

## **Physical Protection of India's Critical Maritime Infrastructure: Part 3: Maritime Transportation: Shipping**

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India defines *Critical Sectors* as those *that are critical to the nation and whose incapacity or destruction will have a debilitating impact on national security, economy, public health or safety.*

This is the third of a series of articles dealing with the physical protection of India's critical maritime-infrastructure. The first one, published in November 2019 on this website, highlighted the somewhat inexplicable paucity of literature — and therefore of information available to the public at large — on the **physical** protection of India's critical infrastructure in general and Indian 'maritime' infrastructure in particular. This contrasts quite sharply with the substantial attention lavished in the public domain upon the protection of India's **information**-infrastructure.

The preceding article in this series had identified six sectors — 'energy', 'transportation', 'telecommunication', 'defence', 'space' and, 'law-enforcement, security and intelligence' — as being especially relevant to the maritime domain. It then dwelt upon relevant aspects of physical security of the first of these six, namely, 'energy'. This article seeks to pick up the thread laid out in the previous one and focus attention upon the physical protection of merchant ships, which form an important part (if not the predominant one) of critical maritime-infrastructure relevant to the 'transportation' sector. Of course, the physical protection of maritime shipping-infrastructure involves not only merchant ships but also ports, which are the nodes from and to which these ships move their merchandise-cargo. It also touches marginally upon the physical protection of warships when they are in ports or harbours, whether berthed alongside or at anchorage. Issues relating to the physical protection of ports (including naval and coast guard harbours and their allied facilities) will be addressed in the next article in the current series.

To establish the criticality to India of its ship-and-port infrastructure, one has only to look at the sharp rise over the years of the country's 'Merchandise Trade-to-GDP' Ratio. The data at Table 1 brings this out quite clearly. It also shows that in all

cases, the average of this Trade-to-GDP Ratio has risen in the period from 2000 to 2018, when compared with the decadal average from 2001 and 2010. What this implies is that with the passage of time – the concomitant increase in trade in ‘services’ notwithstanding – more goods are moving by sea than they were before. This has very significant maritime ramifications for India. On the one hand, our merchandise trade (imports + exports) now accounts for some 35% of our GDP. On the other, 95% of this merchandise trade by volume – and 77% by value – is seaborne. In other words, should the infrastructure that supports this transport of our merchandise trade, namely, the merchant ships carrying Indian cargo and the Indian ports at which they load or discharge this cargo, be significantly compromised, the economic effect would be catastrophic.

Year	India	Decadal Average	China	Decadal Average	USA	Decadal Average	UK	Decadal Average	Australia	Decadal Average	Japan	Decadal Average	ROK	Decadal Average							
2018	30.7	35.4	34.0	39.37	20.9	22.05	41.0	41.3	34.4	33.08	29.9	28.5	70.4	76.22							
2017	28.2		33.8		20.3		41.1		34.6		28.2		68.7								
2016	27.3		33.1		19.8		39.3		32.1		25.4		63.7								
2015	31.4		35.9		21.0		37.5		29.3		29.0		69.7								
2014	38.5		41.2		23.0		39.4		32.5		31.0		77.8								
2013	42.0		43.5		23.3		43.6		31.4		30.0		82.4								
2012	43.0		45.3		24.0		43.6		33.5		27.2		87.3								
2011	42.1		48.2		24.1		44.9		36.9		27.3		89.8								
2010	34.4		28.79		48.9		52.61		21.7		19.92		41.1		36.96	36.1	34.67	25.7	23.43	81.5	65.47
2009	31.5				43.3				18.4				36.5			34.5		21.7		76.1	
2008	43.0	55.8		23.5	38.9	36.8		30.6	85.5												
2007	31.2	61.3		21.9	35.0	36.0		29.6	64.5												
2006	31.9	64.0		21.3	39.4	35.2		27.1	62.7												
2005	29.6	62.2		20.2	36.0	33.4		23.4	60.8												
2004	24.9	59.0		19.2	34.0	32.0		21.2	62.5												
2003	21.6	51.3		17.7	34.5	34.2		19.2	54.8												
2002	20.5	42.2		17.3	36.3	34.9		18.3	51.7												
2001	19.3	38.1		18.0	37.9	33.6		17.5	54.7												
2000	20.0		39.2		19.9		38.4		32.6		17.6		59.2								
1990	12.9		32.0		15.3		37.3		26.3		16.7		48.3								
1980	12.6		19.9		16.9		39.9		29.6		24.6		61.3								

