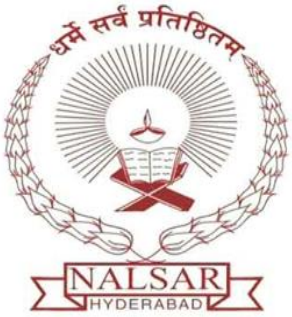

Centre for Aerospace & Defence Laws (CADL)

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Course Material

P.G. DIPLOMA (ADVANCED MARITIME LAWS)

1.2.6. Maritime Laws and Contemporary Issues

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MODULE-I

Maritime Piracy

DEFINING AND UNDERSTANDING PIRACY

Until a few decades ago, piracy was considered a matter of the past. The resurgence of piracy is a modern phenomenon. Despite increased public concern and media attention criminological literature on piracy is scarce; literature has been generated mainly from the fields of history, law, international relations, investigative journalism, and freelance writing. More recently with the escalation of piracy in Somalia, literature has emerged from maritime experts looking at piracy from a security perspective, focusing primarily on piracy as organized crime and its relation to terrorism. One of the few sociologists that has tackled the subject, Hua-Lun Huang, affirms that there is a serious lacuna in the formulation of theories or propositions "to assist modern sociologists or criminologists in demonstrating the relationships between, for example, piratical activities and socioeconomic/politico-geographic factors related to the exploration of the maritime environment".

Despite the reappearance of piracy, it is an act that is generally ill defined and little understood. This is despite the fact that piracy has a common global classification as *hostis humani generis* meaning enemy of all mankind criminals. It is the oldest crime over which there is universal jurisdiction. At the most basic level, piracy is aggravated theft or attempted theft at sea. This is suggested by the old German word for piracy 'Seeraub', literally meaning 'sea robbery'.

Historical context:

The definition of maritime piracy has changed over time and varies depending on context. The development of the concept mirrors the politics of the day, illustrated by the separation of pirates from buccaneers and privateers in the past. In antiquity, the concept of pirate referred to anyone who attacked another at sea. The Greeks and Roman distinguished between robber pirates and pirate communities. Pirate communities were ones which indiscriminately seized persons or goods without a formal declaration of war.

In Medieval times, the definition of pirates focused on theft at sea. To avoid situations of war, thieving between realms was protected under 'letters of marque and reprisal' by private entities where the purpose was retribution. By the seventeenth century, the idea of labeling a society as piratical was no longer acceptable. Instead pirates were seen as individuals who formed groups and were united in wrongdoing, these groups were not representative of a state. In 1934, piracy was recognized as more than theft, the British jurist C. S. Kenny described it as "any armed violence at sea which is not a lawful act of war" (1934). However Kenny's definition is not the legal definition, perhaps because it is too broad.

Definition of Piracy:

The first international codification of piracy occurred in the 1958 Geneva Convention on the High Seas (Article 15) and the later in the 1982 United Nations Convention on the Law of the Sea (UNCLOS) (Article 101).

According to these piracy consists of:

a) Any illegal acts of violence, detention, or any act of depredation committed for private ends by the crew or the passengers of a private ship or a private aircraft, and directed:
    i. On the high seas, against another ship or aircraft, or against persons or property on board such ship or aircraft ;
    ii. Against a ship, aircraft, persons or property in a place outside the jurisdiction of any State;
b) Any act of voluntary participation in the operation of a ship or of an aircraft with knowledge of facts making it a pirate ship or aircraft;
c) Any act of inciting or of intentionally facilitating an act described in subparagraph (a) or (b) of this article.

Unlike Kenny's definition, the convention limits acts of piracy to those for private ends, to incidents that occur outside the jurisdiction of any single State and sets a requirement for a ship-to-ship (or aircraft) conflict. According to Joseph Bingham, who prepared the Comment to the Harvard Draft Convention on Piracy, the public ends element of the definition excludes "all cases of wrongful attacks on persons or property for political ends, whether they are made on behalf of states or of recognized belligerent organizations, or of unorganized revolutionary bands".

This limitation effectively excludes from international jurisdiction (under this convention) any acts of piracy that are condoned or organized by nation states as well as acts of terrorism that are directed at the source state. Although UNCLOS focuses on the motivation of the perpetrators it does not provide any guidance as to what constitutes a private motivation or how to classify an event where private and public motivations are comingled. UNCLOS limits the act of piracy to transgressions committed on the high seas. The high sea is the area of the ocean that is outside of the territorial jurisdiction of a nation state, also known as international waters.

It is important to note that the focus of UNCLOS was not piracy; primarily it was concerned with redistribution of resources to the new nations that were created with the end of colonialization, whilst simultaneously ensuring freedom of navigation for the more established fleets of former colonial powers (Anderson, 1995). Of the 327 articles in UNCLOS, only seven deal with piracy. Largely this is because at the time of drafting piracy was regarded as a problem of the past. The drafters of UNCLOS were concerned with issues

of sovereignty not piracy which may explain why they failed to set any requirements for nations to legislate comparable domestic legislation on piracy and neglected to require any form of cooperation between nations when dealing with maritime predation.

UNCLOS provides that all States have an obligation to cooperate to the fullest possible extent in the repression of piracy (art. 100) and have universal jurisdiction on the high seas to seize pirate ships and aircraft, or a ship or aircraft taken by piracy and under the control of pirates, and arrest the persons and seize the property on board (art. 105). Article 110, inter alia, also allows States to exercise a right of visit vis-à-vis ships suspected of being engaged in piracy. These provisions should be read together with article 58(2) of UNCLOS, which makes it clear that the above-mentioned articles and other pertinent rules of international law apply to the exclusive economic zone in so far as they are not incompatible with the provision of UNCLOS relating to the exclusive economic zone.

It is also important to distinguish the crime of piracy from armed robbery against ships, which can occur within the internal waters and territorial sea of a coastal State. In accordance with Part II of UNCLOS, in cases of armed robbery against ships, primary responsibility for enforcement normally falls on the coastal State. Armed robbery against ships also constitutes an offence under the 1988 Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation (SUA Convention) and, in some cases, the 2000 United Nations Convention against Transnational Organized Crime. It was not until 1995 that the act of piracy within territorial waters was defined in international law. The Code of Practice for the Investigation for the Crime of Piracy and Armed Robbery against Ships (Resolution A.922(22)) (IMO Code) distinguishes between piracy and armed robbery at sea. The definition states in Paragraph 2.2:

Armed robbery against ships means any unlawful act of violence or detention or any act of depredation, or threat thereof, other than an act of "piracy", directed against a ship or against persons or property on board such ship, within a State's jurisdiction over such offences. Therefore identical behaviors are differentiated by location of the attack (either in territorial or international waters). Simply put, armed robbery at sea happens within the jurisdiction of a State, whereas piracy happens on the high seas, which is governed by international law.

Problems in the application of the Piracy Regime:

The constituents of the crime under Article 101 may be listed as follows: 1. An illegal act of violence or depredation, 2. Carried out for private ends, 3.on the high seas and 4. Against another ship. These essential elements have remained controversial however, and also have been subjected to severe criticism for their shortcomings.

A. **Defining the offence of Piracy**:

What constitutes piracy under customary International Law is generally recognized as codified under UNCLOS. However, defining the term piracy has caused many problems. It would suffice here to give the advanced warning of the great variety in opinions as to the scope of the term since there are no authoritative definition which finds unanimous support throughout the times. Nevertheless, all international instruments, both contemporary as well as the past, have adopted and enacted the definition given under UNCLOS.

B. Acts of Violence, detention and Depredation:

An "illegal Act" of Violence when committed " for private ends" on the high seas constitutes piracy according to the definition provided by UNCLOS. While the essence of piracy is violence on the high seas, the text of this provision offers no guidance as to what type of violence constitutes piracy. The use of the term "illegal" suggests, in particular that certain "legal" acts of violence are legitimate when committed on the high seas for private ends. However, such an inference would be contrary to the prevalent norms of international Law which have put an end to this kind of practice. Therefore, it has been pointed out that the word "illegal" qualifying acts of violence should be deleted, otherwise it would lead to incongruous results: reviving the archaic norms of International Law which have been abolished.

A further problem may arise from the textual formation of this provision in situations where there is mere threat to violence as opposed to actual physical violence committed against the crew members or passengers of a ship. Under such circumstances, whether the terms "violence, detention or any act of depredation" would be sufficient enough to attract the definition would be an important question for determination. But the lack of clarity on these issues hinders successful prosecution of pirates.

C. Private Ends:

The definition of piracy requires that an act must be committed " for private ends" which means politically motivated acts are excluded from the purview of the definition. In the same vein, it suggests that piracy cannot be authorized or commissioned by a State. While the latter proposition is well settled in law, the former has caused problem as the term " private ends" is not defined under UNCLOS. Generally speaking, all piratical acts " are done under conditions which render it impossible or unfair to hold any State responsible for their commission. Nevertheless, such assumption is oversimplification of a complex problem. This was evident in the "*Achille Lauro*" which lay derisively exposed the law of piracy, resulting into legal debate if the incident was piracy or terrorism. Although the hijacking of the ship was not considered piracy because of the manifest political objectives, it has invited severe criticism. the rationale for drawing flak was based on the argument that only unrecognized

insurgents who attacked a particular State in order to gain independence from it, were excluded from the definition, and not all attacks carried out indiscriminately.

