

In the light of the factors listed above and with specific reference to the measures adopted post Mumbai terror attack it is evident that the entire gamut of maritime and coastal security has undergone a paradigm shift. However, how well is the nation prepared to thwart another seaborne attack by terrorists continues to occupy a large space in the discussions amongst specialists and other stakeholders. The notable changes in the security architecture include the following:

- The navy was placed at the apex thus making a single agency for both oceanic and coastal security.
- The network of radars along the coast and around islands was accorded top priority and systems put in place for increasing the Maritime Domain Awareness. The contract was executed by BEL which worked with Terma for procurement of the hardware.This even included the use of old lighthouses and also installation of optical devices along with the radars with remote operation and monitoring capability provided at the JORs/Maritime Rescue Coordination Centres (MRCCs).
- A special force of over a thousand trained sea cadres called the Sagar Prahari Bal was created for contingent situations at sea that required immediate intervention.
- The Centre provided financial support for getting the high speed patrol boats for the States with the proviso that the operation and maintenance would be looked after by the coastal States. Over all, about 200 plus boats were imported from Greece which came in two types. This included the twelve ton boat and the five ton variety to be manned and operated by the Coastal Security Groups created under the aegis of State Governments. However, apparently, there are issues of training, operation and maintenance to be resolved by the concerned State Governments.
- The Joint Operations Rooms were commissioned to ensure that there was participation by all the Central and State agencies including the intelligence agencies.
- The Coast Guard has been delegated the responsibility of being the Lead Intelligence Agency (LIA) for coastal and maritime security. However, there are issues of funding, training, equipment and structures to ensure that the Coast Guard is equipped for this role. With multiple agencies in the maritime domain under different ministries of the Government, this task will continue to be a daunting one.

IMAC: The Information Management and Analysis Centre was sanctioned in March 2012. The construction began in Oct 2012. This was completed by BEL in Jan last year. It was launched on 23rd November 2014 and the scheme envisaged linking up 51 Naval and Coast Guard Stations with electro-optical sensors and radars for tracking. The enhanced connectivity was provided by terrestrial links and satellites. The intention was to provide aggregated, correlated and analysed actionable data to the operational authority. The software is claimed to provide data fusion, correlation and decision support systems.

The Coast Guard has been delegated the responsibility of being the LIA

Features of the Costal Surveillance System are aimed at providing surface and limited air surveillance, monitoring movement of vessels around the coast, detection and identification of surface and air targets, identification of target with integrated AIS, providing of Correlated Radar Track data and AIS tracks from radar stations to control centre via Radio/Internet/Satcom.

In addition it catered for presenting combined picture of radar track and AIS from different stations at the Control Centre and voice communication facility to co-ordinate interception/rescue by using CG ships /aircraft. In conclusion, it can be said that the measures implemented thus far have brought in a new confidence in the concerned agencies in being able to make it extremely difficult if not impossible for any adversary to use the long coast for mounting operations *a la* Mumbai terror attack. The dynamics of Indian Ocean Region in the maritime neighbourhood is both complex and challenging and Indian maritime agencies have their hands full in ensuring the coastal security structure is able to respond in a seamless manner. Another important aspect of coastal security is that it does not start at the coast but has multiple layers of maritime security commencing from the outer periphery of the Exclusive Economic Zone (EEZ). Once the outer periphery is secured and the means and methods for total Maritime Domain Awareness (MDA) in the different layers of EEZ, contiguous zone, territorial waters and along the coast are streamlined and synthesised, there is greater scope for enhanced coastal security. DSA

Commodore RS Vasan IN (Retd)

The writer is Head Strategy and Security Studies, Center for Asia Studies and Director Chennai Centre for China Studies. He is also the Director of the Asian Secretariat of the World Borderpol.

INDIAN NAVY AND MARITIME SECURITY

First and foremost the government must adopt a 'top down' approach in achieving the end result. Secondly, the Department of Defence Production (DDP) must be disbanded and a brand new 'Defence Industry Promotion Board (DIPB)' staffed with DIPP personnel be established.

Millenniums before Columbus sailed the Atlantic and Magellan crossed the Pacific, the Indian Ocean had become a thoroughfare of commercial and cultural traffic.

— KM Panikkar

The spread of Hindu and Buddhist religion, culture and trade by holy men and merchants, who travelled by ships to a majority of South East Asian countries, establishes the fact that India has been a maritime power. Even today, there are striking examples of these links in the form of various temples like the one at Angkor Wat in Cambodia or the adaptation of *Ramayana* into local folklore in Bali, Indonesia. Perhaps, the best evidence if one could call it, comes from the exhibition organised recently by the Metropolitan Museum of Art, New York in 2014 titled 'Lost Kingdoms: Hindu-Buddhist sculpture of Early South East Asia, 5th to 8th century', which portrays the one way cultural journey from India to countries like Cambodia, Vietnam, Laos, Thailand and Malaysia. On the western side too, trade links were established with the Roman Empire.

Around this time, Buddhism and trade travelled to Central Asia over land across North West India. It could be a matter of conjecture that this route may have inadvertently contributed to the conquest of India by tribal chiefs from these regions. These invasions across the mountains seem to have sown the seeds of 'continental outlook' in the Indian mindset which is evident even today and resulted in the decline of its maritime prowess. Consequently, various European nations that came to India in search of raw materials to fuel their 'Industrial Revolution' monopolised the Indian Ocean and adjacent seas and in the process conquered India across the seas.

Maritime Security

The word 'maritime security' needs to be understood in its entirety rather than being viewed through a narrow lens. This aspect has been very eloquently brought out by Admiral (Retd) Arun Prakash whilst delivering the YB Chavan Memorial talk at IDSA in 2013. We can safely assume that everything that can affect our national well-being and connected with the seas comes under the ambit of maritime security. However, the freedom to use the seas and protection of SLOCs for economic development; safeguarding territorial integrity and preventing maritime terrorism visiting our shores; acting against piracy and human trafficking; rendering aid in times of natural disasters at sea as well as providing safe cover for harvesting natural and mineral resources from EEZ requires constant vigil and a Navy equipped with the full range of maritime capabilities.

Public Private Partnership

The responsibility of ensuring the country's maritime security lies with the government. However, the onus of providing the country with a capable navy to discharge this responsibility cannot be that of the government alone. The navy that is required to be at sea and undertake various tasks; the shipyards which should build and deliver the requisite platforms; the DRDO and Defence industry that are expected to arm the ships with weapons and sensors, are all stakeholders in the process of building the navy.

It is a well-known fact that 'Navies are built and not bought'. This is the rationale that prompted the indigenous warship building activity at various DPSUs in the late 60s. We must note that at that time there were hardly any private shipyards capable of building such sophisticated ships in the country. Despite the encouragement shown by the navy, the DPSUs failed to deliver ships on time. The huge time and cost overruns had a telling effect on the required capabilities and the navy was left with no choice but to bolster its strength through acquisitions from abroad.

Admiral Sureesh Mehta, a former Indian Navy Chief stated in 2008 that 'By 2022, we plan to have 160-plus ship navy, including three aircraft carriers, 60 major combatants including submarines, and close to 400 aircraft of different types. This will be a formidable three dimensional force with satellite surveillance and networking to provide force multiplication'. Subsequently, there have been reports of various senior officers making statements about attaining force levels of 200 warships and 500 aircraft in the coming decade.

The Indian Navy presently has in commission about 122 ships and 13 submarines in addition to various fixed and rotary wing aircraft. There are projects in various stages of acquisition but they may at best offset the likely layoffs. Despite the emergence of private yards with world-class facilities capable of constructing all types of ships we are yet to get out of the nomination of DPSUs syndrome completely. Therefore, considering the track record of the DPSUs and the reluctance on the part of DDP to treat private shipyards at par, the above force levels are likely to remain in the realm of fantasy.

Make In India Initiative

Prime Minister Narendra Modi launched the 'Make in India' initiative on 25 Sep 2014, primarily aimed at making India a manufacturing hub on similar lines as in China. The objective is laudable as it envisages job creation as well as skill enhancement. Whilst it may be directed at the non-Defence sectors, the concept may be adapted for Defence as it could serve as import substitute. Limiting the scope of present discussion to 'building the navy', the government must examine the projected force levels of the navy and think out-of-the-box or rather 'situate the appreciation', so as to build them all in the country under the 'Make in India' concept. Basically **'situating the appreciation'** intends to define the required result first and then evolve the procedure to attain the objective. The navy which has always been in the forefront of 'self-reliance' would be an ardent supporter of these initiatives.

Policy Changes

In accordance with the above approach, first and foremost the government through the Raksha Mantri must adopt a 'top down' approach in achieving the end result. Secondly, the Department of Defence Production (DDP) must be disbanded and a brand new **'Defence Industry Promotion Board (DIPB)'** staffed with DIPP personnel be established. DIPB should be directed to create a level playing field between all the public and private shipyards and treat them at par. It must examine various concessions extended to the shipyards by leading ship building nations and provide similar ones to Indian yards. All the existing acquisition procedures must be suspended and replaced with new ones as they evolve based on the steps taken to promote shipbuilding activity. Strategic tie-ups between various shipyards – domestic and foreign, must be encouraged by the DIPB to optimise the resources and develop the requisite skills all round. These tie-ups could be in the form of JVs or a combined entity, issued with Defence licenses valid for a time period of ten years and extendable. Competitive bidding and availability of production capacity should be the guiding principles for placement of orders on all these JVs/entities with the twin aims of achieving faster deliveries as well as building-up requisite warship building industry as a whole.

Commodore S Govind (Retd)

The writer is a submarine specialist with more than 3 decades experience. He commanded submarines, ships, submarine training establishment as well as operating base. He has also headed the directorates of submarine operations as well as submarine acquisition at Naval Headquarters. He retired from HQ IDS where he served in the Perspective Planning and Force Development branch.

Role Of Navy

As a principal stakeholder in the maritime security construct, the navy must define the requirements of its force levels and obtain a tacit 'AoN' (acceptance of need) from the government. A stabilised strength would enable forecasting the required budgetary support and based on the likely availability of resources, an estimate of the time horizon for the force levels could be made. This estimate coupled with the likely decommissioning schedule, could be used for prioritising new inductions. This knowledge would also help in planning manpower inductions and enable tailoring operational and maintenance cycles in a bid to ensure steady accretions. Further, it should look at reducing the classes of ships and increasing the number of ships in each class from 3/4 to 6/8 as well as standardisation of equipment fit to ensure optimal utilisation of resources. This would aid the industry in developing and harnessing the requisite skills as well as ensure a robust ancillary SME industry that would take care of logistic requirements in the future.

DRDO

A warship is a complete unit consisting of weapons, sensors, propulsion and power generation systems, electronics and a myriad other components which endow it with great agility and offensive capability. Though we have attained some measure of success in shipbuilding, the indigenous capability in all these areas is minimal or non-existent. The vision statement of DRDO purports to be 'Design, develop and lead to

production state-of-the-art sensors, weapon systems, platforms and allied equipment for our Defence Services'. Except in the field of Sonar and Electronic Warfare, the contribution of DRDO is dismal.

The DRDO must be restructured to concentrate on core areas and discard others in favour of private industry as recommended by various committees. Linkages between laboratories, universities, IITs and industry must be established so as to enhance the R&D base in the country and enhance the awareness levels in the civilian population of defence needs. In areas of technology denial, it should look at entering into R&D/D&D models through G-G co-operation agreements with friendly countries.

Industry

Fiftysix Defence manufacturing permits are reported to have been issued to private companies in the last one year. The 'Make in India' initiative, enhanced FDI limits, a liberal regime for granting Defence licenses and the willingness to involve the Indian industry in Defence acquisitions make the atmosphere conducive for the industry to take the plunge and establish themselves as participatory stakeholders in the defence of the nation.

Technology denial and reluctance to part with critical technology by various OEMs is a reality and needs to be factored in the calculus of development of Defence industry. These two aspects should be the cornerstone of formation of JVs in the industry. Where technology denial is involved, the thrust must be on 'Make' projects under a PPP model involving DRDO, the Services and the industry. Further, in cases where the OEM is willing to transfer all technology except in some critical areas, the option of 'Buy and Make (Indian)' should be preferred. However, for this route to offer a 'win-win' situation to all, the starting indigenous content could be pegged at a minimum 30 per cent and the maximum not less than 70 per cent. Further, enabling export of equipment not required by the Services would make it attractive for the Industry.

The responsibility of ensuring the country's maritime security lies with the government

Conclusion

According to KM Panikkar, "While to other countries, the Indian Ocean is only one of the oceanic areas, to India it is the vital sea. Her future is dependent on the freedom of its waters." That India's interests lie in the Indian Ocean is clearly demonstrated by the fact that more than 95 per cent of its trade by volume is carried across these waters. Its vast coastline and large Exclusive Economic Zone (EEZ) are rich in natural resources like fishing, oil and gas fields which contribute to the economic wealth of the nation. It also has 'Pioneer Status' over 150,000 sq km of seabed area in the Southern Indian Ocean which is likely to contain huge mineral wealth. India is predicted to become one of the top five economies of the world in the near future. All these are clear indicators of modern India's dependence on the seas and the need to ensure its maritime security for its well-being.