**Table 1: Merchandise Trade-to-GDP-Ratio of Selected Countries**

Source: <http://databank.worldbank.org/data/reports.aspx?source=2&series=TG.VAL.TOTL.GD.ZS&country=>

Where merchant shipping is concerned, the Indian Ocean is a particularly busy place. Over 120,000 merchant ships (a.k.a. ‘merchantmen’) traverse the waters and seas of this ocean on an annual basis, wending their way upon the several International Shipping Lanes (ISLs) that crisscross this maritime expanse. Since unlike the Atlantic and Pacific oceans, ingress into and egress from the Indian Ocean is effected only through a finite number of narrow ‘chokepoints’, all this maritime trade is especially vulnerable as it passes through the straits that constitute these chokepoints. For instance, the Strait of Bab-el-Mandeb, which connects the Red Sea and the Gulf of Aden witnesses the annual passage of some 22,000 ships, while the Strait of Malacca accounts for shipping transits in excess of 90,000 every year. India is by no means immune to these vulnerabilities. Some 60 billion US dollars-worth of Indian exports

and some 50 billion US dollars-worth of Indian imports — a staggering 110 billion US dollars-worth of Indian merchandise-cargo —transits the Strait of Bab-el-Mandeb on an annual basis. India’s second-largest export partner on the planet is the UAE. Consequently, the sensitivity and criticality to India of the geopolitically-turbulent Strait of Hormuz is not limited solely to the import of crude-oil from West Asia, but equally so in terms of the provision of denial of access to vital UAE ports such as Al Khalifa and Jebel Ali. Likewise, some 190 billion US dollars-worth of Indian trade runs across the South China Sea — and this value excludes our merchandise maritime trade with Indonesia, Malaysia, Thailand and Singapore.



That our mercantile ships and our ports are very significant components of India’s critical maritime infrastructure is undeniable. Let us now turn to the threats that confront the merchant-shipping component of this critical maritime infrastructure.

There are, of course, several **natural** threats to merchant ships. These include undersea earthquakes that generate the huge and tremendously destructive swell-waves that characterise *tsunamis*. More frequent are weather-generated massive disturbances at sea, such as tropical-revolving storms (TRS), several variants of which, such as cyclones, typhoons, and hurricanes, are well known to the public at large. Somewhat less well known in India but nevertheless devastating for seafarers are large squalls, sea-storms generated by weather fronts, and, ‘derecho’ storms. The safety of ships in the face of natural weather conditions is a function of ship-construction, machinery-reliability, the extent and quality of the safety-gear on board, and, most perhaps the most important of all, crew-training and experience. Contemporary maritime Search and Rescue (SAR) is organised, on a global basis, through the provisions of the “International Convention on Maritime Search and Rescue (SAR)”, commonly known as the ‘SAR Convention’, which was adopted in Hamburg on 27 April 1979 and entered into force on 22 June 1985. Although the obligation of ships to go to the assistance of vessels in distress has long been enshrined in tradition, the SAR Convention is the first to formally create an international system for safety and succour at sea. With the coming into force of this convention, the ‘Maritime Safety Committee’ of the international Maritime Organisation (IMO) — which is effectively the UN-at-sea