D. High Seas:

Piracy must be committed " on the high seas or any other place outside the jurisdiction of any State." This requirement is essentially necessary to constitute piracy under international law. Acts similar to piracy which occur inside the territorial waters of a State do not fall under the definition of piracy. Such acts are termed as armed robbery at sea or armed robbery against ships and the coastal states have absolute jurisdiction over them. However, since most of the piracy attacks have occurred in the territorial waters in recent times, this has become a problem.

It may also be pointed out that the area that is covered by the high seas, where the states can exercise universal jurisdiction to apprehend pirates, has been substantially reduced. This is because territorial waters have been expanded up to twelve nautical miles from the coast line compared to three nautical miles in the past. As a result of this change, the requirement of high seas has become " too stringent to adequately address modern piracy problems. This change has also affected territorial waters in certain geographical regions which have become more vulnerable to piracy. Hence to resolve this problem, it has been suggested that the notion of piracy must be broadened to include piratical acts that occur within the territorial waters of a State.

E. Against another Ship:

Yet another requirement of the definition of piracy under UNCLOS is the presence of a second ship necessary to constitute the offence. In other words, there cannot be an internal seizure of a ship either by passengers or crew members from within the ship. We may recall the *Achille Lauro* incident that did not constitute piracy because the hijackers were passengers on board and that there was no other ship involved. While this requirement represents traditional notion of piracy, there is also a division of opinion on this count. It has been pointed out that under modern conditions of travel, which involves crew members and passengers of different nationalities, the possibility of internal seizure cannot be ruled out. Hence, the requirement of more than one ship must be eliminated. In a similar vein, it has been suggested that the difference between internal seizures and external seizures " leaves a gap in the legal definition of piracy which should be closed. Thus, while the object of excluding internal seizure was to maintain a distinction between piracy and mutiny, this element of the definition has also remained controversial.

OTHER PROBLEMS FACED WHILE PROSECUTING PIRATES

There are other problems which hinders the prosecution of the pirates. A few of these issues are discussed below.

i. Reluctance to prosecute the pirates:

A state capturing the suspected pirates can authorize its law enforcement agencies and the Court to put them on trial. But many states are reluctant to do so because this may give rise to several complex problems involving issues of jurisdiction and also permissible limits of use of force against them. Besides, many States also do not have the means or simply the political will to prosecute them. Hence, what to do with apprehended pirates has become the central legal question of the anti-piracy campaign. Further problems may also arise due to lack of appropriate provisions in the domestic laws criminalizing the act of piracy. Many States, in fact do not have a specific domestic legislation to deal with the issue. Additionally, some states are also reluctant because of the fear that the captured pirates may possibly claim that they would be subjected to unfair trial and torture and death when repatriated to their home country. In this context, the issue of human rights also becomes obvious affecting and hampering the prosecution of the pirates. It is partly because of the fact that some of the States have entered into agreements to transfer capture the pirates to other states which would allow them with a legal justification to avoid all kinds of problems including embarrassment for releasing the pirates without trial.

In this context, we can also refer to the *Petro Ranger Case* where, a tanker was attacked by pirates in South China Sea. The crew members were taken as hostages, and the cargo of the tanker, worth $1.5 million of Kerosene Oil, was stolen. The Chinese officials apprehended the pirates but later released them without any trial. Similarly, a Japanese Carrier *Tenyu* sailing from Indonesia to South Korea with a cargo of aluminum ingots disappeared in September, 1998. A few months later it was found that repainted and renamed, carrying a Honduras Flag. The Japanese owners were able to reclaim the ship by identifying the serial number of the Engines. But the cargo was missing and the crew members were presumed to be dead. Nevertheless, the Chinese authorities released all 16 hijackers without any charge because there wasn't any clear cut evidence that they were pirates.

A similar situation arose in India, when the first case for piracy came up for hearing before the Mumbai High Court in 2005. The *Alondra Rainbow case* as it is known, concerns a Japanese tanker with a Pilipino crew under the command of two Japanese officers. The tanker was sailing from Indonesia to Japan when it was hijacked by the pirates. It was later captured by the Indian Navy and the pirates were tried by the Indian Court. A Court of First Class Magistrate found them guilty of the offence and sentenced them to 7 years of jail. However, the Mumbai High Court overruled the decision exonerating all the 15 alleged pirates on the ground that the prosecution failed to establish a case.

These cases demonstrate how pirates can go scot free if the State does not take the crime and its International obligation seriously.

ii. Lack of Capacity to try the cases:

One of the major factors affecting prosecution of pirates is also lack of capacity of a State to try the offence of piracy. This shortcoming arises from a number of technical and procedural requirements that form part of any legal proceeding generally. Calling witnesses for providing evidence to a State which is prosecuting the suspected pirates, or proving counsel and translation services to the defendants, for example, illustrates the point. These issues pose not only difficult problems but are also financially burdensome.

iii. Uncertainty of the status of Pirates:

Prosecution of suspected pirates is also affected by uncertainty of their status. This brings into picture another disability in the legal proceedings against them. When pirates are captured and put on trial, most of them argue that they are not pirates but ordinary fishermen. However, pirates have also identified themselves with the State claiming that they are members of the Somali Coastal Guard, and are fighting to protect the marine resources from being exploited by foreigners. Under these circumstances, determining their status for the purposes of prosecution and detention becomes very difficult, especially in the absence of a specific legislation on piracy.

iv. Human Rights Concerns:

Human rights are also a matter of serious concern in the prosecution of piracy cases. A suspected pirate, for example, cannot be held for a long time without trial, that would be violation of his human rights. Human Rights issues are equally important upon conviction. For example, prison treatment and Judicial Supervision, including the right to appeal, requires the law enforcement authorities to respect minimum norms established by human rights law. But UNCLOS is completely silent on these matters. It is rather state centric and the whole orientation of the articles is focused on state rights. It does not concern at all with the capture and prosecution of alleged pirates, though in all cases of detention and arrest here is a potential threat to their human rights. Hence, most of the human rights involving issues of propriety and fairness provide an additional ground in discouraging states from prosecuting the pirates.

MARITIME PIRACY INCIDENTS IN FIGURES:

Instances of piracy are monitored both by the International Maritime Organization (IMO) and the Piracy Reporting Centre of the International Maritime Bureau (IMB PRC). An industry association, the IMB PRC is a 24□ hour manned, single point of contact, set up in 1991 specifically to collect and disseminate information on maritime incidents worldwide.

The information is widely communicated to regional governmental, intergovernmental and law enforcement organizations as well as broadcast immediately to all ships in the ocean region via In Marsat C Safety Net service. The IMB PRC records attacks or attempted attacks on any ship, whether at anchor, berthed or at sea irrespective of type of ship or its flag/nationality. Data presented in this section draws heavily on the IMB PRC annual reports on Piracy and Armed Robbery against Ships.

Over the past decade (2003–2012), some 3,436 acts of piracy have been reported worldwide. The number of actual attacks increased from 49 in 2008, before peaking at 249 in 2010 and falling back to 202 in 2012.The number of successful hijackings totaled 49 in 2008 before reaching a peak of 53 in 2010 and a low of 28 in 2012. More recently, the number of overall attacks (attempted and actual) fell from 445 in 2010 to 297 in 2012, reflecting a reduction in piracy levels in East African waters.

During the first nine months of 2013, 188 incidents of piracy and armed robbery against ships have been reported, the lowest third quarter figure since 2006. By September 2013, there had been 140 actual attacks with ten vessels being hijacked, 266 crew members taken hostage, 34 kidnapped, 20 injured and one killed. Incidents in Asian waters and in the Gulf of Guinea have, however, increased significantly since 2010, with attacks in 2012 numbering 26 in East Africa against 55 in the Gulf of Guinea and 130 in Asia. In the first three quarters of 2013, 43 incidents were reported in the Gulf of Guinea, including seven hijackings and 132 crew members being taken hostage.

Overall, six tankers and an offshore supply vessel have been hijacked by September 2013.This is an alarming development in a region already burdened by oil cargo theft and attacks against vessels servicing the oil industry. Global piracy affects all ships, irrespective of their type and flag. However, tankers, containerships and bulk carriers remain among the main targets owing to their high economic value and given their strategic role in global merchandise and energy trade. An added factor in the case of tankers and bulkers is the relatively lower speed at which they operate and their relative “low height” which facilitates boarding by pirates.

Piracy in East African waters is generally concentrated off the coast of Somalia/in the Gulf of Aden/the Mozambique Channel/the Cape of Good Hope lane. However, unlike in other regions where attacks tend to occur in coastal waters or nearby trade lanes, pirates off the coast of Somalia have, since 2000, adopted a different approach by widening their geographical presence and moving farther away from the coast and territorial waters into the Indian Ocean, the Red Sea, the Gulf of Oman, the Mozambique Channel, Maldives, and the Indian territorial waters. Consequently, with the incidence and the impacts of maritime piracy expanding geographically, monitoring and policing the region has become more challenging. The list of countries directly affected by piracy has become more extensive, and includes the Comoros, Djibouti, India, the Islamic Republic of Iran, Kenya, Madagascar, Mozambique,

Oman, Qatar, Seychelles, the United Republic of Tanzania, the United Arab Emirates and Yemen.