A credible and strong navy needs to be built in the country's shipyards to ensure the maritime security of India. This needs a collective and concerted out-of-the-box approach like 'situating the appreciation' and must be driven by the Government. Efforts at shipbuilding must not be limited to hulls but transcend to include all systems, equipment and weaponry that go into making it such a lethal platform. Whilst the navy and DRDO have their roles cut out, it is the industry that needs to seize the opportunity in the prevailing conducive atmosphere and establish the 'Defence Industry Base (DIB)' which is very essential in ensuring our maritime security in particular and national security in general. DSA

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INDIAN NAVY AND COAST GUARD HOW EFFECTIVE IS THE SYNERGY IN MARITIME SECURITY

The IN has overall responsibility for maritime security but the ICG too is partly responsible for one segment of the territorial waters and the States have responsibility of local law and order and the conduct/deployment of the Marine Police. Eternal vigil, using all available means, technical and human and presence at sea would remain the most reliable means of ensuring suitable deterrence in the porous maritime domain.

Ever since the ghastly Mumbai attacks of 26 November 2008, wherein the Pakistani Jihadists of the Lashkar-e-Toiba used the sea routes, resulting in the killing of 166 innocent people and wounding another 300, the term 'Maritime Security' and the necessity to ensure its implementation have become the buzzwords for both the key maritime law enforcing agencies of the country, namely the Indian Navy (IN) and the Indian Coast Guard (ICG).

Maritime Security

By definition, 'Maritime Security' encompasses a vast canvas and includes measures to counter not just the traditional threats facing a nation, but also the asymmetric, nebulous and undefined threats from a plethora of segments, some not even on the radar of law enforcing agencies. The term 'Maritime Security' in our context becomes even more complex since geographically India is located adjacent to the international shipping lanes that criss-cross the waters around us, in proximity of the seat of piracy and a hostile neighbourhood. In broad terms, maritime security for us would mean ensuring freedom of navigation, safety, security and unimpeded flow of seaborne trade and marine resources, combating illegal activities at sea (piracy, maritime terrorism, trafficking in drugs, arms and people, marine pollution, illegal fishing etc) and having the requisite capability to guard our coastline and offshore/close-coast strategic and economic assets from any seaborne threat.

Roles And Responsibilities

Post 26/11, the Government has designated the Indian Navy as the authority responsible for overall maritime security, with the assistance of the Coast Guard, State Marine Police and other Central and State agencies. Just last month, on 26 October 2015, the Defence Minister released the Navy's 'Maritime Security Strategy – Ensuring Safe Seas' during the Navy's Commanders' Conference. This article, therefore, does not look into the all-encompassing issue of 'Maritime Security' for which the IN has the overall responsibility and only dwells on those aspects of maritime security that are being attended jointly by the IN and the ICG. Accordingly, the focus is on the Navy's constabulary role and the Coast Guard's primary charter.

Against this backdrop, our offshore assets and natural resources within the limits of our Exclusive Economic Zone (EEZ) and the coastline itself would qualify to be considered for protection provided by the two services. This falls within the lower end of the entire maritime security spectrum, termed Coastal and Offshore Security, wherein the wherewithal required to deal with the threats are not large, expensive platforms with 'state-of-the-art' weapons but 24x7 comprehensive surveillance through physical and electronic means, close monitoring, intelligence gathering and sharing and, above all, physical presence of appropriate assets to enable quick response to a developing situation.

Early this year, based on intelligence inputs, the Coast Guard encountered a boat in high seas, suspected to be involved in carrying explosives and ammunition. In the ensuing pursuit during dark hours, the crew decided to blow up the vessel rather than face arrest. The nature of cargo remained a mystery but the suicidal act of the crew indicates deeper ramifications had it landed in the hands of Indian authorities. Later in April, in yet another incident in high seas, the IN and the ICG in a joint operation intercepted and subsequently apprehended a Pakistani vessel and its crew with huge narcotics haul. The joint operation was mounted after a series

of communication intercepts and close monitoring of the movement of the vessel.

Successful Interceptions

These two successful incidents at sea in the recent past, while on the one hand underscore the level of synergy achieved between the two key maritime services of the country, on the other they also highlight the paramount requirement of all stakeholders being on the same page when it comes to security issues in the maritime domain where the space is vast, the medium unforgiving and the borders non-existent. The crucial role of 'Intelligence', its timely dissemination to concerned agencies, the need to ensure follow up action on each such 'tip off' as also the importance of a designated common superior needs no emphasis.

Investigations of the 1993 serial Mumbai blasts, conclusively established that the explosives used in the blasts had been brought to our shores using the sea routes. As a result a system of close coast joint patrolling by hired trawlers off the coast of Gujarat and Maharashtra was instituted in the form of 'Op Swan' by the IN and the ICG along with the support from the concerned State Governments. The Navy and the Coast Guard continued to maintain random patrolling along the middle and outer layers of the defensive perimeter. Till the occurrence of Mumbai 2008 episode in the intervening 15 years (1993-2008), the system worked well with no serious breach of security taking place. After the Kargil Review Committee's recommendations the Government also launched the Coastal Security Scheme in 2005-06. However, Mumbai terror attacks in 2008 exposed the gaps in our coastal security apparatus and adversely affected the image of both the Navy and the Coast Guard, the two premier agencies responsible for maritime and coastal security.

26/11 A Watershed Date

It brought to focus the vulnerability of the maritime domain, a benign yet complex region, often overlooked by our security establishment being out of sight. Realising that over the years the number of stakeholders exploiting the maritime arena had sizeably grown thus requiring a multi-agency approach was considered an imperative towards development of a coherent maritime security policy. There being no clearly demarcated borders at sea as on land, each authority responsible for the specific zone has to be well networked in the overall system with the information flow taking place both upwards and downwards. The 'weakest link in the chain' thus becomes the 'measure of effectiveness' in our ability to handle the threats in the maritime domain.

The Indian Navy and the Indian Coast Guard operate in same domain and hence, have overlapping responsibilities with regard to the coastal and offshore security, till the limits of the Exclusive Economic Zone. For ease of conducting business at sea, the major stakeholders, ie the Navy, the Coast Guard and the State Marine Police have divided the sea into certain layers extending outward from the coast giving specific responsibility of surveillance and maintaining presence to each agency. Over the years, in order to have closer coordination between the two services, various measures have been put into place. In day-to-day operations at sea also, both the IN and the ICG coordinate effectively, especially with respect to development and sharing of the Maritime Domain Awareness (MDA) picture, Intelligence inputs and strict adherence to joint Standard Operating Procedures (SOPs) in dealing with common threats. Further, understanding each other's viewpoint is easy since personnel of both services train together at the *ab initio* and later stages and ships and aircraft are also cross deployed during each other's exercises.

The commissioning of IMAC by the Indian Navy has been a major step

Measures And Initiatives

In February 2009, post 26/11, the Government designated the Indian Navy as the authority responsible for the entire maritime security and the ICG as the authority responsible for coastal security in territorial waters including areas to be patrolled by the Coastal Police. Further, the Naval Commanders-in-Chief (Cs-in-C) were designated as Commanders Coastal Defence, the Director General, Indian Coast Guard was designated the Commander, Coastal Command, responsible for overall coordination between the Central and State agencies in all matters related

Vice Admiral Anurag G Thapliyal

AVSM & BAR (Retd)

The writer is former Chief of Staff, of the Eastern Naval Command. An alumnus of the Naval Command College, from the Naval War College, Newport, Rhode Island USA and the Defence Services Staff College, Wellington, India he possesses two Master Degrees in Physics and Defence Studies. He has also served as the Director General of Indian Coast Guard.

to coastal security. Undoubtedly while substantial measures have been taken to improve the national coastal security architecture, some aspects such as responsibility, accountability and authority still remain loosely defined at the Central and State level. As can be seen that the IN has overall responsibility for maritime security but the ICG too is partly responsible for one segment of the territorial waters and the States have responsibility of local law and order and the conduct /deployment of the Marine Police. Also, there is no such entity as the Coastal Command at present and the Coastal Defence is more of a wartime term.

Continuous surveillance of nearly 2.0 million sq km of sea area till the limits of country's EEZ is and would remain a daunting challenge. This being the primary area of operation for the Coast Guard, daily an average of 25 plus ships are deployed and about 8-10 aircraft sorties are mounted for aerial surveillance. Naval ships undertake regular fleet exercises in this region as also deploy ships on specific missions to augment the ICG effort. The real challenge post 26/11 is the prevention of access to the hinterland by anti-nationals, criminals and nefarious elements including terrorists through use of shipping, fishing vessels and other small craft. To thwart that, the presence of platforms at sea is necessary which is akin to the beat policeman on land and acts as a major deterrent.

A slew of measures were initiated by the Government as a fallout of the Mumbai episode. Today, seven years later, most of these are in place and some, that were infrastructure and manpower intensive, are in progress. At the core of the monitoring and feedback mechanism was the formation of National Committee on Strengthening Maritime and Coastal Security (NCSMCS) against threats from sea chaired by the Cabinet Secretary. This Committee meets periodically and provides the interface between the highest echelons of various Ministries of the Government of India and the State Governments. Monitoring the progress of each issue at the Centre helps in expediting action on issues which may get low priority at the State level.

IMAC Network

In order to make the functioning effective and improve the operational interaction between the two Services and other agencies entrusted with the task of surveillance and information gathering, the commissioning of Information Management and Analysis Centre (IMAC) at Gurgaon by the Indian Navy has been a major step. This Centre is at the core of collection, fusion and dissemination of vital data on shipping and fishing in our area of interest and provides a Common Operational Picture to improve coastal surveillance. It is the nodal centre of National Command Control Communications and Intelligence Network (NC3I) and gets inputs from a variety of sources such as the coastal radars, National Automatic Identification System, Long Range Identification and Tracking and other systems. The Coastal Surveillance Network (CSN) with 46 static radars and associated sensors networked together currently provides valuable data to the IMAC.

The setting up of four Joint Operations Centres (JOCs) under the control of the Navy serves the important purpose of getting all stakeholders under one roof during coastal security exercises and operations. These exercises, conducted twice a year, involve the Navy, Coast Guard, State Marine Police, Customs, Ports, Coastal States and all key agencies and facilitate rehearsing and consolidating the SOPs, exercising mock drills and draw out lessons. In addition 'Intelligence' sharing meetings through an institutionalised mechanism with all stakeholders have been in place for a considerable time now and found most useful.

Involvement of our large fishing community, which is overwhelmingly present in the maritime domain every day and could thus serve as the 'eyes and ears' of the security agencies, has been a major positive since 2009. Through regular Community Interaction Programmes (CIPs) the Navy and the Coast Guard interact with our over 16 lakh fisher folk.

The force levels, both in terms of platforms and manpower of the Navy and the Coast Guard have also witnessed an upswing over the past five years making it possible to mount more effort towards surveillance tasks and undertake sustained patrols at longer ranges.

Inshore And Oceanic Synergy

The Navy and the CG have been working in tandem in the overall coastal security construct for over two decades now. Over the years and with the experience of Op Swan and Mumbai terror attacks as also the induction of better surveillance technology and hardware both, afloat and ashore, the interaction between the two services has increased significantly thereby achieving substantial synergy and jointness. As the Coast Guard builds its inventory of larger ocean going platforms and high speed interceptor vessels it would be better positioned to play a larger role in the overall coastal security construct thereby allowing the Navy to focus on its traditional warfighting, diplomatic and benign roles with limited participation in the constabulary and policing role.

However, in the overall coastal and offshore security matrix, where a number of other players are involved, certain shortfalls still remain. These pertain to manpower, training, appropriate resources and some inter-agency issues related to jurisdiction and procedures. It is hoped that with regular interaction and close coordination these issues would be ironed out between the key stakeholders.

The maritime domain is a dynamic region. It is also a fact that those agencies or groups whose agenda is inimical to our national interests would continue to explore alternatives to exploit asymmetry and find measures to overcome technological disparity. Eternal vigil, using all available means, technical and human and presence at sea would thus remain the most reliable means of ensuring suitable deterrence in the porous maritime domain. DSA

INDIA'S SUBMARINE PROCUREMENT
THE CHALLENGE WITHIN

An *ab initio* attempt at indigenous submarine construction would need an experienced design capability. This is not available in India at present. This is an anomaly which needs to be corrected at the earliest if we have to become a shipbuilding nation of any reckoning.

Commodore Anil Jai Singh IN (Retd)

The writer commissioned in January 1981, joined the submarine arm in March 1982 and in three decades since, had five afloat commands (including four submarine commands) and a wide array of appointments ashore. He was also the Indian Naval Adviser in London and part of the perspective planning and force development process in HQ IDS. He took premature retirement in 2011 and is Vice President of the Indian Maritime Foundation. He takes keen interest in matters maritime and has written and spoken on the subject in India and abroad.

The floating of *Kalvari*, the first of French designed submarines being built at Mazagon Dock Ltd Mumbai on 29 Oct 2015 marked an important milestone in India's quest for indigenisation and self-reliance in the Defence manufacturing sector. This was also a significant achievement for two other reasons – the first being the boost it gives to India's manufacturing sector which has seen depletion in its share of India's GDP in recent years and needs to be revitalised and, secondly, it will help towards reducing the ignominious distinction India has of being the largest importer of Defence equipment in the world.