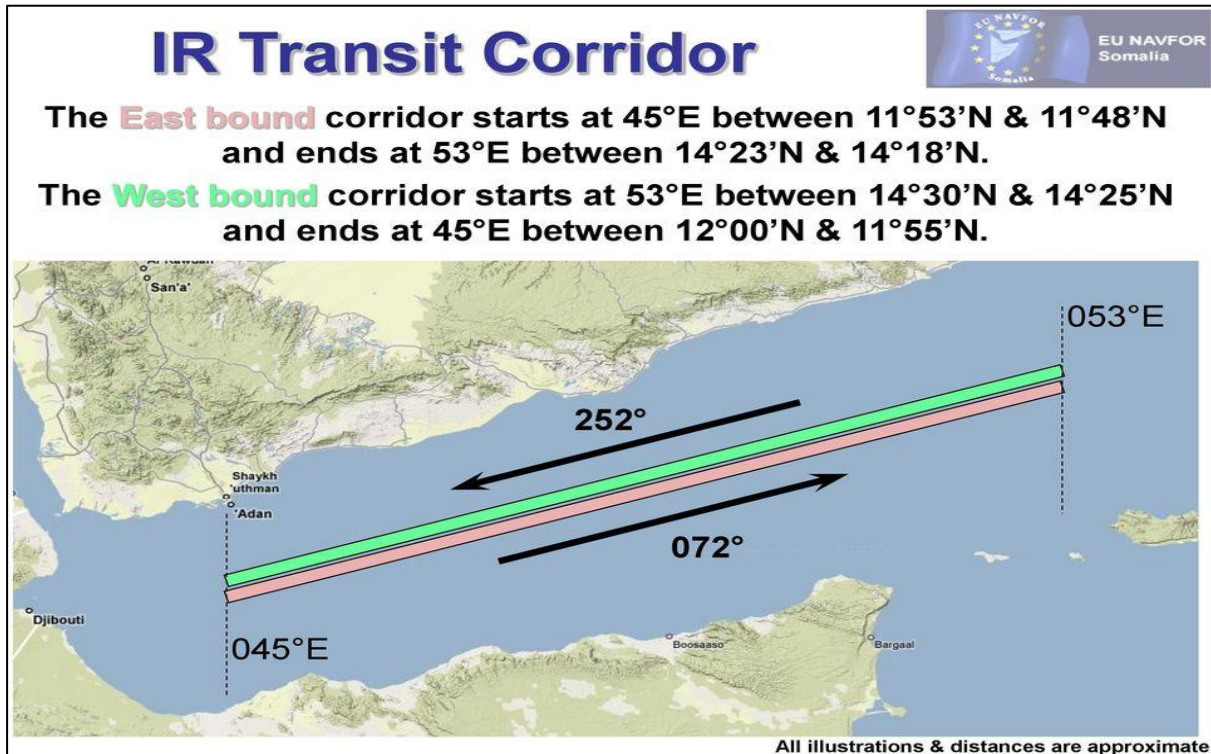
— divided the world's oceans into 13 'Search and Rescue Areas'. These areas have then been further segmented into 'Search and Rescue Regions' (SRRs). A specific authority has been assigned lead-responsibility for the monitoring of distress in each SRR and for coordinating search and rescue efforts. The Indian Coast Guard is a particularly proactive and efficient safety-provider in all situations requiring distress at sea within the vast sea-area encompassed by the Indian Search and Rescue Region (ISRR) depicted below. The Director General, Indian Coast Guard (DG ICG) is the 'National Maritime SAR Coordinating Authority' (NMSARCA).