Targets pirates, according to the International Maritime Bureau, a leading anti-piracy office in Kuala Lumpur, are very different, they attacking ships of various sizes, for many reasons. For example, on the African coast of Nigeria, pirates prefer to attack the vessels involved in the oil business, while in Southeast Asia, they are turning to smaller ships, barges and tugs. Often cargo barges are emptied and sailors are kidnapped and held captive for rewards. In Somalia, any trade is a potential target ship and mariners are advised to fly at least 200 nautical miles from the Somali coast. Somalia is a unique problem regarding piracy, because this country is at war for almost 20 years and piracy is the easiest way to make money. Piracy has become a way of life for young Somalis who simply do not know or do not know how to do anything, most do not have school and do not understand the law and its implications. Somalia does not have fleet, so local militias took business into their own hands and do it themselves illegal fishing and other shady business. Illegal fishing bring the Somali coast about 6 million annually. Piracy off the Somali coast has taken off and the area is a very commonly used international crossing route. All attacks off the Somali coast crews seek reward abduction until the ship owners pay to get his ship and crew back. There was no case in which the owners do not pay, leading obviously to increase the number of attacks.

In June 2007, for example, Somali pirates seized a Danish ship, "Danica White", and the reward was paid amounted to $ 1.5 million. One of Somali pirate attacks on merchant vessels passing through the sea area adjacent to the socalled "Horn of Africa" officially recorded was at the 4 November 2007 when he was detained a North Korean merchant ship. In a very short time, a U.S. patrol vessels, in the area to help in the international effort to combat piracy SOS responded to the call launched by the 22 North Korean sailors on board the commercial vessel impounded. With U.S. help, the North Korean ship was released and allowed authorities in Pyongyang American ships to provide first aid sailors wounded.

In 2008, Somali pirates attacked more than 130 merchant ships, with 200 percent more than in 2007, according to figures from the International Maritime Bureau. Over 30 ships from 16 countries patrolling international waters to combat attacks. The only major attack was led by the Somali pirates that turned on an Italian cruise ship with 1,500 people on board when they were rejected by gunfire ship security team, made up of fossil Israeli soldiers. Combating terrorism has become an expertise Tahali .

90 percent of world trade is carried by sea routes yet, so it is not surprising that the pirates attacking ships with dangerous cargo and is still big enough for commercial freight companies and individuals. Specialists estimate that the twenty-first century pirates causing annual losses of tens of millions of dollars. Five groups of pirates, which includes about 5,000 people worked in the period 2007-2010 the Somali coast. Most people said that pirates have kidnapped between 35 and 50 years.

In 2009, the ship MV Ariana was seized on May 2 in the Indian Ocean, about 450 kilometers south-west of the Seychelles, having on board 10,000 tons of soybeans. The vessel owned by All Ocean Shipping, based in Athens. A 12 year old girl was aboard the MV Ariana cargo, with Ukrainian crew which was then held by Somali pirates six months. The Turkish vessel and its 23 crew members were detained by pirates on 8 July 2009.

The "counterpart" over the same month of July, the Turkish Navy forces arrested 12 pirates, and in August, the Turkish Navy frigate Gaziantep, we turned into the NATO to fight piracy in the region of suspected pirates captured another 5 that preparing attacking a ship. The operation was launched on the basis that evoked maneuvers around pirates in the direction of two vessels under the British flag, the evolving security corridor protected by multinational naval force. Multinational Naval Force, responsible for combating piracy in the Indian Ocean warned merchant ships on the high risk of pirate attacks resume after monsoon rains, ending the region in early September.

The warning was confirmed that in early September 2009 in search of new catches, Somali pirates mistook a French warship with a commercial, attacking him 500 miles off the coast of Somalia. Dexinhai Chinese cargo ship and its 25 crew members, all Chinese, were captured by Somali pirates on October 18. Only after exactly one week and resumed the journey in exchange for a ransom of 3.5 million dollars (2.2 million euros), said the agency New China. Loaded with coal freighter was captured on October 18 northwest of Seychelles in the Indian Ocean, while he was en route to India from South Africa. On October 26, the European Union naval force to combat piracy, EUNAVFOR Atalanta, presented in a statement released in Brussels that "health is good crew and the ship is heading for a safe harbor.

Special Forces would have to release at the end of October 2009 a British couple in the hands of Somali pirates in the Indian Ocean could not intervene in time because of a failure in the decision process. A team of special services would be on a boat to rescue Paul and Rachel Chandler, whose boat was attacked by pirates on 23 October, when sailing between the Seychelles and Tanzania. The pirates have demanded a ransom of $ 7 million. News agencies have not submitted data on naval piracy case.

Cancale Star tanker under the Liberian flag, was attacked by pirates on the night of Monday 23 to Tuesday, November 24, 2009, off the west coast of Africa. Six or eight pirates - who arrived with a speedboat - have failed to address the 230 m long vessel 18 nautical miles from the coast of Benin, boarded the tanker deck and - at gunpoint - they emptied the safe of all the money. Ukrainian mate of the vessel, who tried to resist, was shot on the spot. Pirates hastily withdrew after one of the crew of the tanker siren turned on, giving the alarm. Four other sailors were wounded. The hustle withdrawal tanker crew - crew consisted of 24 Russians, Ukrainians, Latvians and Filipinos by Captain Jaroslav Latvian Semenov - managed to capture a pirate who surrendered Tuesday police Cotonou, where he was interrogated. It is said that Nigerian comes from Badagry town, very close to the border

Beninese, as well as other "colleagues'. Acts of piracy are less common in the western coast of Africa near the eastern than in the continent, but their number is steadily increasing. Somali pirates who seized an oil tanker on November 28, 2009 Greece warned any attempt to release the vessel, with a crew of 16 Filipinos, nine Greeks, two Ukrainians and a Romanian tanker Maran Centaurus, Greek flag, was anchored off the port Haradhere, a refuge for pirates.

Under the auspices of Government - American, French, English (whose vessels were built in a multinational force under the auspices of NATO), and the Chinese and Indian governments under several warships patrolling the pirateinfested waters, to protect maritime trade of the countries concerned and thus international trade. Andrei Sazanov, acting captain of a ship in the Paficiului, destroyed or captured several boats of pirates, says he "theory" Pavlov: Some of bandits and they speak very good Russian, but did not want to tell us where they learned to speak so well. Most often talk to them without an interpreter. Do you find it curious? ". On the evening of November 17, 2009, the frigate INS Tabar, located in the Gulf of Aden, where participating in operations against piracy, was attacked by a "mother ship" of pirates and forced to fight back; ship pirate ship opened fire on Indian who fought back in self-defense (in an Indian official version). Following the confrontation, the pirate ship was completely destroyed. Until the attack on her Indian frigate successfully escorted 35 vessels, some foreign-flagged sailing in the Gulf of Aden and prevented two hijacking attempts.

MARITIME PIRACY AS AN ORGANIZED CRIME:

The seas have played host to numerous conflicts, including piracy. The risk of this has increased due to a number of factors of a legal, political, economic or technical nature. These include the end of the Cold War and the collapse of the bipolar balance of power in the world, the legal status of marine areas, the expansion of areas of instability on land, the reduction of naval presence, the relatively low price and availability of ships, and poverty.

However, external determinants of piracy are not part of the analysis carried out in this article, which focuses on aspects of the internal environment. What is the definition of piracy? The Geneva Convention defines piracy as any illegal act of violence, detention or any act of depredation, committed for private ends by the crew or the passengers of a private ship or a private aircraft, and perpetrated on the high seas, against another ship or aircraft, or against persons or property on board such ship or aircraft.

The purpose of this chapter is to depict terrorist organizations and maritime piracy in light of the theory of resources, skills and competencies of strategic management. It is this way of thinking that dominated the approach to organizational strategy in the early nineties. In organizations focused on economics and science, the analysis of the importance of intangible assets, along with the knowledge and innovation that stem from this, changed their focus from competition to cooperation, leading in turn to increased success. It is therefore

necessary to ask if there are universal success triggers that apply to all organizations, or whether these depend on the type of business in question. This chapter therefore seeks to analyze the issue described above (namely, the threat posed by the operations of criminal organizations) in an interdisciplinary manner.

Characteristics of Piracy:

Maritime piracy has been a feature of humanity since ancient times as goods being transported have always fallen prey to sea-based thieves. It is not surprising that many large-scale films have been produced playing on this pirate motif, leading to the assumption that pirates are viewed by the public through the prism of legends, novels and movie heroes, as personified by Hook, Flint or Jack Sparrow, played by Johnny Depp in the Pirates of the Caribbean movie series. The image of pirates that has been subconsciously formed since childhood presents them as being somewhat inept, disorganized, but also lovable characters.

However, we also find movies based on facts, such as Blackbeard, which represent pirate groups as well-organized, effective organizations. A recent non-fictional movie, Captain Phillips, describes the fate of a captain abducted by Somali pirates. They are portrayed as a group that is committed to achieving its objectives with determination and brutality, which means taking the spoils and abducting the captain as a consequence. The conduct of pirates thus begins to resemble the activities of terrorists.