At a strategic and operational level, an important frontline maritime capability like a submarine reduces our strategic vulnerability to Import-dependence and imparts credibility to a blue water navy of an emerging international power.

Kalvari is not the first submarine built in India. *INS Shalki* and *INS Shankul*, two of the IN's four Type 209 submarines of German design were also built at MDL Mumbai and commissioned in 1992 and 1994, respectively. The programme was terminated thereafter due to the typical myopic political expediency which is the hallmark of elected governments. The nation is still paying the price for that decision as even two decades later we are struggling with our attempts at submarine construction.

A Unique Experience

More recently, India's first ballistic missile submarine *Arihant* has also been built indigenously and is undergoing extensive sea trials (prior to her commissioning into the Indian Navy) and the results of which have been very encouraging so far. A second and third SSBN have also been approved with the former already off the blocks. The SSBNs are the gold standard in submarine construction and have been built only by the Big Five. The construction of *Arihant* therefore marks the coming of age of the Indian warship building capability. The success of the SSBN project has been possible due to the coordination amongst various stakeholders, a vibrant PPP model and empowered professionals working to a well-defined plan.

The Indian Navy is justifiably proud of its unstinted support and encouragement to indigenous shipbuilding as a consequence of which all 42 ships and submarines of the Indian Navy are being built at Indian shipyards. However despite the significant strides in submarine construction, there has been a lag which needs to be addressed but may not be getting the attention it deserves.

Submarine construction is a complex process which is extremely resource intensive – be it monetary, material, human or in terms of time. It therefore requires a prolonged and focused commitment from the decision-makers who must recognise the challenges and create an enabling environment to encourage this development. Therefore, while we have embarked on this path of indigenous submarine construction, the powers-that-be in the MoD have been found seriously wanting in their ability to comprehend the complexities of this platform and give it the support it requires. Perhaps only *Arihant* got the kind of support that should be extended to all important programmes but one *Arihant* does not constitute a capability.

Self-inflicted Wound

The delays in construction of the P75 (it has taken almost ten years to construct the first submarine which had a proven design and equipment fit) the lack of urgency in processing the second line (Project 75-I) – it has been five years since the Acceptance of Need

(AoN) was accorded by the Defence Acquisition Council and a lack of clarity on both, the choice of design and the choice of shipyard despite there being only a limited number of both and capabilities of each well documented in the MoD which does not augur well for rectifying the issues that have plagued the submarine arm for much of the 48 years of its existence.

This is symptomatic of a much deeper malaise in the MoD; its decision-making abilities, its lack of even a fundamental knowledge of matters military and its commitment and accountability to the country's Armed Forces. The Navy too cannot absolve itself of its responsibility for this dismal state of affairs in its meek acquiescence to the MoD bureaucracy which has emasculated the Armed Forces of all decision-making powers.

In September 2014, the Prime Minister launched the 'Make in India' initiative with Defence as one of the core areas. In fact it gladdened the hearts of many submariners to see a submarine being depicted to reflect this commitment. The MoD in its haste to jump on to this bandwagon, promptly revised the earlier DAC decision regarding the P75(I) to procure two submarines outright from the selected foreign OEM and build the remaining four in India and approved the building of all six submarines in India itself in collaboration with the selected foreign OEM. In this writer's opinion, this is an inherently flawed decision which has pandered to a short-term gain which will be detrimental to the construction programme in the long-term for two reasons:

- Two submarines from abroad and four built in India would have given the time and opportunity for the elected Indian shipyard to
  - Develop its infrastructure while the first two were being built abroad
  - Simultaneously train its personnel in association with the foreign OEM
  - Participate in the building of the submarines abroad gaining valuable experience and better understand the complexities and nuances of submarine construction
  - Learn valuable aspects of submarine design
  - A smoother transfer of manufacturing ToT
  - Understanding of the global best practices in submarine construction
  - Offer a more cost-effective solution with the experience gained
- All six submarines being built in India will deprive the Indian shipyard of all the benefits listed above besides leading to a longer delivery schedule, higher cost and consequentially a further depletion in the Navy's frontline combat capability at a critical juncture in the nation's foreign policy initiatives in a region fraught with instability and uncertainty and increasingly belligerent neighbours.

Two examples which merit mention are the two conventional submarine programmes run within the country. In the Type 209 programme, two submarines were purchased outright and two were built in India. The entire programme was completed within eight years with four submarines, two of them indigenously built in active service. More than a decade later, the P75 programme in which all six submarines are being built in India, it is ten years and the first submarine is still at least one year away from commissioning. Notwithstanding this stark difference between the two models, the present Government has opted for the latter option despite both options being available – another case of political expediency at the cost of combat capability and national security.

It is unlikely that the IN will have its own SSNs in the next 15 years or so

Obscure Intent And Purpose

To address this inevitable delay and the alarming state of the Navy's submarine arm, the Government has decided to modernise four of the current nine Kilo class submarines and two of the four Type 209 submarines. In the case of the former, it is understood that the first of the four will be refitted and modernised at a shipyard in Russia while the other three will be refitted in India by a selected shipyard with assistance from the Russians whereas both the Type 209s will be refitted in India itself.

An Indian shipyard is yet to be finalised for the refit of the three Kilo class submarines but reports in the media indicate that the Pipavav shipyard in Gujarat is the front-runner. This has gained further credence with the impending takeover of Pipavav Defence and Offshore Engineering Company Ltd, of which the Pipavav Shipayard is the Flagship Company by the Anil Ambani led Reliance ADAG conglomerate after the company was forced into corporate debt restructuring under the stewardship of its promoter Nikhil Gandhi. Senior retired submariners have already been taken on board to steer the fortunes of the company's submarine building aspirations. Pipavav Shipyard presently neither has the specialised infrastructure nor the qualified manpower to undertake even a basic submarine refit – a modernisation is far more complex. Hindustan Shipyard, the MoD shipyard in Visakhapatnam took over eight years to refit *INS Sindhukirti* and that too with Russian help – leading to huge cost overruns. It is indeed ironical that HSL, which gained some expertise in the process, painful though it was, is not under consideration for the refit of the three Kilo class submarines in India which will be allotted to a shipyard that will have to begin the process from scratch. While the Russians as a result will laugh all the way to the bank, the submarine arm will face the brunt of time and cost overruns.

30-Year Plan

In 1999, the Cabinet Committee on Security had approved a well-thought-out realistic plan for developing indigenous submarine capability while ensuring the Navy's requirement for a force level of 20-odd contemporary conventional submarines

by 2030 and two production lines undertaking series production to meet the IN's requirements thereafter. At the end of the half-way period of the plan (December 2015), the current status is that not even one of these 24 submarines is yet commissioned, a second production line is still many years away from realisation (the Request for Proposals for the P75(I) programme is still awaited) and the Navy is having to resort to modernising an old fleet, most of which is past its best-before date. Even an optimistic back-of-the-envelope assessment paints a grim picture for the next 15 years – by 2030 the Navy will have at best 13 or 14 conventional submarines, of which about 40 per cent would be in their fourth decade of service. Various options exist which find periodic mention in the media to address this impending crisis. These include purchase of two additional Kilo class submarines or exercising the option clause of the Defence Procurement Procedure and building a few more Scorpene class submarines. However while these options can address the short-term requirement, it should not compromise our aspiration to self-reliance and indigenisation in submarine manufacture.

Nuclear Hunter-killers

The rapidly evolving maritime security dynamic in the Indo-Pacific has led to an approval for six conventional submarines and six nuclear powered attack submarines (SSNs) instead of the earlier 12 SSKs (conventional submarine-submarine killers)approved in the 30-year plan. This is a national imperative and essential for a Carrier Battle Group based blue water navy. The SSNs are the need of the hour and the decision to develop these indigenously is indeed laudable because this is a technology nobody is willing to part with and even if we are able to acquire some from a foreign source as in the case of *INS Chakra*, on a 10 year lease from Russia, it will come with strings attached and would be subject to various international technology control regimes. However SSNs are more complex platforms as compared to SSKs and designing these and building them thereafter will be a tremendous challenge for our shipyards which would require a high degree of preparation and expertise before embarking on this venture. It is therefore highly unlikely that the IN will have its own SSNs in the next 15 years or so.

The Indigenisation Challenge

The Indian Navy which prides itself and rightly so, on its thrust on indigenisation in its endeavour to become a builder navy (a pre-requisite to be a navy of any reckoning), categorises the indigenous effort under a 'Float' 'Move' and 'Fight' component. Presently, indigenisation under Float is at about 90 per cent with indigenous steel being used for fabrication of the hull which is being done in Indian shipyards. The 'Move' component is at about 60 per cent with a large number of system components and propulsion and power packages being produced indigenously. However it is the Fight component, the very *raison d'etre* of a warship that is a dismal 30 per cent we remain dependent on foreign sources for cutting edge technologies in weapons and sensors and this is what contributes to India's ignominious distinction of being the largest importer of military hardware in the world for the last five years. The blame for this lies entirely with the MoD bureaucracy which dithers and dawdles for years over decisions and has failed in so many years to provide a clear road map or shown any inclination towards being an enabler to expedite this process. A plethora of policy documents emanating from the MoD, each of which was a potential game changer have remained just that – documents which have failed in both letter and spirit.

In the case of submarines, this percentage is even lower as the platform itself is more complex and needs a higher degree of automation, resilience and redundancy. The Navy and MoD can use this delay in the submarine construction programme to advantage by focusing simultaneously on enhancing the indigenous content in the float, move, fight and in the case of submarines the 'dive' component as well. This would ensure that the indigenous design would be a truly 'Made in India' submarine.

Mindless Impediments

The Indian Navy has recently promulgated its Indigenisation Plan 2015-2030 which outlines the current state of indigenisation and the areas that need to be addressed over the next 15 years. Coupled with the MoD's earlier unclassified version of the Services 15-year plan called the 'Technology Perspective and Capability Roadmap' (TPCR) document this should have provided a clear time and technology specific way ahead for industry. However both these documents do not provide enough guidance for industry to make the necessary investments in developing various technologies or offer any assurance of productionising these in a well-defined time frame.

India is in the cusp of becoming a major maritime power

The first step in submarine construction is identifying the exact requirements and the roles and missions envisaged for the platform. This would determine the formulation of the Staff requirements which would then translate into an RfP based on a broad template of existing and envisaged future technologies. An *ab initio* attempt at indigenous submarine construction would need an experienced design capability. This is not available in India at present. Warship and submarine design in India is the preserve of the Navy's design organisation which has made impressive strides in surface ship in designing the Navy's surface fleet including the impressive Type 15A and 15B destroyers and the Project 17 and 17A stealth frigates. However none of the shipyards have a design bureau which can develop a design. This is an anomaly which needs to be corrected at the earliest if we have to become a shipbuilding nation of any reckoning. Even at present the design for the OPVs being built at Pipavav Shipyard and the forthcoming ASW shallow water craft the MVMV is being sourced from abroad. Submarine design posed an even greater challenge – resorting to a proven international design as we would be doing in the case of project 75(I) restrict the options for customisation due to integration issues. International submarine OEMs across the world have spent many years evolving into their present capability, be it the West or Russia. The next important step is to identify a shipyard or shipyards which possess the necessary capability or at the very least the potential and willing to make the necessary investment in time, money, resources and manpower against well-defined milestones. Last year the MoD constituted a Committee to assess the capability of Indian shipyards so as to be able to identify those capable of undertaking submarine construction. The report was to be submitted in eight weeks but over a year has passed and no decision has been arrived at as yet. The current shipbuilding landscape does not offer a very wide choice and the MoD was well aware of each shipyard's capabilities and potential before this committee was formed. It is this attitudinal roadblock within the MoD which is the actual impediment and not the limitations in the capability to undertake the task.

Accountability

Once the shipyard is finalised, the actual process begins of promulgating the RfP, creating the necessary infrastructure and manpower expertise, developing a multi-tiered vendor base, a robust quality control organisation within the shipyard, sound fiscal management to sustain delays and cost overruns and adequate resilience to overcome setbacks at various stages. Most important is the commitment to the fighting force and its combat compatibility which cannot be compromised. This has generally been the casualty in our entire defence procurement process where accountability of the decision-makers and the financial adviser is non-existent in the system.

Finalising the equipment fit, building the submarine and integrating these into a composite whole will determine the effectiveness of the unit as a fighting unit and could well be the difference between victory and defeat.

India is in the cusp of becoming a major maritime power – comprehensive maritime security architecture is intrinsic to this and indigenous capability forms a vital element to reduce import dependence and mitigate an important strategic vulnerability. The Indian Navy has an impressive record in surface ship indigenisation but has faltered in case of submarines leading to a current situation where the capability deficit in our undersea warfare capability is widening by the day. There is no magic wand to address this – only a focused time and purpose bound programme fully backed by the MoD can at best mitigate this to some extent over the next two decades or so. There is however a serious lack of purpose in defining these milestones for various reasons, some of which may have very little to do with the actual challenge of overcoming this inertia.