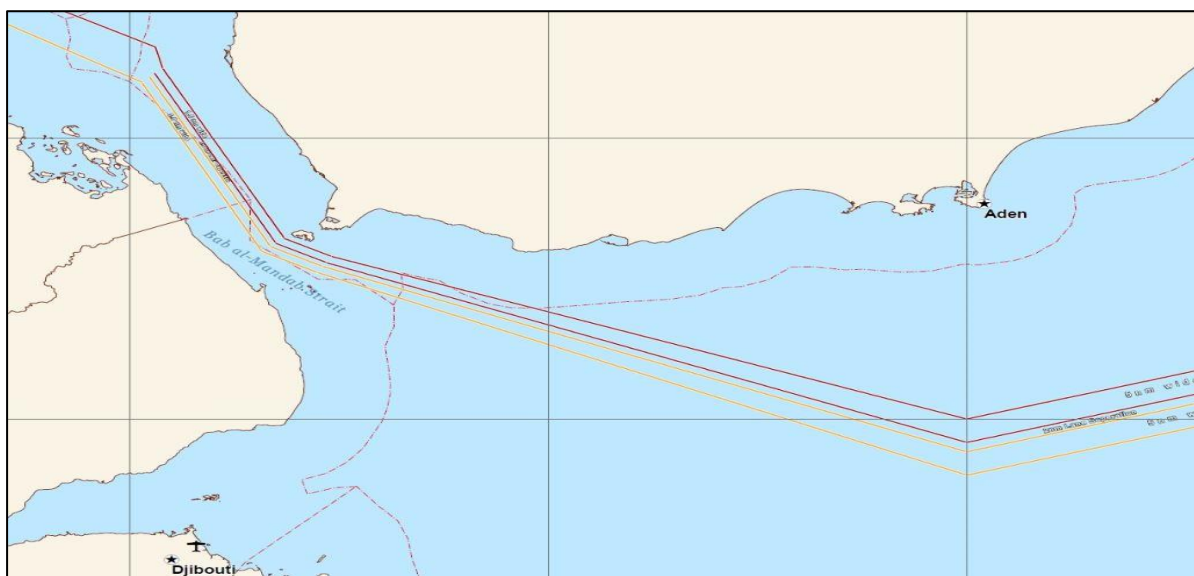
Important and devastating as natural threats to shipping are, this article seeks to concentrate upon more sinister dangers — those posed by human predation. Predatory activities at sea by a variety of human predators such as pirates, privateers, brigands, smugglers, and a variety of maritime criminals, are perhaps as ancient as seafaring itself. As if this was not long enough a list, maritime terrorists have now made the most recent addition.

Modern-day piracy, which has become all too familiar a risk to shipping operating to our west — in the Gulf of Aden, off the coast of Somalia, and in and off the Gulf of Guinea — and to our east — particularly in the Sulu and Sulawesi seas north of the archipelagos of Indonesia and the Philippines. As a consequence, physical security has become an important requirement for merchant's vessels. The principal security-providers are, of course, navies. To narrow down the area over which such security needs to be provided, an International Recommended Transit Corridor (IRTC) for east-bound traffic as well for west-bound traffic has been established in the Gulf of Aden as depicted below. Merchant ships that need to cross the Strait of Bab-el-

Mandeb, send out advance-intimation to naval coordinating-authorities of the date-and-time at which they expect to arrive at pre-designated rendezvous-points established at either end of the IRTC. The IRTC is subdivided into a grid comprising a number of adjacent areas each of which has an alpha-numeric identifier.



In September of 2017, in recognition of the enhanced risk to merchant ships transiting the Strait of Bab-el-Mandeb and proceeding through the southern portion of the Red Sea, the Internationally Recommended Transit Corridor was subsumed into a new 'Maritime Security Transit Corridor' (MSTC), as shown



There are two basic forms of naval protection offered to such merchant ships. On the one hand is a formalised grouping of warships, known as the 'Combined Maritime Forces' (CMF), which has been set-up under US-aegis, and, on the other, are navies — such as those of India, China, ROK, Russia, etc., which undertake independent counter-piracy escorts and operations. The CMF actually comprises three subordinate task forces, each of which has a distinct identifying-number and a specific purpose: CTF-150 caters to the USA's 'Operation FREEDOM's SENTINEL' (this is the successor of the earlier Operation 'ENDURING FREEDOM', which was in place from 2001 to December 2014, and was designed to prosecute maritime facets of the USA's Global War on Terror). CTF-152, too, is a US-led multinational naval task force, which was set-up in 2004 in order to coordinate maritime security operations within the Persian Gulf. CTF-151, once again US-led, is a multinational naval task force, but this one concentrates specifically on countering piracy in the Gulf of Aden and its environs. In terms of the provision of physical security through naval actions, it is important to note that although a given ship of CTF-151 can be ordered to deploy in a given area within the IRTC, once it is there, its operations and actions will be governed by the Rules of Engagement (ROE) of the country to which it belongs. Since these ROE vary with the legal, societal, and ethical constructs that obtain in each contributing-country, the counter-piracy actions that the warship is permitted to take may vary from 'mild' to 'robust'. As a result, India, which seeks 'assured levels' of protection — especially to merchantmen flying the Indian tricolour — involving 'dissuasive', 'deterrent', 'preventive', 'curative', and 'punitive' actions, has chosen to operate outside of the CTF-151. Another collective grouping is the European Union Naval Force (EUNAVFOR), which has a longstanding counter-piracy and maritime-security operation called 'Operation ATALANTA' in place in the Gulf of Aden.