We learn about these activities via media reports, including online, thanks to the increasingly significant role played by social networks. Sea piracy enjoyed a renaissance in the early 1990s, and since this date it has been possible to talk about the formation of powerful gangs living off the profits they make on the high seas. These organizations are very well organized, featuring organizational structures akin to a small army. They have the following equipment: very fast boats armed with machine guns, RPGs and mortars, GPS receivers, devices for eavesdropping and interference with radio communications, encoded means of communication, diving equipment, and water scooters. They have connections to corrupt local police, coastguards, shipping companies, and port workers, and often have relations with ship crews to ensure that they can act freely and receive information about valuable cargo. Modern pirates can also be small groups of poor thieves living in port towns and impoverished fishermen attacking primitive boats.

Most often they board ships at night, stand at moorings near the shore, terrorize the crew and passengers with knives, machetes, and occasionally firearms, and then steal what they are able to take. Regardless of the type of organization, the pirates are guided in their actions by the desire for personal gain, whether this be from the sale of stolen goods, or the ransom for the ship or crew. At the same time, they take efforts to cover their tracks and not to arouse media attention. Thus, pirate activity is concentrated on the operational level.

As statistical background, the Report of the International Maritime Bureau (IMB) on marine piracy states that figures have fluctuated over the past 20 years across the range of 200-470 pirate-related events a year. It should be noted that some attacks go unreported. The damage is estimated to amount to around 7–12 billion USD. 95% of the costs incurred are due to the activities of Somali pirates. It should also be noted that the geography of piracy has changed. While previously most attacks were recorded in the waters around Southeast Asia, now the Indian Ocean, particularly off the coast of East Africa, and the Atlantic Ocean off the coast of West Africa, are the new focal points.

The actions of these organized groups are different: Somali pirates hijack ships and hold their crews to ransom, while the pirates in the Gulf of Guinea region focus on the theft of cargo from ships, especially oil and petroleum products, in order to resell them on the black market. Despite the recent decline in the number of attacks, regarding which various preventive measures taken by ship owners were undoubtedly contributing factors, including an increase in the number of armed guards onboard ships, it may be concerning that there is an increase in the degree of brutality, in the number of kidnappings for ransom, in the amount demanded by ransom requests, and a prolongation of the time for which individuals and crews are detained. The effects of maritime piracy have as a consequence that organizations on an international level initiate discussions on how to counter maritime threats, how to fight back, and, by extension, how to detect and transmit data on the possible occurrence of these risks. To this end, it is necessary to recognize the enemy, including via the use of the theory of resources of strategic management.

Maritime Piracy in Terms of Resources:

Let us start by explaining the classical approach, dubbed the resource approach. The search for core competencies should start by examining all the base resources (tangible and intangible) and skills (complex resources), for example, financial resources, technical resources, staff and their competencies, organizational culture, the reputation and achievements of the organization, and the efficiency of structures and procedures. Tangible resources are what the organization has and/or controls. Intangible resources are both internal and external factors to which the organization has access and which it may use, but over which it does not have full control. They are largely responsible for the success of the organization.

The classification is as follows: human capital, organizational/structural capital, relational capital. Human capital is defined as the knowledge, skills, experience and abilities that employees take with them when they leave the organization. It is therefore a set of features that allows employees to perform tasks, solve problems in the organization, create innovation collectively, build relationships, reason, and make decisions. This capital consists of the capital of knowledge (know-what, know-why, know-how, know-who), skills (professionalism, speed, talent and aptitudes), society (willingness to act, understanding,

trust, commitment, leadership, norms, values, habits, relationships) and development (innovation, flexibility, creativity, learning skills).

Structural capital is defined as the body of knowledge that arises at the end of the working day. This includes all the resources that support the work of the members of an organization: the organizational structure, databases, procedures, processes, organizational culture, knowledge of the organization, learning, flexibility, and willingness to change. This capital consists of organizational capital (organizational structure, hardware, software, trademarks), process capital (methods, techniques, procedures, functions, styles, organizational culture) and innovation capital (knowledge, learning, flexibility, willingness to change). Relational capital denotes the resources related to interpersonal and inter-organizational relations, the ability to establish and maintain close and lasting relationships, and build a social network: in short, factors related to external relations. This capital is the market capital (relationships with customers, competitors, partners), distinction capital (brand, image, reputation, loyalty, mission, vision, goals) and customer capital (client database, potential clients).

Literature and the responses to the diagnostic survey were analyzed using the above-mentioned divisions. It can be seen that some of the resources cannot be purchased and sold on the market, imitated or replaced – these are called strategic resources. Skills are processes and are what the organization can do best, using its own or potential resources as a foundation for this. In our case, this consists of building a competitive advantage by using the specific skills of criminal organizations (piracy) to achieve the goal (loot), and not getting caught by those bodies responsible for the security of the ship or the state. Skills relate to what the organization is doing

According to Prahalad and Hamel, for certain organizations, core competencies are the areas of knowledge and experience, which consist of tightly related elements. Core competencies are hard for competitors to copy since they are specific to and characteristic of a particular organization. Compiling resources and organizational skills in a unique way forms the core competencies of an organization, and grants it an advantage over competing criminal organizations, as well as over the security services. Organizations' base resources are the foundations of their existence. Permanent coordination and the use of resources to achieve the underlying purpose are evidence of the possession of special competencies by organizations.

It seems that criminal organizations, in this case, piracy, can be compared to companies, whose strength lies in human capital. Human capital is defined as the sum of the capacity, knowledge, skills and experience of the members of an organization and of management that are useful for the performance of complex tasks, and the ability to expand these resources by way of learning. It creates added value for the organization through the direct application of the knowledge and skills of its members via the process of operating and accumulating knowledge in the intangible assets.

The aim of the organization is therefore the acquisition of knowledgeable workers, who are characterized by a certain state of mind and attitude, because powerful companies stem from the proximity of mutual relations, loyalty and the trust of their members. Similarly, Peters and Waterman see the perfection of companies as one of the aspects of community norms and values. Management of people of this kind requires an appropriate organizational culture (structural capital, subcategory: process capital of organization) and leadership (human capital, subcategory social capital of organization). These are two factors that hold the greatest importance in business organizations in term of achieving a competitive advantage, and also seem to be a factor within criminal organizations. Culture is the result of formal and informal relationships, processes, and systems, as well as the strategies and goals of the organization. It is conditioned in large part by cultural elements, which are the products of local traditions. In the case of piracy, this consists of: the history of the organization, poverty, maritime traditions, and legends. Organizational culture is like the body's immune system: rooted in the organizational subconscious, it determines the development of core competencies.

Another important resource is the leader, whose efforts should be aimed at accelerating the creation of resources in their organization and facilitating their dissemination and use. The concept of core competencies is largely of an intellectual nature, and manifests itself in a comprehensive knowledge of the organization (leaders) with regard to the resources owned. The leader is supposed to create a strategic architecture of the organization, which will guide the organization into the future. Leadership in a hierarchical structure, which may include maritime piracy, is a type of relationship between management and subordinates. It is the ability to mobilize others resulting from the possession of not only specific knowledge but also charisma and authority. The map that leaders create is to determine key competencies and their components, which will lead to advantage both in the present and in the future. The sources of advantage and value creation for organizations are therefore intangible resources, in particular, knowledge, and more specifically the use of it, for example, in the ability of criminals to use the latest technology, weapons, GPS devices, and satellite communications. Its optimum use depends on the culture of the organization. Knowledge is not a factor for long-term value creation and cannot provide an advantage due to the possibility of its duplication. Therefore creativity is important. This refers to a creative attitude, which contributes to the creation of new, original ideas, and solutions, for example an attack or kidnapping. Non-standard and audacious acts are in fact difficult to predict on the part of the security services. Thus, a particular resource of an organization is tacit knowledge, inherent in the members of the organization.

Attention should be paid to another aspect, namely to the above-mentioned information and communication technologies, which facilitate effective communication between the members of the organization and allow almost immediate contact with their surroundings to assist with the distribution of stolen goods and negotiate ransoms with those involved. It seems that

intangible resources are not sufficient for effective action. To succeed, one also needs financial capital as well as technical and technological capital. Criminal organizations are a collection of high-level organizations characterized by: an obsession for action; close contact with the customer (relational capital); autonomy and entrepreneurship; a focus on values; a limited profile of activity (structural capital); the treatment of people as the most effective resource for the organization; leadership; discipline and knowledge (human capital). The specific nature of maritime piracy allows this list to be expanded to include: the mobility of pirates, the ability to use the latest technology, maritime traditions and the availability of suitable hiding places. The first two can be classified as human capital, the latter two as relational capital.

Lack of Specific Legal Regime:

The absence of specific law costs millions of dollars, companies or states whose vessels are captive. 90 percent of world trade is carried by sea routes yet, so it is not surprising that the pirates attacking ships with dangerous cargo and is still big enough for commercial companies transport goods and people. Specialists estimate that the twenty first century pirates causing annual losses of tens of millions of dollars. Most cases of piracy product of the Somali coast cannot be judged in any regional or international tribunal, because international law has no place or has very few provisions that allow their judgment in civil or criminal. The 13 Somali pirates captured by the Dutch navy in the Indian Ocean were paroled in 2009 winter holidays because no country has agreed to judge, many countries have difficulties to bring pirates.