Part of this emanates from a lack of knowledge of the complexities of the submarine as a platform even among the uniformed fraternity. A submarine is much more than a ship which goes underwater and this needs to be understood when operating, maintaining or building these platforms. A submarine is a complex 'System of Systems' where individual systems driven by electronics, electrics, hydraulics, pneumatics, fuel coupled with adequate redundancy have to be integrated into a seamless whole and where no two systems are mutually exclusive of each other. DSA

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COUNTERING CHINESE ASSERTIVENESS IN THE INDO-PACIFIC

China should not be demonised but it should also not be allowed to trample Indian interests and presence in the region. India's Act East policy is already creating rumblings in the policy circles in China but India needs to engage more Chinese neighbours.

In strategic and diplomatic parlance words such as encirclement, engagement and enmeshment are regularly used to signify different phases and structures. Engagement is a sophisticated diplomatic tool and enmeshment is used to signify the regionalisation, interdependency and economic engagement of any country to abide by the set normative behaviour. Encirclement is more of a strategic term which has alarming connotations. In the context of China's increasing assertiveness where do these words figure in the strategic and diplomatic discourse? Chinese encirclement strategy has been discussed through the common phrases like 'String of Pearls' and 'China's Indian Ocean strategy' while in the Indian case 'diamond strategy' is an often used terminology. The two other words enmeshment and engagement have been used primarily to make the country understand the regional security and economic interdependency. However, in the current context, all these words have somehow been subsumed because of the Chinese assertiveness which has been trying to redefine geographies, influence regional dialogue mechanisms and rewrite acceptable forms of global as well as regional behaviour.

In this scenario where does India stand and what is its strategy is a matter of conjecture. Does India have any stakes in containing or cooperating with China? Whether might is always right, or regional security and stability obligations do have a say in regulating any nation's behaviour? China is seeking a new global order with its role clearly acknowledged and defined according to its narrative. India which is carefully calibrating its engagement with the Chinese periphery and at the same time has been interacting with major powers is seen as a benign power with increasing stakes in regional security. Indo-Pacific security architecture has increasingly been referred to as the panacea for the traditional security concerns as many regional security organisations such as ASEAN, ARF and even ADMM Plus have adopted non-traditional security issues as their core discussion area. The problem with regional mechanisms is the needed for consensus building leaving the contentious issues out of the discussion table.

Peacemaker Option

The constraints faced by regional organisations and increasing interdependence among the smaller countries which are umbilically attached to Chinese economy have reduced possible choices. Countries like US, India and Japan being the ASEAN Dialogue partners and important regional players having both strategic and economic stakes in the larger Indo-Pacific region are joining hands. The concept of a quadrilateral involving the three countries and Australia is being reconsidered while strategic partnerships between India and the three countries are getting more enhanced. India's Act East Policy reconfirms India's proactive policy not only in terms of engaging the region through its participation in the Regional Comprehensive Economic Partnership but also defence cooperation. The visit of the two sailing ships *INS Tarangini* and *INS Sudarsini* signifies the expeditionary and the regional peacemaker role that India envisages for itself.

A look at the strategic partnership between India and China's peripheral countries clearly underline India's active diplomacy. Indian PM's visit to strategic partner countries such as Japan, South Korea, Mongolia and five Central Asian republics (out of which three are strategic partners), clearly hint in this direction. Further, Prime Minister Modi's visit to Bhutan, Sri Lanka, Seychelles and Mauritius shows that Chinese influence needs to be met with more engagement with India's neighbours. The economic packages offered to Mongolia and greater trade and investment links stressed with Central Asian

Republics is one element of it. Within ASEAN, the action plan for 2016-2020 has been discussed and Defence cooperation among the ASEAN countries is mooted. India would like to stress on greater coast guard engagement followed by naval exercises and liaison visits. This is particularly visible in the case of Vietnam, Philippines, Singapore and Indonesia. India's Defence exports policy is reviewed and new norms have been discussed. In the past India has provided Defence equipment and weapons to those countries which are friendly countries at 'friendly prices'. The joint venture between Defence industries has been explored with Singapore, Malaysia and Indonesia while India has been providing necessary support in the field of communication and operational logistics to Vietnamese defence forces. The maintenance and training are the other two elements which India has been considering to increase its footprints in the region. The US and Japan have been collaborating with India in reducing Chinese influence in regions such as Central Asia, South Asia and Oceania. This clearly shows a concert of democratic forces evolving in the Indo-Pacific region.

India As Balancer

A large number of articles highlight India's proactive strategy undertaken during the launch of the Act East policy. The previous government had also taken initiatives to court the willing ASEAN nations which see India as a unique balancer and a proactive Asian power. The China counter strategy is primarily three pronged in close consultations with the dialogue partners and ASEAN nations. There are also other aspects of engagement such as cultural diplomacy, people-to-people contacts and capacity building through cooperative endeavours.

a) Strategic Partnerships-nuanced Approach

Among the countries in South and East Asia, India has adopted a strategy of strategic partnership which is a flexible approach to define its security and strategic priorities in such a way that it is not directed against any one country but is at the same time vague but with a purpose. India's strategic outlook has dictated its policy discourse while engaging the countries in its extended neighbourhood. Luis Blanco, an eminent scholar, has argued that despite being relatively informal institutionalised relationships, 'strategic partnerships' have caught a fancy of many nations such as China, Russia and India. Since the early 1990s, so called cooperative relationships have been rechristened and new formulations have been named as 'strategic partnerships'. However, the word strategic is as vague as the concept of strategic partnership. The word 'strategic' denotes an act which is aimed at reaching specific and vital goals while a strategic partnership is usually projected as a comprehensive cooperative relationship between signatories for achieving common goals.

The US has been the main player in the China containment strategy

Net Security Provider

'Strategic partnership' is the new terminology which has the potential to explain India's relationship with US while at the same time can justify India's relations with even Iran and China. However, the level and intent of engagement might vary. Some strategic partnerships might only be addressing issues such as energy, culture and political understanding while others might address much larger engagement through Defence cooperation, strategic dialogue and multilateral forums. India has made itself clear about its maritime intentions that it wants to be the net security provider in the Indian Ocean region. Moreover, Trilateral Maritime Security Cooperation Agreement with Sri Lanka and Maldives with Seychelles and Mauritius as observers has every potential to be an expanded forum involving the two observers. Coastal security mechanism and cooperation in the Indian Ocean is foreseen. Further, India has not abandoned the IBSAMAR exercises, a less frequent maritime exercise involving India, South Africa and Brazil. On the eastern front Milan, the biennial meeting of navies has been seen as an international event projecting trans-regional and intra-regional cooperation among navies. This showcases the resolve to protect both its immediate and extended maritime domain. Both Singapore and Indonesia have been requesting India for frequent exercises among navies. CORPAT, the coordinated patrols that India conducts with Indonesian Navy is likely to become a more frequent affair.

India-Indonesia Maritime Exercises which were held in October 2015 are also likely to get approval in future as an annual affair.

The Indian discourse in various security forums such as Indian Ocean Naval Symposium (IONS) also reflect future utility of multilateral cooperative security forums and how India wants to utilise for promoting the security in the Indian Ocean in its periphery and near abroad. India's incremental subscription to Indo-Pacific construct shows the strategic outlook that India might adopt in the near and long-term. With more than 30 Strategic Partnerships already signed between India and various other countries and organisations, India's policy has adopted more incremental and sophisticated approach.

b) Concert of Powers: Cooperative Security

As discussed the strategic partnerships form the

Dr Pankaj Jha

The writer is Director (Research) with Indian Council of World Affairs (ICWA). He also worked as Deputy Director with National Security Council Secretariat, Prime Minister's Office. He worked as Research Fellow with ICWA for two years and was Associate Fellow at Institute for Defence Studies and Analyses (IDSA) for six years (2005-2011). He has done his PhD from the Centre of Southeast Asia and Southwest Pacific Studies (now known as Indo-Pacific Studies), School of International Studies, JNU and is an Economics-Major from Delhi University.

bedrock of engagement but both at the bilateral level India's strategic engagement with the four powers Japan, Australia, US and South Korea has been at strategic plus level. With Japan, India has been seeking to import their *US-2* Maritime aircraft while with South Korea India is seeking to build warships and destroyers. With Australia there have already been talks related to Defence technology forum and also development of radar systems. The US has been the main player in the China containment strategy. The US has also elevated the strategic partnership with India to the strategic plus level. India has already been using US heavy lift aircraft and has been conducting maritime sorties using US built aircraft such as Boeing *P-8I Poseidon*. India's Defence expenditure has also been increasing and India has incrementally subscribed to the Indo-Pacific construct also. The Quadrilateral Initiative has been explored at the Track 1.5 level. These formations and regular interactions at the highest official level hint at the multiple-pronged strategy. India has been incrementally engaging major powers at multilateral/bilateral levels while at the same time opening up its markets through regional economic organisations to integrate better with countries in East and Southeast Asia.

c) Strengthening Maritime Security Mechanisms

The maritime security now needs two basic ingredients given the fact that new concepts such as Blue economy are gaining momentum which would mean that maritime security would not only encapsulate the security of the energy and merchandise trade but also protection of sea resources from unauthorised exploration and scavengers. Therefore, the small island nations need to be empowered and the capability planning should be done in a sustained manner. This includes civilian drones, nano satellites and coastal monitoring radar stations. There is also a need to explore the possibility of triad or may be called as Trilateral Maritime Security Initiative (TMSI) so that first aid in maritime security can be created. The triad country formations need to conduct table top exercises annually and sea exercises every two years, to ensure that common SOPs and interoperability are maintained and improved. India has worked on a trilateral Maritime Security arrangement with Maldives and Sri Lanka, with Seychelles and Mauritius as observers. Such formations could be further explored in the three theatres of Persian Gulf, Indian Ocean and South China Sea. However, littorals need to be involved in the process in coordination with major power formations.

Right To Innocent Passage

It has been expressed that the South China Sea territorial dispute might threaten the United Nations Convention on the Law of the Sea (UNCLOS). The dispute involves six claimant countries/economies: China, Vietnam, the Philippines, Malaysia, Brunei and Taiwan. Indonesia is involved only in the maritime dispute because of the spillover of the Chinese claimed EEZ. Interestingly, all the claimant states are parties to UNCLOS. The reclamation of islands by China was in a way spurred by the similar moves by a number of other claimant states in their respective islands under their control. However, the tensions building-up between regional players as well as other nations need to be carefully monitored. The freedom of navigation and the innocent passage need to be forcefully communicated. The reclamation activity would spur such reclamation in other areas across the world and given the Chinese capability to do it within a short period of time, it would not be surprising that many other island nations threatened by sea level rise because of global warming might seek the services of China.

Secondly, in case the UN Arbitration Panel awards the case in favour of the Philippines then what should be the role of the regional players in enforcing the ruling? Earlier, also with regard to Malaysia and Singapore the two countries have accepted the judgement and even India has accepted the ruling which was in favour of Bangladesh. The countries in the periphery of the South China Sea would have to make extra efforts to bring peace and stability to the region. Article 192 of UNCLOS mandates, 'States have the obligation to protect and preserve the marine environment'. India having resolved its maritime dispute with Bangladesh has already taken the moral high ground of accepting international arbitration. The solution lies in the trilateral cooperative structures both within ADMM Plus and also among the dialogue partners. Trilateral cooperation for resource exploitation was discussed few years back between China, Philippines and Vietnam. Further, the institutional formations should work on a comprehensive incremental strategy. Thirdly any announcement of Air Defence Identification Zone and other related security formations would jeopardise the navigational safety and security of the cargo. India has tried to work out a way through continuously stressing for the dialogue mechanism under ASEAN structures while at the same time building capacities of countries such as Vietnam and Philippines. US, Japan and India have been working in tandem on this contentious issue.

Reining In China

India has adopted a much calibrated policy towards China's neighbours and which has served its national interest well but it needs better articulation and adaptation as per the international and regional dynamics. China should not be demonised but it should also not be allowed to trample Indian interests and presence in the region. India's Act East policy is already creating rumblings in the policy circles in China but India needs to engage more Chinese neighbours such as Laos, Mongolia and Central Asian Republics. India's military is well trained and can offer a lot in terms of training to these peripheral countries while India's market is the most lucrative destination. The option is to create and support manufacturing bases which can give a competition to China's economic might while at the same time making footprints in those regions where China is still to mark its presence or the Chinese investments are not finding congenial environment. DSA

AMPHIBIOUS AIRCRAFT

MILITARY AND CIVIL APPLICATIONS

While the amphibious aircraft is a force multiplier for maritime forces the time has come when India needs to carry out a serious study towards the relevance of 'flying boats' in easing the ever increasing demand of air traffic in the near future.

Commodore Sujeet Samaddar NM (Retd)

The writer retired as the Principal Director Naval Plans. He served NOVA Integrated Systems – a TATA Enterprise as Vice President (Operations) until Oct 2011. He is presently Director and CEO, ShinMaywa Industries India Limited.

In what could have been another attempt to unleash havoc on Indian shores on similar lines as the 26/11 terror strikes, fortunately the Indian Coast Guard intercepted a suspicious Pakistani fishing boat, laden with explosives, in the Arabian Sea in the early hours of January 1, 2015. Detected almost 24 hours earlier by a Coast Guard *Dornier* aircraft it took a patrol vessel, operating in the vicinity, to intercept the boat after almost 14-16 hours. Despite warning shots the boat did not surrender and apparently blew itself up with its crew and with this the hard evidence of complicity of the terrorist outfit conducting this operation was also lost. An amphibious aircraft would have provided the capability of rapid and simultaneous surveillance and arrest leaving no time for scuttling or obtaining directions from 'handlers'. An arrest effected by an amphibious aircraft would have been a huge deterrent to any such future operations.