The Indian Navy maintains very close cooperation and coordination with the navies that constitute both, CTF-151, and, Op ATALANTA and regularly participates in the hugely-useful 'Shared Awareness and De-confliction' (SHADE) conferences held in Bahrain every six months. SHADE is an unclassified forum that brings together nations, international organisations and members of the shipping industry who share a common interest in combating Somali based piracy and broader Maritime Security issues. It is co-chaired by the EUNAVFOR and the CMF and is also attended by NATO and many other nations and associations outside of these organisations. In recognition of the fact that such information flows from and to merchantmen (and the companies that either own or manage them) are useful not just for the countering of piracy but for the promotion of regional security as well, there are a few other mechanisms as well, for the collation and dissemination of information that enhances secure safe and secure transits of merchantmen through piracy-prone areas within the Gulf of Aden and its environs. All such mechanisms are important facilitators of physical security even beyond the confines of piracy alone. This is because piracy and maritime crime generate regional instability, which in turn, introduces other maritime threats such as the deliberate targeting of ships by extremist groups (such as *Al Shabaab* and *Al Qaeda*), and, the imposition of collateral damage arising from regional conflict. An example of such a mechanism is the British Royal Navy's 'United Kingdom Marine Trade Operations' (UKMTO), which provides an information conduit between counter-piracy security forces and international maritime shipping.

Another example is the EUNAVFOR's 'Maritime Security Centre — Horn of Africa' (MSC-HOA), which is located in Brest, France. Merchantmen transiting the area in and off the Gulf of Aden are monitored 24 hours a day. An interactive website enables the Centre to communicate the latest counter-piracy guidance to the ships and the companies that own and operate them, as also to direct naval assets as required, in the event of any emergency. Although it operates outside these collective security-constructs (and is what is known as an 'independent deployer'), Indian Naval warships deployed in the Gulf of Aden and its environs maintain constant communication with all these mechanisms and in so doing, enhances the provision of physical security to Indian-flag merchantmen — and foreign-flag ones, too!

A great deal in terms of preventive actions can, of course, be done by the merchant ships themselves. Consequently, a large conglomerate of shipping companies and agencies have collectively issued a succession of comprehensive guidelines to global merchant shipping. The current (fifth) edition, titled, "*Best Management Practices to Deter Piracy and Enhance Maritime Security in the Red Sea, Gulf of Aden, Indian Ocean and Arabian Sea*" (BMP-5) lays down a number of guidelines that are advisory rather than mandatory, but whose adherence (or lack thereof) impacts insurance and other fiscal-compensation measures. Hence, merchantmen and the companies that own and manage them try hard to adhere to the provisions of BMP-5. This is as true of Indian-flag vessels as it is of any others.

The primary layer of ship-board self-protection involves a high standard of Bridge watchkeeping and enhanced vigilance through the provision of extra lookouts, diligent radar-watchkeeping, the use of thermal-imagery optics and night-vision aids, the placement of mannequins/dummies at strategic locations around the ship so as to give the impression that there are a greater numbers of crew on watch, the provision of a CCTV-system, the fitment of fixed searchlights, the fitment of barbed/razor-wire along the ship's railings and outboard of the ship's structure, the deployment of water/foam cannon to deter boarding, etc. In addition to these physical measures, merchantmen are advised to effect tactical measures such as carry out evasive manoeuvres that create hydrostatic pressure-waves along the shipside, making it very difficult for a pirate boat or skiff to remain close enough to the ship for a boarding to be attempted.