Gulf of Aden is on the route of ships passing through the Suez Canal and the pirates operating in the area are well organized, armed and often require considerable rewards from governments or shipowners captured. EU and NATO sent warships patrolling areas off the Somali coast to escort missions and discouragement. On January 19, 2010, Somali pirates released Greek-flagged tanker Mara Centaurus and all crew members, however, a considerable reward - $ 7,000,000 (9 million according to other sources) that were thrown to the deck from a helicopter flew over the ship seized.

In March 2010, NATO decided to extend their mission in the Indian Ocean by the end of 2012. The EU's anti-piracy mission in the area, NAVFOR, who also used as protection for ships loaded with humanitarian aid to Somalia, one of the poorest countries in the world. NAVFOR officials say that after a period of calm, Somali pirates have become more active. Since piracy has grown in the Gulf of Aden and the pirates have become a global brand, they have managed to raise several million dollars rewards from ship-owners that they have captured.

Only in 2009, the Nigerian foreign ministry estimates, the pirates received $ 150 million as rewards for captured ships or persons. Given that international warships now patrolling the

Somali coast, pirates venture to operate outside their normal area of action. Some pirate attacks have taken place even in the Indian ocean. A major problem in the fight against piracy off the Somali coast is the absence of a functioning national government in Somalia. This is compounded by the lack of international regulation of piracy, making it captures states do not officially know what to do with pirates who capture them.

Costs and trade related implications of maritime piracy:

In today's globalized and interdependent world, the implications of maritime piracy are far reaching and extend to all countries, whether coastal or landlocked. While short term impacts often involve an increase in costs, longer term implications can be of a different scale. As oceans and maritime activities support livelihoods and promote growth and development, security threats affecting the maritime domain have the potential to significantly compromise the economic prospects and well-being of societies and to undermine peace, political security and stability. Critical benefits derived from the maritime domain include subsistence and nutrition (e.g. fishing), energy security and supply, economic opportunities (e.g. trade, maritime transport, tourism, submarine installations) and associated revenues (including foreign currency earnings from port activities and from oil and gas exploration and trade). The following sections provide an overview of some of the costs associated with maritime piracy and highlight some of the broader trade related implications that maritime piracy may have.

The global cost of piracy, including the cost of piracy off eastern Africa, remains uncertain, with existing assessments providing divergent estimates and conclusions. Existing studies tend to primarily focus on calculating first order costs such as the cost of ransoms, security deterrence equipment and naval forces deployment. The secondary costs of piracy, such as the effects on foreign investment in the affected and neighbouring regions, or on commodity prices appear so far to have benefited from much less attention. Existing studies differ in terms of their methodology and approach and, therefore, are neither directly comparable, nor provide a definite authoritative assessment of piracy related costs. However studies carried out so far provide an indication of the order of magnitude of the economic costs associated with piracy.

More recently, in 2013, the World Bank has estimated the global economic cost of piracy off the coast of Somalia at US$18 billion, with a margin of error of roughly US$6 billion. Acting as a hidden tax on world trade, this amount reflects in particular increased trade costs; it does not account for losses to tourism and fisheries, which are addressed separately. The report notes that in terms of order of magnitude the estimate is in line with other assessments which, however, adopt a different methodology, notably the 2012 OEF/OBP assessment. According to a preliminary assessment by the OEF, published in 2013, the direct economic impacts on West Africa of piracy in the Gulf of Guinea region are estimated to range between US$740 million and US$950 million in 2012.

The magnitude of the threat caused by piracy:

Before we analyze the legal regime of piracy, it is important to understand the nature of the threat arising from it and the impact it has upon global economy. That being the object, this section highlights the grim reality facing the international community. This is followed immediately with a brief account of the counter measures adopted by the international community to deal with the problem. The fact that 75% of the total world trade measured in tonnes and 59 % of this, in terms of value, is transported to the sea; is enough to understand the gravity of the problem. The losses suffered by the commercial shipping industry, including maritime transport and fisheries is also massive. The world's shipping powers, for instance have collectively spent about $2 billion a year on anti- piracy operations. All of this has virtually crippled international trade, shipping companies and the tourist industry, causing colossal losses and damage to their business.

Piracy has also caused irreparable loss to human lives. It is reported that there were 589 people held hostages by Somali pirates in 2012. Earlier, the International Maritime Bureau (IMB) reported 1206 hostages held by Somali Pirates in 2011 and 645 in the year 2010. It is also reported that piracy has endangered the lives of many seafarers, including 62 who were killed in the last four years, while 1090 were taken hostages off the horn of Africa, and that more than half of them were used as human shields by their captors. The International Maritime Organization (IMO) also reports that 341 incidents of piracy and "armed robbery" against ships that had taken place in 2012, and 544 in 2011. It is estimated that Somali Pirates have collected between $ 36 and $ 40.5million in ransoms in 2012. And worst even the UN humanitarian aid to the people of Somalia was not spared from the scourge of the Pirates.

INTERNATIONAL RESPONSE TO SUPPRESS PIRACY:

The term 'Somali piracy' refers to the activities of Somalia-based groups who aim to generate income by attacking ships at sea. In practice the intended victims are mostly foreign merchant vessels sailing in the Gulf of Aden or in the Western Indian Ocean. The attackers are not – or at least not formally – linked to government authorities in Somalia, but can rather be characterized as gangs of private marauders. In addition to the internationally recognized but largely ineffective Transitional Federal Government of the Republic of Somalia (TFG), there are three other major governing entities in Somalia.

These are the Islamist insurgency group al Shabaab in South and Central Somalia, and the de facto autonomous regional governments of Somaliland and Puntland in the north. The preferred method used by Somali pirates is to board ships, take the crews hostage, and to extract a ransom from the shipowner in return for the release of both the crew and the ship.

The international response to Somali piracy ranges from media coverage throughout the world to donor conferences to generate financial sources to invest in state-building initiatives

in Somalia, as well as the international naval presence and adjustments to the insurance rates for maritime shipping. The main emphasis in this section is on initiatives by foreign (non-Somali) and international governmental actors – primarily initiatives at sea but also those on land and in the legal sphere that are closely related or complementary to what is taking place at sea. Of course Somali actors and foreign non-state actors – especially the international shipping industry – are important players as well, but we will approach these primarily in relation to actions taken by foreign governmental actors.

Major foreign state actors include governments from countries that engage in naval counterpiracy missions off Somalia. The most prominent of these are the United States (US), China, Japan, Russia, India, South Korea, and many of the European member states of the European Union (EU) and the North Atlantic Treaty Organization (NATO). However, in the past few years various other countries have also sent warships to the region in response to Somali piracy. At the international level, apart from the EU and NATO, the United Nations (UN) are involved in various ways, for instance through the Security Council and the International Maritime Organization. National and international governmental bodies dealing with international law, or with criminal or financial issues also play an important role.

International Cooperation against Piracy:

Piracy has long been referred to as an enemy of mankind (‘*hostis humani generis’*), and yet when it comes to counterpiracy activities at sea, mankind has never responded collectively. The current operations in the Gulf of Aden probably constitute the first time in history when all of the world’s major naval powers bring together significant naval assets in a specific region for a – to some extent - combined response to piracy. In the past, success against piracy was primarily achieved by hegemonic powers or a combined effort by global and regional powers. From the first century BC, the Roman Empire achieved some degree of success in fighting piracy in the Mediterranean. Britain, during its ascendance as the world’s dominant naval force and the leading colonial power, suppressed piracy of European origin in the Atlantic and Indian Oceans. However, state power has only rarely been so strong as to be able to subdue piracy at the international level more or less single-handedly. At the height of its power, Spain was unable to suppress pirate attacks on the shipping routes between Spain itself and its overseas possessions in the Americas and Asia. It is also noteworthy that today’s leading maritime power, the United States, has so far been unable to end the threat of Somali piracy – in spite of the permanent presence of significant American naval forces in the Persian Gulf and the Indian Ocean.

During the Cold War, piracy did not play a prominent role in maritime security, at least not at the international level. Piracy once again became regarded as a serious threat to international shipping in the 1990s, when the number of piracy attacks in the Strait of Malacca grew rapidly. International cooperation played an important role in the response to Southeast Asian – mostly Indonesian – piracy in the Strait of Malacca. Major maritime powers such as the

United States and Japan, which have significant strategic interests in the Strait of Malacca, were eager to be involved in addressing Southeast Asian piracy. However, Indonesia, Malaysia, and Singapore, being concerned that their sovereign rights in the Strait could suffer as a result of the internationalization of the counterpiracy approach, were reluctant to assign a major role to external actors. According to Adam J. Young, the most effective approach for countries outside the region involves technical assistance and funding, rather than military or security cooperation, which allows the regional states to retain the lead in combating piracy. The regional states themselves initiated, in 2004, joint maritime patrols – the so-called MALSINDO patrols by Malaysia, Singapore and Indonesia. In 2006 the three countries signed an agreement to create a single framework for the MALSINDO naval patrols and for air surveillance.