Long-range Evacuation

During the evacuation of Indians stranded in Yemen an expensive force of three warships which included guided missile destroyer and a frigate, two *C-17* aircraft of the Indian Air Force and two passenger ships were utilised. The *C-17* and the Air India flights operated from Djibouti whereas the ships ferried the evacuees from Sanaa. A total of about 4,000 Indians were evacuated over a period of about one month at some substantial cost and risk. With a transit time direct to the Yemen coast of about four hours, from Mumbai, amphibian aircraft would have achieved the evacuation in perhaps 100-120 sorties conducted over a period of five-seven days by landing directly at the Yemen coast waters. The cost savings and the operational flexibility that amphibian aircraft provide by way of access, airspace, sea landing capability and immigration control that it provides is apparent.

On August 14, 2013 *INS Sindhurakshak* was lost alongside the jetty to a fire on board. Whilst alongside several rescue systems are in place the Indian Navy would not have been able to organise a rescue effort had the incident occurred at sea. Only an amphibious aircraft could have been dispatched with divers,

welding sets and experts to save the submarine and more importantly, its crew. Earlier the world was witness to the tragedy of April 7, 1989, wherein, whilst a Russian *IL-38* and a Norwegian *P-3 Orion* <http://www.globalsecurity.org/military/world/russia/a-42.htm> circled overhead airdropping rescue gear, fortytwo submariners of a nuclear-powered submarine perished in the Norwegian Sea. Most importantly, the human tragedy of the loss of the highly trained and specialised submariners far exceeded the cost of the submarine. This is a lesson of history that India can learn from the experience of the Russian episode. This is a contingent capability that India must possess.

Of particular relevance to the Indian Navy and in fact all navies that operate long-range maritime patrol aircraft (LRMR) such as the *P8I* of the Indian Navy and AWACS aircraft of the IAF, or deck based *MiG 29K*, or shore based maritime interdiction aircraft such as the *MiG 29* or *Su-30* or the *Jaguar*, is in the choice of the most suitable amphibious aircraft that can conduct a near all-weather high speed rescue operation for the entire crew of a ditched aircraft. The aircraft is more easily replaceable than its highly trained aircrew. Similarly, the rescue of a crew of distressed ship or submarine is faster and surer with amphibious aircraft than using ships or even helicopters. Combat missions may also be undertaken by suitable amphibious aircraft. Rapid and precision induction and de-induction of troops along undefended coastlines for covert /diplomatic or force projection operations is one example. Such an asset builds a huge confidence in the crew that they have a very good chance of recovery even at sea – a capability that does not exist as of now.

Contingent Uses

Amphibious aircraft are also being used as airborne firefighters carrying several tons of sea water to douse fires ashore or on oil rigs. Amphibious aircraft can also support remote communities in distant islands or remote land frontiers which are in proximity of deep lakes and rivers with logistics and medical support.

Amphibious aircraft have, thus, multifarious applications for naval forces and as the technology is maturing these aircraft are under induction by several navies including China which would possibly put a 60 ton amphibious aircraft in the IOR waters by next year.

Amphibious aircraft are capable of a variety of missions

Amphibious aircraft combine the capabilities of rapid surveillance and prompt response, whether for relief or arrest, in a single platform. Such a capability is not available on any other platform. The modern amphibious aircraft is thus a veritable force multiplier since they fulfill a multitude of missions in a single platform. Unlike helicopters and aircraft, amphibious aircraft can land at the location and enforce both the will and the law of the country and thus are a platform of choice for benign and constabulary missions of navies. Unlike ships, amphibious aircraft can reach the location far faster than ships and can prevent destruction or dumping of contraband and evidence.

Amphibious aircraft are today capable of a variety of missions other than search and rescue. Under Article 98 of the United Nations Convention on the Law of the Seas (UNCLOS) 'Every coastal State shall promote the establishment, operation and maintenance of an adequate and effective search and rescue service regarding safety on and over the sea and, where circumstances so require, by way of mutual regional arrangements cooperate with neighbouring States for this purpose'. Amphibious aircraft fit this purpose completely.

As regards piracy, one of the more pressing international problems facing the seafaring community today, as per the UNCLOS military aircraft are 'entitled to seize (Article 107)', enjoy 'right of visit (Article 110)' and the 'right of hot pursuit

(Article 111)'. Amphibious aircraft can thus be very useful in conducting anti-piracy missions and efficient, effective and economic constabulary operations for safe and secure seas. Once the deterrence value of amphibious aircraft is clearly established by conducting a few successful operations that bring culprits to book, seas will become far more safe and secure in the future and at lesser operating cost.

Multifarious Roles

These aircraft can now therefore be tasked for multifarious naval missions such as:

- Surveillance, reconnaissance, intelligence gathering and on-spot investigation in the EEZ and on high sea.
- Long-range Naval logistic and maintenance support through ferrying of specialised dockyard personnel and spares to a fleet during overseas deployment.
- Long-range and Rapid Visit, Board, Search and Seizure (VBSS) operations.
- Mainland to distant island and inter-island logistic support without need of a runway.
- Long-range Fleet Support including crew rotation on high seas.
- Oceanic Search and Rescue (SAR) and casualty evacuation (CASEVAC) from ships, submarines and oilrigs.
- Monitoring, servicing and protection of offshore assets.
- Controlling of derelicts and abandoned vessels.
- Humanitarian assistance and disaster relief operations in the Indian Ocean Region.
- Countering small arms, shoulder launched weapons and drugs trafficking and terrorism at sea.
- Countering illegal human migration.
- Prevention of poaching and illegal fishing.
- Prevention of toxic cargo dumping at sea and pollution control.
- Anti-piracy missions.
- Anti-terrorism.
- Support for deep sea mining activities, offshore cable laying and hydrocarbon prospecting.
- Recovery of ditched aircrew at sea of long-range aircraft of the Indian Air Force and Indian Navy such as the *Su-30*, AWACS, *MiG 29* and the soon to be inducted *Rafale*.
- Direct and rapid access to the Indian outpost 'Bharati' in Antarctica.

Whilst ships, submarines and aircraft are all qualified in some way or the other for fulfilling the above missions each of these platforms are also limited by some capability gap or the other. Modern amphibious aircraft make possible a range of options not achievable by any one type of platform. It's unique multi-modal design permits airborne, seaborne and land operations in a single platform and thus is a highly effective force multiplier for the Indian Navy.

Strategically, India must bear in mind that China is also in the process of designing and manufacture of the *Jialong AG 600* amphibian aircraft. This aircraft is potentially the largest amphibian aircraft in the world. Media reports suggest that final assembly of the aircraft would be completed by end 2015 and the aircraft first flight is tentatively scheduled in mid-2016. The aircraft is expected to be used to service the many artificial islands being built by China in the South China Sea and to increase China's presence in the Indian Ocean Region. The aircraft is also aimed at tapping the potential global commercial amphibian market.

Commercial Carriers

In addition to the requirements of the Indian Armed Forces and various military users of amphibious aircraft, it is also worth considering application of such a platform in the commercial sector. As per latest reports of IATA and other aviation professional agencies, annual air traffic growth rate of 10.5 per cent and higher has been almost constant over the last decade and is expected to be even higher in the coming years. Consequently, the capacity overload of current airports and the demand for point-to-point connections need serious consideration. The Draft Civil Aviation Policy, 2015 of Government of India has listed several initiatives and policy directions for the growth of the commercial aviation sector in India. The aim of the Government of India is to provide an ecosystem and a level playing field to various aviation sub-sectors, ie airlines, airports, cargo, maintenance repairs and overhaul services, general aviation, aerospace manufacturing, skill development etc. The Government has also proposed to take flying to the masses by making it affordable. The growth in aviation will create a larger multiplier effect in terms of investments, tourism and employment generation, especially for unskilled and semi-skilled workers.

The vast coastline and several exotic islands in the Lakhshadweep and Andaman Seas that India boasts of, the stage is set to create a positively buoyant market for seaplanes/amphibians as a mode of civil air transportation in the future. With the anticipated growth in the civil air traffic and passengers, soon the land based airports would be bursting at the seams to accommodate increased traffic of both passengers and freight. Moreover, new airports would require 'real estate' with attendant land acquisition issues and incur substantial capital expenditure towards the associated infrastructure development. Induction of amphibious aircraft in the commercial segment would not only decongest the existing airports loads but would also allow the use of sea ports as an alternate operating area for civil aviation. Various market segments for potential use of amphibian aircraft in the civil application are:

Amphibious aircraft can reach the location far faster than ships and can prevent destruction or dumping of contraband and evidence

- Leisure and tourism/semi-commercial segment which is presently the largest segment for the seaplane/amphibian aircraft.
- While the traditional commuter traffic offers scheduled flights from smaller airports to the hubs or point-to-point connections between smaller airports, the amphibian aircraft could provide three alternative variants in the local passenger transportation segment:
- Flight from the nearest major land airport to the seaport or return
- Flight between two water landing fields
- Flight between a land airport and sea port located at a far distance (flight between selected large airports and island tourist resorts)
- Special markets for cargo movement and firefighting capability could use amphibian capability very effectively.

Great Potential

With such a capability already on the verge of induction into the Indian Armed Forces, in the near future, it would be worth a measured guess that the necessary infrastructure, operating philosophy and maintenance infrastructure including maintenance, repair and overhaul (MRO) technology of such aircraft would also be created in India. In addition, Government of India is already in the process of developing India's own Regional Transport Aircraft (RTA) under the aegis of NAL and HAL. It would be worthwhile therefore to carry out a cost benefit analysis and explore the feasibility of an indigenously designed amphibian aircraft as the Indian regional transport aircraft for meeting both domestic and export demand. This may make good business sense since the RTA market is already overcrowded with the lead players such as Bombardier, Embraer, ATR and more recently the Chinese and Russian entry level aircraft for this segment with multifarious product profiles.

These considerations certainly open up the possibility of a potential business opportunity with new technology and innovative applications that can find a sufficiently vibrant potential customer base. It may therefore be a viable option for the government to consider a technical collaboration /partnership with an established amphibious aircraft manufacturer to develop the RTA as an amphibious platform for commercial applications which is a niche market with very limited players in both the domestic and global market and thus may offer substantial opportunity for India to be an exporter of amphibious aircraft.

In addition to the obvious benefits of low infrastructure requirements, point-to-point connectivity and decongesting of present airports, with adequate numbers, commonality of platform and maintenance infrastructure even the operating cost of such a platform could be reduced to a great extent for both military and civil operators. It must be understood that there are a lot of island territories in Indian subcontinent with poor/negligible accessibility. Accessibility can be improved drastically by introduction of amphibian air traffic. Such operations that would connect distant islands with the mainland will have several downstream benefits of developing these areas and relocating populations, enhancing tourism revenues and creating a modern technology aerospace industry in India.

Island Connectivity

The market demand is promising if amphibian aircraft/seaplanes could provide competitive flights to non or difficult to access island areas or coastal locations or to industrial/business areas by saving valuable time compared to other available means of transportation. For many 'passengers' amphibious /seaplane operations may offer that 'unique' or 'special' type of journey and also provide aeronautical culture opportunity to people who do not live close to the established airports. Last but not the least, amphibious aircraft/seaplanes may provide a sense of freedom for passengers to move outside the artificial world of airports, controlled airspace and aeronautical bureaucracy.

In conclusion, while the amphibious aircraft is a force multiplier for maritime forces the time has come when India needs to carry out a serious study towards the relevance of 'flying boats' in easing the ever increasing demand of air traffic in the near future. The opportunities are many but options are limited. Civil operations of a credible amphibian platform designed to suit Indian market could surely be one solution. Of course key operational parameters such as Very Short Take Off and Landing ability, high sea state operations, good payload, long range and high speed flight is a necessity for successful operations. DSA

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Nuclear Power Installations AND COASTAL SECURITY

A vital aspect of strengthening coastal security of this large nation is through the creation of awareness regarding the role of nuclear power in alleviating India's power requirement deficits as well as safeguarding such installations from disruption.

There has been a visible increase, of late, in the number of civil nuclear power installations being commissioned or either proposed to be built along the coastal regions of India. Simultaneously, one can also notice a visible increase in coastal vigilance and the attention paid to coastal security. In short, both civilian nuclear power installations and coastal security have attained significant attention in view of the emphasis given to achieve energy security on the one hand and the corresponding need to also guard India's long coastline of about 7,500 km or so on the other.

Economic Dimensions

Attaining energy security has been felt necessary and vital to fulfill the rising demand for energy owing to the increase in domestic consumption, which has more than doubled of late. In fact, it has now been widely recognised that the sustainability of India's economic development very much depends on securing the energy which is crucial for its economic growth and alleviation of poverty. As a blessing, the vast coastline of India has rendered immense contribution by way of providing several economic activities including creation of special economic zones (SEZ) such as Kandla SEZ and Madras Export Processing Zones etc, establishment of naval bases as in Visakhapatnam, Mumbai and Kochi and satellite and missile launching centres such as Satish Dhawan Space Centre at Sriharikota besides nuclear power installations. However, as will be shown later, it has not been without challenges.