The second layer of physical ship-board self-protection presumes that the ship has been successfully boarded by pirates/criminals/terrorists has been successful. It accordingly focusses upon denying access to the ship's internal spaces with special attention being paid to compartments such as the navigation-bridge, the communications-equipment compartments, and the machinery-control room, access to any or all of which would yield control over the ship's propulsion, navigation and internal/external communication. Towards this end, BMP-5 recommends measures such as the application of blast-resistant film on bridge-windows that provide a view ahead, as well as steel/aluminium plates to cover bridge-windows that provide views to the sides or the rear; the fitment of chain-link fencing to guard against the effects of rocket-propelled grenades (RPGs); fitment of sandbags in the bridge-wings; ensuring that doors and hatches that provide access to the ship's bridge, superstructure, machinery-spaces and internal compartments are capable of being locked such that

they cannot be opened from the outside; the fitment of steel bars to portholes and windows; the creation of a well-designed citadel within the ship within which the crew can lock themselves-in for a protracted period, while remaining well-provisioned with canned-food, water, provisions, sanitation, and means of internal and external communications.

It should not be assumed that the physical-protection mentioned in the foregoing sections are specific solely to the Gulf of Aden and its maritime environs. The scourge of piracy, armed-robbery, hijacking, kidnapping-for-ransom, and maritime-depredations related to terrorism, have been witnessed in a number of areas ranging from off the Gulf of Guinea to the Sulu and Sulawesi seas north of the Philippines and Indonesia. Collective approaches to the provision of naval physical-protection of shipping in the latter areas, for instance, has led to combined-patrols being instituted by the navies of Indonesia, Malaysia and the Philippines (INDOMALPHI). As has been the case in and off the Gulf of Aden, these combined patrols have proven to be very effective in curbing the incidences of maritime crime.

A much more contentious and potentially-disastrous measure that has been adopted by a number of shipping companies is to hire Private Armed Security Guards and position them aboard merchantmen that are scheduled to transit through crime-infested waters. Several security companies have started to provide maritime security services, which they claim to be custom-made for modern piracy at sea. Some countries have introduced legislation and rules to help shipping companies to place armed guards on board the vessels to provide physical protection, while others have done the opposite. In India's case, the DG Shipping has left it up to individual companies but has issued a cautionary input against this practice, thereby typically seeking to have its cake and eat it too! In actual fact, this apparently attractive solution raises a number of very problematic concerns. A merchantman receives protection from warships precisely because the former is meant to be unarmed. This is what allows the merchantman to freely access ports and coastal reaches of a littoral State with navigational-safety and labour-laws being the principal concerns that it needs to address. Once it embarks arms, there is a huge question as to the precise legal status that it holds. What all constitutes 'small arms' and how would any such definition remain immune to the gallop of technology — especially the miniaturisation that comes in its wake? How are the risks of the proliferation of small-arms to a host of non-State actors to be mitigated? A merchantman that has armed personnel on board might well comply with the legal provisions of its 'Flag State', but how does it ensure such compliance in the case of a variety of Coastal States, and Port States? The *Enrica Lexie* imbroglio, which involved two Italian marines who shot and killed Indian nationals aboard an Indian fishing boat, albeit outside India's Territorial Sea, allegedly-misidentifying them as part of the crew of a boat about to engage in piratical-activity, is still fresh in public memory. Likewise, the *MV Seaman Guard Ohio* — which was a merchantman owned by an American company, AdvanFort, but flying the Sierra Leone flag (a flag-of-convenience), and was being used as a 'floating armoury' to store weapons and security guards on private anti-piracy contracts — was impounded in 2013 for violating Indian regulations. This led to the ship's crew (three



Ukrainians, six ex-military British nationals, 14 Estonians and 12 Indians) being incarcerated in a Chennai prison for four years (2013-2017). These are just two examples of the host of legal challenges that face those shipping companies that choose to deploy private armed guards on board their merchantmen. Some sense finally seems to be dawning, as witness the fact that amidst the latest tensions in the Persian Gulf, involving the effects of US sanctions on the export of oil from Iran, shipping associations have strongly discouraged the exercise of this option.

The criticality to India of merchant-shipping infrastructure is a function of the Indian cargo being carried to and from ports across the world. Given that Indian-flag shipping carries just about 7% of Indian cargo and that foreign-flagged merchantmen (including several that fly 'flags-of-convenience') carry the remaining 93%, the physical protection of mercantile-shipping is not an imperative that is limited to India-flag merchant ships alone.

The next article in this series will focus attention upon the physical protection of the second segment of this critical infrastructure, namely, Indian ports.

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