It seems likely that this regional cooperative initiative was partly motivated by the aim to avert interventions by external powers. A broader cooperative initiative related to piracy in Southeast Asia is the Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia (ReCAAP), that came into force in 2006 and that involves sixteen governments, mostly of Southeast Asian countries. An important outcome of this is the ReCAAP Information Sharing Centre in Singapore which aims at facilitating the sharing of piracy-related information.

Since the 1990s, the threat of piracy attacks against international shipping has increased in various parts of the world, including the South China Sea, the Bay of Bengal, West Africa, and off the Brazilian coast. However, the most spectacular increase in recent years was off the Somali coast. Due to the weakness of the Somali state, the efforts by external actors rather than those of local authorities have so far played the most visible role in the response to piracy off the coast of Somalia. Another important difference with regard to the 1990s situation in the Malacca Strait is that the number of extra regional countries that are involved is far greater. As will be explored throughout this book, the international dimension in the response to Somali piracy is diverse and complex. This raises the question of how the many actors interact with each other, and to which extent a common approach has been found.

In spite of the historical significance of the international response to Somali piracy, not many research data are yet available on this topic. The fact that there is an international dimension to the response has been widely noted, and also that a military response is in itself insufficient to end piracy. Moreover, it has been noted that the United Nations is as yet incapable of effectively dealing with piracy. However, there has been little analysis with regard to the way in which the many international actors interact, both at sea and at other levels, and which factors influence cooperation between them.

Overview of foreign naval intervention off the HOA(Horn of Africa):

The deployment of foreign navies to patrol the area is one attempt to guarantee the security of merchant shipping along the Somali coast and in the Gulf of Aden, dating back to 2008. In August 2008, for instance, the US Naval Forces Central Command (NAVCENT) set up a Maritime Security Patrol Area (MSPA) in the Gulf of Aden, involving coalition navy warships and aircraft which patrols the waters and airspace of the area. Before the establishment of the MSPA, efforts were focused on Combined Task Force 150 (CTF-150), a multinational operation which patrolled the Gulf of Aden, Gulf of Oman, Arabian Sea, Red Sea and Indian Ocean and whose main aim is to counter terrorism. Its main contributors are Britain, France, Germany and the USA. However, the MSPA was and interim framework designed to counter destabilizing activities in the region and improving security while long-term initiatives mature.

In January 2009, the NAVCENT established Combined Task Force 151 (CTF151), with the sole task of combating piracy in the Gulf of Aden and the waters off the Somali coast in the Indian Ocean. Before the establishment of the CTF-151, efforts were focused on CTF-150. To further enhance collaboration among foreign navies, the US and four other nations (Britain, Cyprus, Japan and Singapore) signed onto an international plan, the "New York Declaration", on September 2009. The non-binding declaration aims to coordinate international naval patrols, enhance shipping self-protection measures and discourage the payment of ransom to pirates operating in the region.

In mid-2008, the European Union (EU) also initiated a Close Support Protection (CSP) system for vessels passing through the Gulf of Aden. This operation involves arranging the passage of ships in groups through a special (UKMTO) transit corridor, based on their transit speed. Naval and air surveillance are deployed within the area to wade off attacks and provide support to ships. The vessels can also alert the accompanying warships for assistance if they are attacked by pirates.

The NATO also floated an intervention known as Operation Allied Protector between October and December 2008. However, both the CSP and Operation Allied Protector were later integrated into the broader EU's maritime security initiative known as Operation Atalanta which has been in operation since 5 December 2008. Apart from the US and the EU, a flotilla of warships from other states such as China, Russia, Japan, Iran, among others, have intervened to protect merchant shipping in the region. Intervention by foreign navies arose partly from the need to protect their states' economic and security interests and partly in response to the UN's call for the suppression of acts of piracy in the area.

The UN Security Council issued four key resolutions (1816, 1838, 1846, and 1851) in 2008 to enhance international response to piracy off the HoA. UN resolution 1838, for instance, calls upon 'States whose naval vessels and military aircraft operate on the high seas and

airspace off the coast of Somalia to use on the high seas and airspace off the coast of Somalia the necessary means, in conformity with international law, as reflected in the Convention, for the repression of acts of piracy' (UNSC, 2008). The international armada assembling off the coast of Somalia created expectations of quickly suppressing the piracy threat through deterrence and intervention. However, statistical evidence from the IMB reports (2008 and 2009) show that piracy in the region has not decreased. If anything, it is increasing and spreading to new areas, and risks assuming a more ominous dimension.

EMERGING RISKS ASSOCIATED WITH FOREIGN NAVAL INTERVENTION IN HOA:

The foregoing demonstrates the level of response that combating piracy off the HoA has received from the international community. Observably, naval show of force has received immediate and enormous support from the developed countries, almost to the neglect of other critical socio-economic and political measures that would help stabilize Somalia: the principal source of insecurity offshore. Unfortunately, foreign naval intervention comes with its unintended effects or risks.

Desperation and Expansion of the Range of Attacks:

First, the intervention of foreign navies has added a new dimension to the desperation of Somali pirates, evidenced in the increasing resort to violence (the use more arms and the firing of sophisticated weapons) and the extension of their attacks farther out at sea. Hitherto, pirates have largely operated on the coast of Somalia and the Gulf of Aden. Figure 5 below shows that the range of attacks has expanded from just 165 nautical miles off the coast of Somalia in 2005 to about 1, 1000 nautical miles in early 2010, suggesting an increase of over 5% in six years. Yet, the range of attack is even growing. On 17 April 2010, suspected Somali pirates hijacked three Thai fishing vessels – MV PRANTALAY 11, MV PRANTALAY 12 and MV PRANTALAY 14 – in the Indian Ocean. The three vessels, carrying a total of 77 crew members, were hijacked about 1,200 nautical miles (2,222 km) from the Somali coast . In contrast to the pattern of earlier years, Somali pirates now attack vessels further out at sea, including off Kenya, Tanzania, Seychelles and Madagascar. They have demonstrated the capacity of attacking vessels as far west as the southern region of the Red Sea and the Bab el Mandab Straits, and as far north as off east coast of Oman and the Arabian Sea.

Rising Stakes: Trade-by-Barter:

The intervention of foreign navies has raised the stakes both for pirates and crewmembers. For pirates, it has led to higher risk of the criminal act in terms of their arrest or even killing by foreign navies. For crewmembers, it has lead to more violence as well as demand for higher ransom by pirates. Because the stakes are now high, Somali pirates appear to attach a 'conditionality' that gives them leverage over States and their navies attempting to clamp

down on piracy. This entails demand by pirates for the release of their captured colleagues (something akin to barter), in addition to ransom, in exchange for the release of crewmembers taken hostage by them. Pirates appear to have an edge in this challenge. For instance, a typical pirate raiding group usually comprises 8 to 10 men. Arrest by foreign navies has not gone beyond five pirates. But a successful pirate swoop can net in about 24 crewmembers or even more as hostages.

Propitious to Ideological Struggle:

The intervention of foreign navies is propitious to ideological struggle amongst foreign navies. A sign of this is emerged following the deployment of Iranian naval warship in the Gulf of Aden to help protect Iranian ships transiting through the region. On August 2009, for instance, Deputy Commander of Iran's Islamic Revolution Guards Corps (IRGC) Navy, Brig. Gen.

Ali Fadavi, relished that: The IRGC Navy accomplished a trans-regional mission to provide security for the Iranian commercial ships in the Gulf of Aden and once again proved that it has the capability to establish security outside its geographical region....This is while, despite the presence of their advanced naval fleets, the US and European countries have failed to repel the piracy threat facing their vessels.

Iranian naval presence undoubtedly discomforts the US given the ruffled diplomatic relations between the US and Iran over the latter's nuclear programme. Consequently, the international armada of warships has been unable to suppress piracy partly because of the tendency of navies to depart when their own interests or citizens are no longer under threat or as a result of some perceived ideological differences.

***Risk Exacerbating Regional Tension*:**

One of the challenges to combating piracy borders on what happens once pirates have been caught. Any state can shoulder the burden of prosecution, although few are willing to do so. A problem arises when a state whose ship was attacked or whose navy arrested pirates but does not have existing law that criminalises piracy. Somalia for instance does not have a law against piracy. Consequently arrangements have been made by foreign navies to hand over suspected Somali pirates to the country's neighbour for prosecution. In January 2009, for instance, the US and the UK signed a memorandum of understanding with Kenya that permits them to hand over to Kenyan authorities captured pirates for prosecution (Shinn, 2009). When captured Somali pirates are handed over to neighbours like Ethiopia and Kenya for prosecution, the tendency for resentment and hatred by Somalis may increase. Such arrangements in the future could fracture the contours of inter- and intra-state animosity in a region that is known for the complexity of its instability.

IMO GUIDANCE

IMO's Maritime Safety Committee (MSC) highlights adequate self-protection as the most appropriate deterrent to acts or attempted acts of piracy and armed robbery.