The development of nuclear power generation for civilian purposes in the post-World War II era has greatly augmented the capacity of producing energy in a safe manner. In the case of India too, focus is given to the development of civilian nuclear power generation as can be seen from the emphasis made by Prime Minister Narendra Modi to triple nuclear power from the current 5,780 MW production. Accordingly, along the entire coastal regions alone there are nine nuclear power stations either currently under operation or have been approved for construction. Along the eastern coast for example there are four nuclear power stations – Haripur in West Bengal, Kovvada in Andhra Pradesh, the Madras Atomic Power Plant (MAPS) at Kalpakkam, Tamil Nadu and the Kudankulam Nuclear Power

Project (KKNPP) at Kudankulam, Tamil Nadu while in the west coast there are five – Kaiga Generating Station (KGS) Karnataka, the Jaitapur Nuclear Power Project (JNPP) at Maharashtra, the Tarapur Atomic Power Station (TAPS) at Maharashtra, the Kakrapur Atomic Power Station (KAPS), Gujarat and the Mithivirdi Nuclear Power Plant (MNPP) at Gujarat. According to the Nuclear Power Corporation of India (NPCIL), currently the total energy generated out of nuclear power plants including those located in the coastal regions is 5,780 MW. The table on page 60 of this edition of ***DSA*** provides details of nuclear power installations in coastal regions/zones in the country.

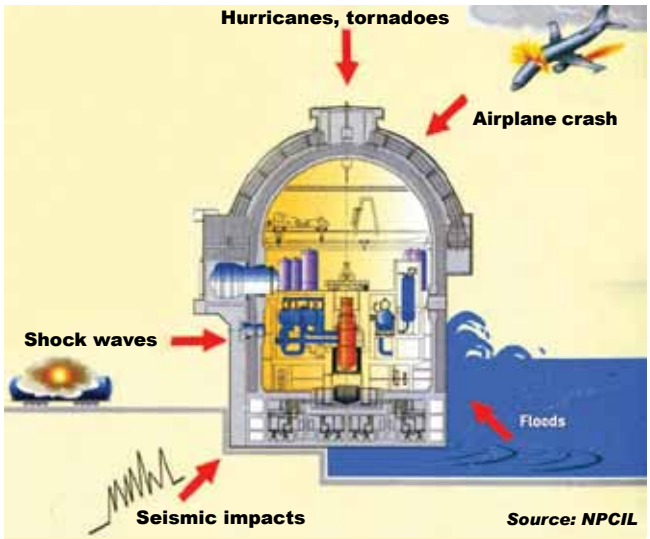
Nuclear Energy And Coastal Security

The contribution of these many nuclear power plants to India's energy security is not without challenges. As these plants are located along coastal regions it is pertinent to see if they are secure particularly from external threats and other vulnerabilities. As far as safety is concerned, the three major accidents that have occurred so far in the history of civil-nuclear

power generation viz Three Mile Island in 1979, the Chernobyl disaster of 1986 and the latest one at Fukushima in 2011 have been an eye opener for enhanced safety measures. Nonetheless, such accidents particularly the Fukushima incident generated greater awareness and differing perceptions and opinions on the safety of nuclear power plants in India as could be seen from the prolonged agitations and protests over the commissioning of Kudankulam nuclear power plant at Tirunelveli in Tamil Nadu.

Elsewhere too, as in Kaiga in Karnataka and Haripur in West Bengal, similar such oppositions have occurred. In fact, minor incidents have been noted in some of the nuclear power plants as in the case of flooding in Kalpakkam following the tsunami and the fire in Kakrapar station in Gujarat way back in 1991 both of which were contained and did not result in disaster. Notwithstanding, the government of India has proceeded with the approval and commissioning of some of them after adequate precautions were taken to study the safety features by experts and appropriate technological improvements were put in place. For example in the case of Kudankulam, which has drawn a good lot of international attention owing to prolonged protests and agitation, measures have been taken to ensure safety of the plant from natural disasters and calamities and to contain radioactive materials from leaking outside (see below).

Safety Features Of Kudankulam Nuclear Reactor



Source: TS Subramaniam, We can allay the fears, *Frontline* Vol 28, Issue 24, Nov 19-Dec 02, 2011.
http://www.frontline.in/static/html/fl2824/stories/20111202282403300.htm

As could be seen from the above picture, it is clear that adequate precautions have been taken to withstand all aspects of disasters – natural in terms of earthquake, tsunami, cyclone etc and man-made in terms of power failure, missile attack, aircraft falling – from causing an accident. Besides, safety upgrades based on regular safety reviews such as seismic safety and ageing management as well as adopting new designs is part of the several regulatory mechanisms adopted in a stringent manner at par with international standards to ensure safety. In fact, the former President Abdul Kalam is said to have noted that the Kudankulam plant possesses 'state-of-the-art safety features'.

From the above it can be ascertained that nuclear power plants themselves do not in any way contribute to insecurity to the coastal regions. What should be understood, however, is the extent to which coastal regions are secure from external attacks given the new kinds of threats that have emanated of late. It is in this sense that coastal security has assumed renewed vigour and an important ingredient of India's national security strategy as a whole.

Threat Matrix

Of the several kinds of conventional threats that one can anticipate from across the sea such as piracy, illegal immigration, influx of refugees and drug trafficking, it is maritime terrorism that has attained significant attention of late. Seaborne attack could not be ruled out from such terrorists on strategic targets along the coastal regions including that of nuclear power plants. The vast size of the Indian coast provides ample scope for threats notably from physically proximate actors such as Pakistan and China both of whom are antagonistic to India. In fact, the 26/11 terrorist attack on Mumbai by Pakistan based terrorists adds testimony to the possibility of future such attacks on such strategic locations. The operation was launched through the sea route as was the case in the serial bomb blast in Mumbai way back in 1993 during which arms and explosives were smuggled through the Mumbai and Gujarat coast.

These attacks are a vivid recapitulation of the lacunae in Indian coastal security and the consequent need to revamp the same. Even if such attacks do not actually destabilise the nuclear power reactors themselves, yet, the sheer possibility itself would create fear among the local populace and provide scope for dissidents (old and new) to launch further agitations against existing and any future plans for launching nuclear power plants.

Besides, the Indian Ocean Region (IOR) has become increasingly militarised with China taking a new role to the extent of establishing naval ports as near as in India's southern neighbour Sri Lanka as part of its 'String of Pearl's Strategy'. These have given a renewed anxiety to the security of Indian coasts particularly that of nuclear power establishments, which come well within the ambit of attacks.

M Venkataraman

The writer is Assistant Professor at the Department of Defence and Strategic Studies, University of Madras, Chennai, Tamil Nadu.

SUK Jamadhagni

The co-writer is Associate Professor at the Department of Defence and Strategic Studies, University of Madras, Chennai, Tamil Nadu.

Nuclear Power Installations In Coastal Regions Of India

SN	Name of Station	Location	Capacity	Current Status
1.	Haripur	Contai, East Medinipur District, West Bengal	6x1000 MW	Proposed and approved by the Govt of India
2.	Kovvada	Srikakulam District, Andhra Pradesh	6x1000 MW	Proposed and approved by the Govt of India
3.	Kalpakkam, Madras Atomic Power Plant (MAPS)	Kalpakkam, Tamil Nadu	2x220 MW	Under operation
4.	Kudankulam (KKNPP)	Tirunelveli, Tamil Nadu	1x1000 MW 1x1000 MW (Under commissioning) 4x1000 MW (proposed)	Under operation
5.	Kaiga Generating Station (KGS)	Uttar Kannada District, Karnataka	4x220 MW 2x700 MW (proposed)	Under operation
6.	Jaitapur Nuclear Power Project (JNPP)	Maharashtra	6x1650 MW	Proposed and approved by the Govt of India
7.	Tarapur Atomic Power Station (TAPS)	Trombay, Maharashtra	2x160 MW 2x540 MW	Under operation
8.	The Kakrapar Atomic Power Station (KAPS)	Gujarat	2x220 MW 2x700 (under construction)	Under operation
9.	Mithivirdi Nuclear Power Plant (MNPP)	Gujarat	6x1000 MW	Proposed and approved by the Govt of India

Source: Compiled from Energy Statistics 2015, Central Statistics Office, Ministry of Statistics and Programme Implementation, Government of India, p. viii.

Multi-layered Approach

The realisation, hence, to secure the Indian coast led to a multipronged strategy to guard the coastal frontiers as defined by international regimes – United Nations Convention on the Law of Sea (UNCLOS) – that provided the concept of Exclusive Economic Zone (EEZ) besides the territorial waters of 12 nautical miles and the continental shelf. The Indian Coast Guard (ICG), created in the aftermath of the UNCLOS and the consequent expansion of coastal realm, today has taken a lead role in providing security to the expanded sea that is within the sovereign control of India (see below).

Jurisdiction of Indian coastal security forces from the coastline

Source: http://www.slideshare.net/nthangasenthil/coastal-prs-course-material

The challenge borne out of the vastness in area of Indian coast coupled with the failure to adequately man the coastal regions as evidenced by the operation Swan and Tasha in the 1990s resulted in strengthening coastal security by way of adopting a multi-layered approach according to which the Indian Navy was to patrol the outer layer while the Coast Guard to patrol the territorial waters and contiguous zone and the Marine Police Force (MPF) along with customs police including local fishermen were all roped in to check the territorial waters. Besides, several coastal special police stations were also created to augment the role of MPF and ICG whose task was to check the coastal areas. Also several coastal radar chains have been set up along the coasts to screen through hostile activities.

Significant defence and industrial establishments are located along the coast

Way Forward

India is a country with a vast coastline with nearly a quarter of its population (about 250 million) living within 50 km of the coast. These people populate some 130 cities and towns that dot the coast. The important cities include some of India's most densely populated metropolises and economic nerve centres like Mumbai, Kolkata, Chennai, Goa, Surat and Thiruvananthapuram. Significantly much of these settlements are situated in low lying areas that are most vulnerable to natural disasters and also subject to periodic flooding.

Also, many of the significant defence and industrial establishments are located along the coast. A vital aspect of strengthening coastal security of this large nation is through the creation of awareness among the civil population regarding the role of nuclear power in alleviating India's power requirement deficits as well as safeguarding such installations from disruption. Other than the government's efforts in ensuring the protection of these establishments, it is only the involvement of the other stakeholders like the general population of the areas, fisher folk, non-governmental organisations that address issues relating to the coasts, think tanks and educational institutions interested in the coastal region.

Dispelling notions of fears about nuclear safety, unambiguous declarations of safety measures in place to deal with radioactive wastes, precautions against possible future nuclear accidents and the enormous dividends of opting for nuclear-based energy alternatives including risks involved if any must be top priority for the government in addressing the dual issues of energy security and coastal security in our country. DSA

CHINA'S GROWING FOOTPRINT IN THE INDIAN OCEAN

All the steps that China is taking to protect and enhance its interests in the Indian Ocean region are generating apprehensions in Indian strategic circles about her real intentions, thereby engendering a classic security dilemma between the two Asian giants.

The Chinese People's Liberation Army will be getting rid of 300,000 soldiers from its ranks in a bid to shed deadweight, reduce overhead and use the savings to buy more high-tech ships, planes and make its army leaner and more professional. But even with these cuts the Chinese military – which currently has more than two million troops – will remain the largest in the world. While the army might be getting downsized, China's ambitions in the region are expanding and the move is largely about jettisoning the burdensome Soviet-era command structure and making the overall force more agile.

Chinese President Xi Jinping announced the cuts in a public address after a military parade marking the 70th anniversary of the country's victory over Japan in World War II. Marking the 70th anniversary of the end of World War II, the parade was a chance for Xi to stir his country's nationalist feelings and also to assert his own authority by announcing plans to restructure China's bloated military.

Chinese Expansionism

For the international audience and in particular for the region, the message of the Chinese leadership was also clear: Chinese ambitions are expanding and it now has the wherewithal to protect and enhance those interests be they in the Taiwan Strait, the East China Sea, the South China Sea or the larger Indo-Pacific. There remain still many unanswered questions about the future trajectory of the new Chinese reform programme, including what it means for the top-heavy leadership structure and what role the reserves and the country's civilian militias will play in national defence and projecting Chinese power abroad. But what remains certain is that the Chinese military of the near-future will be very different from the Chinese military of the recent past. And this will predictably cause consternation in the region and beyond. Already regional powers are responding to the rise of China in several ways.