To that end, in May 2011 the MSC adopted Resolution MSC 324(89) on the Implementation of Best Management Practice Guidance, which recognizes the urgent need for merchant shipping to take every possible measure to protect itself from pirate attack and that effective self-protection is the best defence. The resolution strongly urges all those concerned to take action to ensure that, as a minimum, ships' masters receive updated information prior to, and which sailing through, the defined High Risk Area (HRA); ships register with the Maritime Security Centre Horn of Africa (MSCHOA) and report to United Kingdom Maritime Trade Operations (UKMTO) Dubai, and that ships effectively implement all recommended preventive, evasive and defensive measures.

The following are recommendations and guidance adopted by IMO to assist governments, shipowners and ship operators, shipmasters and crews in countering acts Piracy and Armed Robbery against Ships:

- Recommendations to Governments for preventing and suppressing piracy and armed robbery against ships MSC.1-Circ.1333-Rev.1
- Guidance to shipowners and ship operators, shipmasters and crews on preventing and suppressing acts of piracy and armed robbery against ships MSC.1/Circ.1334

For a more comprehensive list of recommendations and guidance adopted by IMO on the prevention and response to acts Piracy and Armed Robbery against Ships - including Guidelines on crimes of piracy and armed robbery investigation and IMO's Code of Practice for the Investigation of Crimes of piracy and armed robbery - please refer to the Guidance on Piracy section of IMO's Maritime Security webpage.

Regional Cooperation:

Regional cooperation among States has an important role to play in solving the problem of piracy and armed robbery against ships, as evidenced by the success of the regional anti-piracy and armed robbery agreement and related operations in the Straits of Malacca and Singapore, to which IMO provided and continues to provide assistance, throughout the development and implementation processes.

The Regional Cooperation Agreement on Combating Piracy and Armed Robbery against ships in Asia (RECAAP), which was concluded in November 2004 by 16 countries in Asia, entered into force in September 2006 and encompasses the RECAAP Information Sharing Centre (ISC) for facilitating the sharing of piracy and armed robbery related information, is a

good model of a cohesive and successful regional cooperation structure, which IMO seeks to replicate elsewhere around the World.

In recent years, particular focus has been placed on piracy and armed robbery at sea in the Gulf of Aden and the wider Western Indian Ocean, as well as on the Gulf of Guinea in West Africa. While progress has been made recently in those regions to eradicate piracy, armed robbery and other illicit maritime activities, ships are urged to remain vigilant when navigating through those regions, since the threat of piracy is not "eliminated", noting in particular the increasingly fragile situation ashore in Somalia.

Given the growing use of Privately Contracted Armed Security Personnel (PCASP), MSC also approved recommendations and guidance on the use of PCASP on board ships in the High Risk Area. This guidance was further developed by the Facilitation Committee, and by a special MSC Inter-sessional Working Group, which produced a suite of guidance for flag States, for port and coastal States, and for ship-owners, ship operators, and shipmasters on the subject.

Governments, shipowners and ship operators, shipmasters and crews, should also note that in order to prevent and suppress acts of piracy and armed robbery against ships effectively, it is the responsibility of the Coastal State/Port State to develop national and regional legislation and action plans outlining the methods they deem appropriate for prevention of such acts. IMO is able to provide technical assistance in this process, if and when requested by Member States, individually (at national level) or collectively (at regional level).

Countering Somalia-based piracy:

In January 2009, an important regional agreement was adopted in Djibouti by States in the region, at a high-level meeting convened by IMO. The Djibouti Code of Conduct (DCoC) concerning the Repression of Piracy and Armed Robbery against Ships in the Western Indian Ocean and the Gulf of Aden recognizes the extent of the problem of piracy and armed robbery against ships in the region and, in it, the signatories declare their intention to cooperate to the fullest possible extent, and in a manner consistent with international law, in the repression of piracy and armed robbery against ships.

The signatories commit themselves towards sharing and reporting relevant information through a system of national focal points and information centres; interdicting ships suspected of engaging in acts of piracy or armed robbery against ships; ensuring that persons committing or attempting to commit acts of piracy or armed robbery against ships are apprehended and prosecuted; and facilitating proper care, treatment, and repatriation for seafarers, fishermen, other shipboard personnel and passengers subject to acts of piracy or armed robbery against ships, particularly those who have been subjected to violence.

Countering West Africa-based piracy

IMO and the Maritime Organization of West and Central Africa (MOWCA), in July 2008, developed the Memorandum of Understanding on the establishment a sub-regional integrated Coast Guard Function Network in West and Central Africa and provide a framework of cooperation and guidance for the implementation of the Network. The MoU which has been signed by 15 coastal States in the region aims to initiate joint efforts in the domain of maritime activities to protect human life, enforce laws and improve the safety and protection of the environment.

More recently the Code of Conduct concerning the repression of piracy, armed robbery against ships, and illicit maritime activity in west and central Africa was formally adopted by a Heads of State meeting in Cameroon's capital Yaoundé, on 25 June 2013, and was signed by ministerial level representatives of 22 States immediately afterwards. The Code builds on the existing Memorandum of Understanding on the integrated coastguard function network in west and central Africa and incorporates a number of elements of the Djibouti Code of Conduct, the regional counter-piracy agreement for East African States, but is much wider in scope as it addresses a range of illicit activities at sea including illegal fishing, drug smuggling and piracy.

INDIA- AFRICA MARITIME REGIME AND STEPS TAKEN TO SUPPRESS MARITIME PIRACY

For a long time, India's political attention was directed towards its East, through its 'Look East' policy (later renamed 'Act East'). Yet, most of the Indian diaspora (both NRI and PIO), remittances, border conflict (with Pakistan), energy interests (crude oil, petroleum), and inner-core of security lies to the country's west. From an Indian perspective, therefore, as important as securing the east, is its western maritime security, where the Indian Ocean and the Arabian Sea meet. In recent years, this viewpoint has gained prominence, and today there is a rebalancing towards the West, especially the African Indian Ocean Rim littorals. This is reflected in the 'top priority' status accorded by the government of Prime Minister Narendra Modi to the African continent in the country's foreign and economy policy.

Indeed, there has been an unprecedented intensification in India's political engagement with Africa; one indication is the growing number of high-level visits from the two sides. Both India and African countries agree on the need to keep the oceans open and free for the benefit of all nations. This is reflected in India's 'Ten Guiding Principles for India-Africa Engagement', as enunciated by PM Modi during his address to the Ugandan parliament last year.

This paper explores the driving factors behind India's increasing maritime security cooperation with African countries in the Western Indian Ocean. We will be discussing the existing challenges to India and Africa's cooperation in the maritime domain, and calls on

India to play a greater role in shaping the maritime security architecture in the Western Indian Ocean. Now, we will be discussing the India- Africa maritime domain, the regional cooperation to combat piracy and the challenges.

Importance of Maritime Domain for India and Africa:

A secure maritime environment in the Indian Ocean Region (IOR) is crucial for both India and African countries for securing national interests and achieving sustained national development. Such security means not only guarding the coastline or territories, but also safeguarding the countries' interests in their exclusive economic zones (EEZs), as well as protecting trade and shipping routes, and sea-lanes of communications (SLOCs).

India has a vast coastline of 7,500 kilometers and an EEZ of two million square kilometers. It occupies a central position in the IOR, straddling the main international shipping lanes. The African continent, for its part, has a vast coastline with 38 of its 54 countries being either coastal or island nations. Africa's maritime environment is globally significant as huge amounts of international shipping activities pass through its seas. Indeed, around 90 percent of the continent's trade is carried out by sea, thereby making the African Maritime Domain (AMD) crucial for commercial, security, environmental, and developmental reasons. For the longest time, however, African countries suffered from a culture of 'sea blindness', i.e. it largely ignored its maritime domain—and had little knowledge of the benefits of its water bodies. It is in the last few years that African countries have started paying more attention to the maritime domain and as a collective entity has come to realise the importance of its maritime security.

With a booming oil and mining industry, Africa has been at the centre of global attention: various global players like India, China, and the European Union, are keen to engage Africa's waters. However, with an increase in resource extraction activities in the seas, there has been a corresponding rise not only in the volume of sea-traffic but also the rate of maritime crimes. Unfortunately, most African countries lack the capacity to ensure the security of their declared maritime zones. This has resulted in vast illegal capture and exploitation of the continent's marine resources, which in turn is provoking a clamor for better maritime governance. The high incidence of piracy off the East African coast in Gulf of Aden and in the Niger Delta Region and Gulf of Guinea in West Africa, has brought the issue of African maritime security to the world's attention.

While challenges posed by piracy has brought the attention of global players to African waters, it is necessary to understand why the Western Indian Ocean (WIO) region is becoming more vital for maritime partnership between India and the littoral countries of the African Indian Ocean Rim. Is it the region's geographical proximity to India and its rich natural resource profile, which has caught the attention of global players like China and India?

II. The Western Indian Ocean: A Profile:

The Western Indian Ocean (WIO) region comprises 10 countries: Somalia, Kenya, Tanzania, Mozambique, South Africa, Comoros, Madagascar, Seychelles, Mauritius, and the French overseas territory of Réunion. The region is of major global geostrategic significance and remains a space of major geopolitical and naval interaction between states. Significant proportions of global maritime trade pass through the area, including a large share of the world's crude oil supplies.