The Chinese Navy is aiming at a gradual extension of the strategic depth for offshore defensive operations and enhancing its capabilities in integrated maritime operations and nuclear counter-attacks. Chinese President, Xi Jinping, has emerged as a strong supporter of the Chinese naval power, suggesting that the oceans would play an increasingly important role in China's economic development. China's Navy is now considered the third-largest in the world behind only the US and Russia and superior to the Indian Navy in both qualitative and quantitative terms. The Peoples' Liberation Army (PLA) Navy has traditionally been a coastal force and China has had a continental outlook to security. But with a rise in its economic might since the 1980s, Chinese interests have expanded and have acquired a maritime orientation with intent to project power into the Indian Ocean. China's increasingly sophisticated submarine fleet could eventually be one of the world's largest and with a rapid accretion in its capabilities, including submarines, ballistic missiles and GPS-blocking technology, some are suggesting that China will increasingly have the capacity to challenge America. In 2012, China commissioned its first aircraft carrier, *Liaoning*, a refurbished vessel purchased from Ukraine in 1998, underscoring a shift away from devoting the bulk of PLA's modernisation drive to the goal of capturing Taiwan.

Indian Ocean Hegemony

With a rise in China's economic and political prowess, there has also been a commensurate growth in its profile in the Indian Ocean region. Chinese interests in the region are also expanding and it would like to see a stable Indian Ocean region with its own presence more significant than before. China is acquiring naval facilities along the crucial choke points in the Indian Ocean not only to serve its economic interests but also to enhance its strategic presence in the region. China realizes that its maritime strength will give it the strategic leverage that it needs to emerge as the regional hegemon and a potential super power and there is enough evidence to suggest that China is comprehensively building up its maritime power in all dimensions. It is China's growing dependence on maritime space and resources that is reflected in the Chinese aspiration to expand its influence and to ultimately dominate the strategic environment of the Indian Ocean region. China's growing reliance on facilities across the Indian Ocean region is a response to its perceived vulnerability, given the logistical constraints that it faces due to the distance of the Indian Ocean waters from its own area of operation. The Chinese military has underscored that India should stop regarding the Indian Ocean as its backyard although it has an important role to play in ensuring peace and stability in the Indian Ocean region.

Complementary Facilities

China has deployed its Jin class submarines at a submarine base near Sanya in the southern tip of Hainan Island in South China Sea, raising alarm in India as the base is merely 1,200 nautical miles from the Malacca Strait and will be its closest access point to the Indian Ocean. The base also has an underground facility that can hide the movement of submarines, making them difficult to detect. The concentration of strategic naval forces at Sanya will further propel China towards a consolidation of its control over the surrounding Indian Ocean region. The presence of access tunnels on the mouth of the deep water base is particularly troubling for India as it will have strategic implications in the Indian Ocean region, allowing China to interdict shipping at the three crucial choke points in the Indian Ocean. As the ability of China's Navy to project power in the Indian Ocean region grows, India is likely to feel even more vulnerable despite enjoying distinct geographical advantages in the region. China's growing naval presence in and around the Indian Ocean region is troubling for India as it restricts India's freedom to manoeuvre in the region. Of particular note is what has been termed as China's 'string of pearls' strategy that has significantly expanded China's strategic depth in India's backyard. China is building strategic relationships and setting up bases along the sea lanes from the Middle East to South China Sea not simply to protect China's growing energy interests but also to enhance its broader strategic objectives.

Power Projection

China's diplomatic and military efforts in the Indian Ocean seem to exhibit a desire to project power *vis-à-vis* competing powers in the region such as the US and India. China's presence in the Bay of Bengal via roads and ports in Myanmar and in the Arabian Sea via the Chinese built port of Gwadar in Pakistan has been a cause of concern for India. With access to crucial port facilities in Egypt, Iran and Pakistan, China is well-poised to secure its interests in the region. China's involvement in the construction of the deep-sea port of Gwadar has attracted a lot of attention due to its strategic location, about 70 kilometres from the Iranian border and 400 kilometres east of the Strait of Hormuz, a major oil supply route. It has been suggested that it will provide China with a 'listening post' from where it can 'monitor US naval activity in the Persian Gulf, Indian activity in the Arabian Sea and future US-Indian maritime cooperation in the Indian Ocean'. Though Pakistan's naval capabilities do not, on their own, pose any challenge to India, the combination of Chinese and Pakistani naval forces can indeed be formidable for India to counter. In recent years, Chinese submarines have been regularly docking in various South Asian states including Pakistan and Sri Lanka, much to India's consternation.

It has been suggested that the Chinese government appears 'to have a very clear vision of the future importance of the sea and a sense of the strategic leadership needed to develop maritime interest'. This is reflected in the attempts that China has made in recent years to build-up all aspects of its maritime economy and to create one of the world's largest merchant fleets with a port, transport and shipbuilding infrastructure to match. In this respect, the Indian Ocean has an important role to play in the Chinese efforts towards establishing its predominance as the main maritime power in the region.

Chinese military of the near-future will be very different

Yet, the notion that China aspires to naval domination of Indian Ocean remains a bit far-fetched. China would certainly like to play a greater role in the region, protect and advance its interests, especially Chinese commerce, as well as counter India. But given the immense geographical advantages that India enjoys in the Indian Ocean, China will have great difficulty in exerting as much sway as easily in the Indian Ocean as India possibly can. But all the steps that China is taking to protect and enhance its interests in the Indian Ocean region are generating apprehensions in Indian strategic circles about her real intentions, thereby engendering a classic security dilemma between the two Asian giants. And it is India's fears and perceptions of the growing naval prowess of China in the Indian Ocean that is driving Indian naval posture. DSA

Prof Harsh V Pant

The writer is Professor of International Relations at King's College, London.

US FULCRUM FOR INDIAN NAVY PIVOT FROM BLUE WATER TO EXPEDITIONARY

It's pretty clear that India and US will find themselves in some kind of an alignment against China. Whether India chooses to be a follower of the US like Britain, an 'independent' ally like France or a friendly neutral like Sweden will keep strategic watchers occupied for the next few decades.

The April 3, 1989 cover of *TIME* featured a Godavari-class frigate and the title 'Super India – The Next Military Power'. It was perhaps unwittingly prescient about the defining role the Indian Navy would play in the rise of India.

Chinese Surge

Fast forward three decades and India's economic rise is reflected in the IN's formidable blue water capabilities. Only the US Navy wields a bigger stick in the Indian Ocean Region (IOR). But China's rise has surpassed even India's. The once stagnant People's Liberation Army Navy (PLAN) is unrecognisable as it not just challenges the US's 'Pacific Pivot' in its backyard but also forays into the IOR as it seeks to dominate its sealine of communications (SLOCs).

This new 'Indo-Pacific' arena as Adm Arun Prakash terms it, challenges conventional notions about the IN's blue water orientation and capabilities. A pivot from the IOR to the Pacific requires the IN to execute a parallel pivot from a blue water to an expeditionary force in order to support a 'Look East, Act East' foreign policy.

Consider the following indicators of the IN's expeditionary evolution as the IN pivots to project power and conduct warfare across large distances inside the adversary's territorial boundaries:

- In 2007, the IN commissioned the *INS Jalashwa* (ex-USS Trenton), whose primary role is putting amphibious troops ashore on faraway lands. Another 4 such LPDs are to be built indigenously.
- Following the new *Vikrant*, the 35,000 tonne replacement for the *INS Viraat*,will be a 65,000 tonne mega carrier – the IAC-2 – capable of deploying a larger, more powerful air wing.
- In 2011, an amphibious warfare ship *INS Airavat* was repeatedly warned by PLAN as it left the Vietnamese port of Nha Trang, where the IN has secured 'special' berthing rights.

In the midst of this comes active US interest, whose influence on the IN adopting an expeditionary course could be transformative.

Seduced By Monroe

Prof James Holmes, of the US Naval War College, Newport, RI – author of impressive tomes on both the Indian and Chinese Navies – claims that Indian policy makers have long been seduced by Monroe. Not the platinum-haired icon of the 1950s, but the US President James Monroe – whose speech to the US Congress in 1823 warned European colonial powers against expanding further in the two American continents. That became the 'Monroe Doctrine' – the US defining a zone of strategic hegemony beyond its boundaries where other powers were not welcome.

Holmes cites numerous speeches and writings early in India's independence, where Jawaharlal Nehru and the diplomat/historian KM Panikkar (author of *India and the Indian Ocean*: *An Essay on the Influence of Sea Power on Indian History)* both invoked Monrovian principles to define India's natural strategic boundaries. The Goa liberation, the IPKF intervention in Sri Lanka and Operation Cactus in the Maldives, all provide examples of India's Monrovian actions.

Strategic boundaries though tend to expand with power and today in the Indo-Pacific, the three 'natural hegemons' as Prof Holmes calls the US, China and India share overlapping areas of influence and interest from the Horn of Africa to the South China Sea.

The Monrovian power play has been accelerated by China's contentious claims on several island chains and its reclamation activities. Chinese actions have reaffirmed the Mahanian view that economic power can only be guaranteed through maritime dominance. By rapidly copying US innovations like the mobile landing platform (MLP) – logistics ships that allow amphibious forces and supplies to be offloaded rapidly in the absence of a port – China is ramping up for the expeditionary fight.

So what are India's options? In his writings Holmes sets out three choices for India's larger maritime strategy – the Strongman, the Constable or the Free Rider. By looking specifically at the South China Sea, let us analyse these further.

The Indian Navy's Options in the South China Sea

Role	Pros	Cons	Force structure
Free Rider The IN relies on the USN to provide the security of the high seas and play buffer against any coercive Chinese actions	# Allows IN to concentrate on IOR # Reduces risk of entanglement in US v China military confrontation # Fewer capital intensive acquisitions put lesser pressure on budget resources	# Sudden US collapse /withdrawal will leave no guarantor of Indian interests # US support in critical Indian strategic and military programmes may not be forthcoming	Current IN force structure adequate
Constable The IN extends its current policing role into the South China Sea with 'partner' navies like the USN and its allies	# Counters increased PLAN presence in IOR # Facilitates US support to critical Indian strategic and military programmes # Natural extension of current role and exercises with US allies. Makes a jump to the next level of Strongman easier	# High risk of entanglement in US v China military confrontation # Sudden US collapse /withdrawal would require India to take on Strongman role or cede to China # Increased pressure on budget resources to support an essentially US-led strategy	Current plans for 3 Carrier Battle Groups (CBGs) would need an additional CBG to allow one CBG for a 'surge' into the South China Sea
Strongman IN has an independent sustained naval presence in the region and seeks to dominate in the same way as the IOR	# Allows IN to support an independent 'Look East Act East policy' # Provides leverage in getting China to curtail its IOR expansion # Insulates IN from US collapse/US withdrawal from the region	# Increased risk of direct confrontation with China # Heavy demand on budget resources for major military build-up # Lack of strategic allies for support and basing	# Current plans for 3 CBGs would need to be doubled to ensure two CBGs can be 'surged' into the South China Sea # Require army and air force to redraw current long-term plans to support IN operations

Rajit Ojha

The writer is a Modelling and Simulation (M&S) professional with experience of leading consulting engagements with clients like the United States Air Force and the Indian Army. He's been closely involved in the roll out of programmes from concept to execution stage. His areas of interest are military strategy and organisation, acquisitions and unconventional warfare.

It is also worth highlighting that though the IN is largely a Free Rider in the South China Sea today, even its minimal presence has attracted an unwelcome response from the PLAN.

Meanwhile, the US would like the IN to register a more robust presence eastwards. Secretary of Defense Ashton Carter, fresh off delivering a warning to China at the Shangri-la dialogue in Singapore this May, chose to land first at Visakhapatnam, HQ of India's Eastern Naval Command and only then went on to Delhi to renew his case for greater regional security cooperation.

Not-so-mixed Signals

India is also increasingly less coy about US overtures to build deeper naval ties. After 2007 the MALABAR exercises with US and its allies were scaled down because of Chinese protests. However, the latest edition marked the return of the Japanese and the US brought a Nimitz-class carrier. India, very significantly, provided a Kilo-class submarine, after having refused to do so in previous editions.

Meanwhile, several IN admirals as well as carrier COs have graduated from the US Naval War College. The institution is a leading forum

Rear Admiral Surendra Ahuja arrives on board the *USS Theodore Roosevelt* as part of MALABAR 2015. He was the first US-trained 'tailhook' pilot to Carrier Qualify (CQ) on the *USS Enterprise* in 2007. Today he is the Asst Controller Carrier Project at NHQ.
Credit: US Navy

for intellectual exchange – Prof Holmes and his colleagues like Toshi Yoshihara having studied the Chinese and Indian Navies closely.

However, it is in the field of aircraft carrier capabilities – the centerpiece of expeditionary naval operations – that cooperation is setting remarkable precedents. When it was time to find a foreign partner to train its future *MiG 29K* pilots, the IN chose the USN for its 'tailhook' expertise instead of looking reflexively towards its erstwhile colonial roots. When the *INS Viraat* is decommissioned in 2016, the era of British light carriers and *Sea Harriers* will fade into the horizon.

India is increasingly less coy about US overtures to build deeper naval ties

Enter a newer 'bigger is better' carrier strategy, reflected in the 65,000 tonne IAC-2 which will have the necessary combat power in a formidable air wing to execute expeditionary operations. A joint Indo-US working group is currently engaged in the concept and design stage of the project.

US technology is critical in two areas. First is the revolutionary Electro Magnetic Launch System (EMALS) that is far superior to steam catapults and is only fitted in the USN's latest Ford-class carriers. The EMALS allows larger aircraft to carry greater payloads to longer distances, a critical requirement in expeditionary operations.

The second, is n-propulsion which allows a 65,000 tonne carrier to operate unrestricted without the need to frequently refuel from tankers. There are no free-lunches however. If the US which has traditionally only let its closest ally, Britain have access to military nuclear technology, makes another exception for India, what realpolitik price tag will it carry?

In late October this year the *USS Lassen* deliberately closed to under 12 miles of the Chinese 'reclaimed' island of Subi Reef to assert freedom of navigation rights. Two Chinese Navy ships shadowed the US destroyer and repeatedly warned it. Beijing summoned the US ambassador to protest what it called a 'serious provocation'. Is India prepared to have its ships alongside the USN in such high stakes brinkmanship?

Paradoxically, China's continued aggressive and expansionary posture could force India and US to ally against it. It won't be for the first time. Rewind to the 1960s when the CIA used Charbatia in Orissa as a base for *U-2* flights and trained a force of Tibetan guerillas – forerunner of the RAW-controlled Special Frontier Force (SFF), that counts current COAS Gen Dalbir Singh as a former boss.

In 1965, a joint IB-CIA team even planted a n-powered listening device on Nanda Devi to spy on Chinese missile tests. Ironically, the leader of the Indian contingent was MS Kohli, a navy man on deputation to the ITBP who would reach the rank of Captain!

Expeditionary Capability

Cloning the US's expeditionary capability is obviously out of the question – India lacks a US$ 700 billion

Current Indian Expeditionary Capabilities

defence budget to operate 10 super carriers or raise a new arm like the US Marines Corps with its own air wing. Despite constraints, Indian expeditionary warfare planners will have to address the following:

Amphibious Land Forces: While various formations like the 54 Infantry Division and 340 Independent Infantry Brigade have been tasked with amphibious assault at various times, currently, the Thiruvananthapuram-based 91 Infantry Brigade is the Indian Army's sole specialised amphibious brigade. Additional amphibious infantry and specialised amphibious warfare equipment will be required to enhance current capability.

The Marine Commandos (MARCOS) of the IN, whose capabilities are also undergoing steady expansion, would provide amphibious special operations capability.

Naval Forces: The IN has three primary tasks in an amphibious operation. First is to provide sealift. Currently the IN is only able to support battalion-strength operations, roughly equivalent to a US Marine Expeditionary Unit (MEU). Brigade-level lift capability will only arrive by 2022, as per the navy's current acquisition plans of LPDs and LCUs.

Second is to provide airlift to amphibious forces. The rapidly declining fleet of troop-carrying *Sea Kings* and persistent delays in acquiring replacements needs immediate resolution.

Third, amphibious operations will require both local air superiority and close air support (CAS). While the *MiG-29Ks* are a step-up on the *Sea Harriers*, armed helicopters have to provide a major part of CAS. This requires the LPDs to perform an important secondary role as 'helicopter carriers'.

Revolutionary Electro Magnetic Launch System (EMALS) is far superior to steam catapults

Basing/Forward Deployment: Forward deployment of military assets at foreign bases is integral to expeditionary capability. Even the super carrier-equipped USN positions a forward deployed carrier and aircraft in Japan. The USMC has recently expanded its footprint to Darwin, in Australia.

Vietnam – which has purchased patrol boats from India and is interested in the *BrahMos* missile – offers interesting possibilities. While the IN has secured 'special' berthing rights at Nha Trang, at some point a high level politico-military decision will have to be taken to forward deploy on a sustained basis from such locations.

While foreign basing decisions are complex, the far simpler proposal to handover the Andamans and Nicobar Command permanently to the navy continues to be in limbo, hampering India's security posture eastwards.

Jointmanship: The IAF too will have to commit at some point to operating its combat aircraft, tankers, transporters and AWACs from foreign bases. This is essential if India decides to operate in the South China Sea independently of the US. Not even a powerful IAC-2-centred CBG will be enough to take on China's impressive Anti-Access/Area Denial (A2/AD) capabilities.

Larger geostrategic trajectories unlike rocket trajectories are not rocket science. It's pretty clear that India and US will find themselves in some kind of an alignment against China. Whether India chooses to be a follower of the US like Britain, an 'independent' ally like France, or a friendly neutral like Sweden will keep strategic watchers occupied for the next few decades.

Regardless, the Indian Navy is guaranteed to make a few magazine covers in the years ahead. DSA

SECURING OUR COASTLINES AND BEYOND

INITIATIVES TAKEN BY INDIA AND THE INDIAN NAVY

In cooperating with neighbours and its extended neighbourhood, India has been actively engaging with Mauritius, Mozambique, Seychelles and other countries marking the periphery of the Indian Ocean, providing assistance and setting up of surveillance stations.

A vulnerable coastline is the biggest threat to any nation today as the world trade and commerce traces its route from the sea and into the heartland of the nations and the dangers have become more pronounced. It came to light that 'India is particularly ill-equipped to provide safety cover to the extended economic zone brought about by different legislations. This is evident by the dangerous actions of hostile neighbours posed through sea. Events of 26/11 have demonstrated the usage of sea space as a medium to assist and promote terrorist activities'.[1] It therefore, became imperative to bring structural and functional changes in the overall security system of our nation to plug the loopholes and keep the perpetrators at bay post 26/11.

Evolving our security architecture is a dynamic process to meet the new challenges. A coordinated effort by the Indian government and all agencies responsible has strengthened maritime surveillance. Therefore, the aim of this article is to make a modest attempt to review in a short summary some of the changes and initiatives taken by the Indian Government and the Indian Navy to secure our coastlines over the years since 26/11.

The Initiatives

'The country's maritime interests encompass maintenance of the territorial integrity of India against seaward challenges and threats as well as protection of our maritime trade and the merchantmen that embody it. Our coastline today faces significant security challenges from malevolent 'non-State', as well as 'State-sponsored' elements'.[2] Hence, a series of initiatives were taken to offset the emanating threat from the sea. There has been a dedicated effort by the Indian Navy, Indian Coast Guard and others to step up coastal patrolling on a continuous basis to identify possible threats and contain them with a rapid action, to

[1] KRA Narasiah, "Coastal Security As Sea Governance", *The Hindu*, Aug 14, 2012, available at http://www.thehindu.com/books/coastal-security-as-sea-governance/article3765715.ece

[2] Department of Defence, Ministry of Defence, available at, http://www.mod.nic.in/forms/Mainlinks.aspx?lid=1529&Id=0http://www.mod.nic.in/forms/Mainlinks.aspx?lid=1529&Id=0

establishment of new naval bases, increasing force levels and fleet strength by inducting more state-of-the-art warships and patrol vessels with cutting-edge technologies etc.

'Coastal security is intrinsically both a law and order subject and a national security issue. The matter is at present reviewed and monitored by the National Committee on Strengthening Maritime and Coastal Security (NCSMCS), under the Chairmanship of Cabinet Secretary which monitors the progress in respect of coastal security initiatives'[3]. The latest being the Information Management and Analysis Centre (IMAC, to be renamed as NDMA Centre) at Gurgaon, to be operated by both the Indian Navy as well as the Indian Coast Guard to enhance coastal surveillance.

It will function with the National Command Control Communications and Intelligence Network (NC3I Network), with both IMAC and NC3I network integrated with the National Maritime Domain Awareness programme. It connects several radar stations with a network of sensors that pickup information and relay it to IMAC where it is analysed and then disseminated further to other stations.

Multipurpose Identity Cards

Another important initiative taken is launching of coastal security scheme under which assistance is being provided to coastal and island States to set up well-equipped coastal police stations and outposts under its phase-I and in the next phase (since 2010) to analyse gaps in the existing scheme and to rectify them by enhancing procurement policy. Furthermore, registration of fishing boats and issuance of identity cards to fishing community and additionally providing Multi-purpose National Identity Cards to the people living in coastal towns for a uniform system of people driven network is a good step.

In cooperating with neighbours and its extended neighbourhood, India has been actively engaging with Mauritius, Mozambique, Seychelles and other countries marking the periphery of the Indian Ocean. Providing assistance and setting up of surveillance stations inter-connected with Indian stations that actively relay information to each other on real time basis can help in ensuring maritime security. Taking cue from 'The Indian Ocean Rim Association (IORA), a pan-Indian Ocean Economic grouping that brings together countries from three continents viz Africa, Asia and Australia, which in recent times has begun to look at maritime security issues in the Indian Ocean as a whole.' [4]

Threat Perceptions

'India requires a strong and modern Navy to protect its varied maritime interests and shoulder additional responsibilities, particularly in the current geo-political and security situation that prevails in the Indian Ocean Region'[5].

The focus has been not only to ensure security of the coasts but beyond into the high seas and therefore, a global and multifaceted front is what we require. Involving seafarers like fishermen and merchant vessels becomes vital as they can act as the eyes of our country as noted above. Apart from that, regular joint naval exercises, simulations and integrated information sharing platform not only within the country but also with the neighbours is a way forward to secure maritime environment. A revamping of maritime security has been on the agenda by procuring and also indigenously building fast patrol vessels and frigates. Correlation and interoperability between new State and Central agencies established for the purpose of coastal security must be strengthened. An increase in Defence expenditure based on India's threat perceptions at present should be considered. The process of Intelligence gathering, information sharing, investigations and acting upon these data is crucial. Coastal security although under the overall command of the Indian Navy requires our political leadership, media and public at large to play a supportive role to make India more secure as a nation. DSA

India requires a strong and modern Navy to protect its varied maritime interests

Saloni Salil

The writer is a Global Security Analyst with IndraStra Global, US and a Researcher with the South Asia Desk at Wikistrat, US. She is a designated Visiting Fellow in the Indian Ocean Research Program at Future Directions International, Australia. She is also included as a contributor in Asia Pacific Security Magazine, Australia. She has authored a monograph titled 'China's Strategy in the South China Sea: Role of United States and India'. Her research areas include the Indian Ocean Region, South China Sea and the Indo-Pacific Studies.

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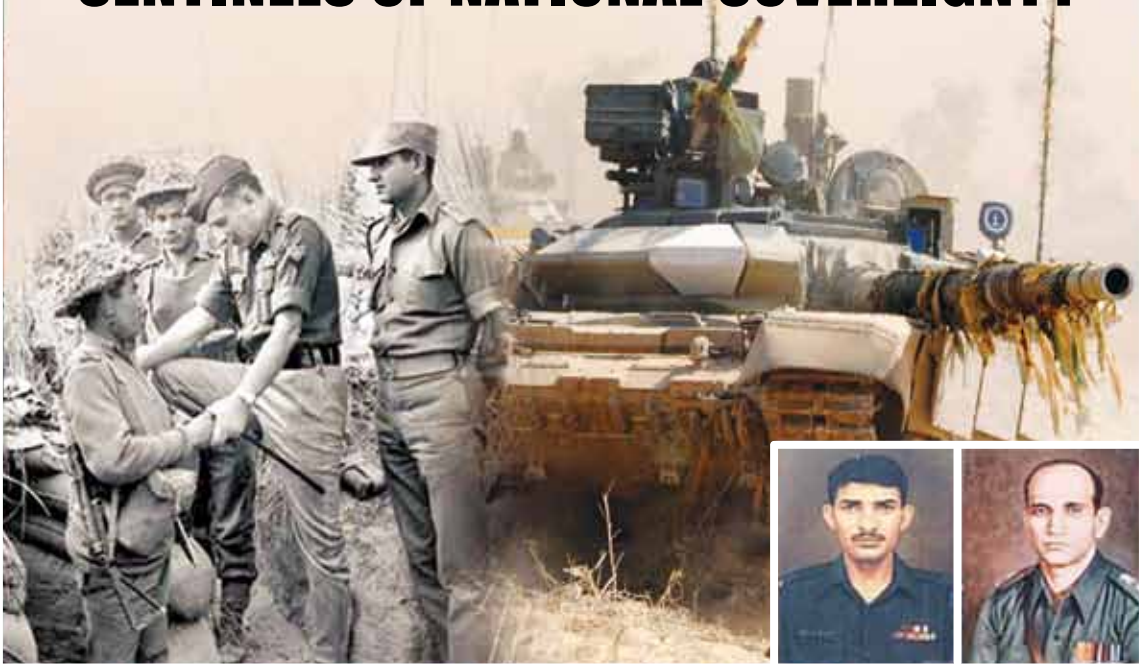

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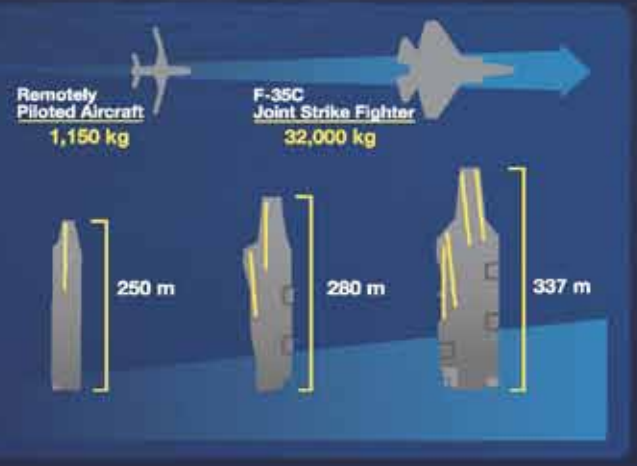

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