Security Challenges in the WIO:

The Western Indian Ocean is facing a diverse range of complex, interconnected security challenges, including both traditional and non-traditional. To be sure, piracy has been on the decline in the region beginning in 2013, primarily due to successful multi-national efforts to patrol East African waters. However, the WIO region remains vulnerable to radical terrorism from outfits like Al-Shabaab, and the activities of Somalian pirates.

The outbreak and escalation of Somali piracy from 2008-2012, off the East coast of Africa and in the Gulf of Aden has shown that maritime insecurities are interconnected and that "the capacity of African states are insufficient to prevent crime at sea and to realise the developmental potential of the maritime economy." Somali pirates have been attacking vessels within the maritime boundaries of countries like Kenya, Tanzania, Seychelles, Madagascar, and further off into the Indian Ocean. These insecurities—whether related to piracy or organised crime, or terrorism—are closely linked to instabilities and state fragility on land, "highlighting not only the liminal nature of challenges, but also their relationship to wider issues of development and insecurity."

WIO littorals have attempted various experiments in the enforcement of sanctions and counterterrorism operations to arrest the challenges of piracy and criminality at sea. The majority of the Maritime Domain Awareness (MDA) functions in the region are not provided by African or regional actors, but rather by international actors and stakeholders

Nature of inter-regional cooperation in WIO region:

1. *Programme to Promote Regional Maritime Security (MASE*) - The MASE Programme was adopted on 7 October 2010 in Mauritius, and is jointly run by the European Union (EU) and the United Nations Office on Drugs and Crime (UNODC). The programme is entirely funded by the EU and is collectively implemented by the Intergovernmental Authority on Development (IGAD), East African Community (EAC), Common Market for Eastern and Southern Africa (COMESA), and the Indian Ocean Commission (IOC). The programme's primary objective is to strengthen the maritime security capacity of Eastern and Southern Africa and the WIO (ESA-IO) region in order to implement the Regional Strategy and Action Plan against Piracy.

2. ***Djibouti Code of Conduct (DCoC) –***

The Code of Conduct concerning the Repression of Piracy and Armed Robbery against Ships in the Western Indian Ocean and Gulf of Aden (or the Djibouti Code of Conduct) provides a framework for capacity building in the WIO region in order to counter the threat of piracy. This is the first such code to be operational in the Western Indian Ocean waters. The code was signed on 29 January 2009 and its membership includes 20 of the 21 eligible countries.

3. ***Jeddah amendment to the Djibouti Code of Conduct (DCoC+) –***

A high-level meeting of the signatories to the DCoC held in Jeddah, Saudi Arabia in January 2017 adopted a revised code of conduct, known as the DCoC+. The amendment recognises the role of the 'Blue Economy' including shipping, fisheries, seafaring, and tourism in supporting sustainable economic growth, food security, employment and stability. The revised code builds on the earlier 2009 code and encourages signatory states to cooperate to the fullest possible extent to repress transnational organised crime in the maritime domain, maritime terrorism, and IUU (illegal, unreported and unregulated) fishing. "A key article of the code includes the intention of participants to develop and implement a national strategy for the development of the maritime sector and a sustainable 'blue economy' that generates revenue, employment, and stability." The Jeddah meeting was attended by high-level representatives from 17 DCoC signatory states', France (Réunion) and four observer states, as well as observers from EU, UNODC, Interpol, and East African Standby Force (ASF).

4. ***Africa Integrated Maritime Strategy (AIMS) 2050 –***

The 2050 AIMS is the African Union's (AU) concerted attempt to reclaim the continent's maritime sector for the development of its own citizens. The strategy aims to foster more wealth creation from Africa's oceans, seas, inland waterways by developing a thriving maritime economy and realising the full potential of sea-based activities in an environmentally sustainable manner. Africa's total length of coastline, including its islands, is 26,000 nautical miles. Thirty-eight African countries are either coastal or island nations while 52 of its over 100 port facilities handle containers and various forms of cargo. "While African owned ships account for 1.2 percent of world shipping by number and 0.9 percent by gross tonnage, African ports handle only six percent of worldwide water borne cargo traffic and approximately 3 percent of the worldwide container traffic." The AU is attempting to implement the 2050 AIMS in conjunction with the relevant AU, national, and international regulatory frameworks and on-going maritime activities in Africa. While the AIMS 2050 is indeed an ambitious plan to enhance maritime viability for a prosperous Africa, it is not an end in itself, but rather a way to nurture Africa's growth. This will require committed and enhanced cooperation and coordination between local communities, member countries, RECs and regional mechanisms, and the broader international community.

There is no doubt that a comprehensive action plan is in place to harness Africa's ocean waters for wealth creation, and that security organisations and maritime governance structures and agencies exist in the WIO region. Thus it behooves maritime neighbours like India and African Indian Ocean rim countries to enhance their cooperation on maritime security initiatives.

Locating India and African littorals in Western Indian Ocean:

Both from a geo-strategic and geo-economic point of view, the Western Indian Ocean holds immense value and provides numerous opportunities for the countries in the region. Indian analysts and policymakers consider it as an imperative for India to exert greater influence in strengthening regional maritime security efforts, and at the same time, for Africa to expect increased commitment from its partner states. Therefore, India's focus on enhancing its maritime cooperation with WIO littorals assumes greater significance due to the region's geo-strategic location and abundant natural resources. Resource-rich East African littorals are increasingly turning towards the Indian Ocean in order to achieve sustainable growth and development.

African countries such as Kenya, Madagascar, Comoros, Mauritius, Mozambique, Comoros, Somalia, Seychelles, South Africa, and Tanzania are members of the Indian Ocean Rim Association for Regional Cooperation (IOR-ARC), which was established in March, 1997. The organisation is now known as Indian Ocean Rim Association (IORA). Moreover, the Indian Ocean Naval Symposium (IONS) has brought India closer to several African littoral states of the IOR. The IONS was launched in 2008 and has six African member states: Kenya, Mauritius, Mozambique, Seychelles, Tanzania, and South Africa; Madagascar is an observer state.

India's approach to maritime cooperation with Africa has essentially revolved around its central security concerns in African waters. India has reached out to African states through offers of military aid, capacity building, and training assistance. A proactive re-orientation in India's nautical outlook towards Africa is also reflected in India's 2015 Maritime Strategy document. In the document, India declares that its policy towards the countries in the Western Indian Ocean region has expanded and diversified intro a broad-based security approach, one which is supplemented by regular naval visits, sharing of best practices to build capacity through trainings, transfer of naval hardware and logistical support, naval intelligence, joint military exercises and patrolling of seas, and development of listening stations and posts which are essentially monitoring stations, complete with radars and surveillance gear for monitoring maritime communications.

Such a broad-based maritime security approach towards African countries entails four principle avenues of cooperation:

1. Training of African naval personnel, defence officers, and civilian personnel engaged in maritime administration in Indian institutes like Indian Naval Academy and Naval Institute of Educational and Training Institute. In his address during the India Africa Higher Education and Skills Development Summit in New Delhi in August, India's Secretary (East and Southern Africa), Ministry of External Affairs, T.S. Tirumurti pointed out that several current or former presidents, prime ministers and vice presidents have attended trainings or educational institutions in India.

2. Conducting Hydrographic Surveys and helping African littoral nations develop basic capabilities in hydrography - At present, half of the world's coastal states have no hydrographic capability, while only a few states have limited capabilities. However, India has adequate hydrographic capabilities. There is, therefore, immense scope for international cooperation in hydrography, particularly so in Africa, "where 64% of the waters is yet to be surveyed systematically." Indian Survey Ships in the past have conducted hydrographic surveys for five African countries – Kenya, Seychelles, Mauritius, Mozambique, and Tanzania. Currently, India has MoUs on Hydrographic cooperation with three African countries: Mauritius (October 2005 to 2020), Tanzania (June 2015 to 2020), and Seychelles (March 2015 to 2020).

3. Conducting anti-piracy patrols - A large percentage of India's trade, including oil and fertilizers, passes through the Gulf of Aden. According to estimates by the Ministry of Shipping, Indian imports through the Gulf of Aden were valued at US$ 50 billion, and exports at US$ 60 billion. Therefore, the safety and unhindered continuity of maritime trade, by ships that use this route, is a primary national concern as it directly impacts the economy. The Indian Navy was one of the first countries to commence anti-piracy patrols in the Gulf of Aden as early as in October 2008. Since then, Indian ships have been deployed in the region continuously. Indian naval vessels also regularly patrol the Mozambique Channel and have supplied equipment and training, apart from providing maritime security during two summits – the African Union summit in 2003 and the World Economic Forum meeting in 2004 in Maputo, Mozambique. Besides escorting Indian flagged vessels, the Indian Navy have also provided protection to ships of other countries. No ship under Indian escort has so far been hijacked. The Indian Navy's involvement in anti-piracy operations since 2008 has led to greater bilateral interactions with other navies in the region. Complemented by the Indian Navy's 'mission-based-deployment' (MBD) approach, Indian mission-ready ships are prepared round the clock to carry out anti-piracy patrols and provide humanitarian assistance when required.

4. Port visits and development of monitoring stations - In a display of more purposeful maritime diplomacy, Indian naval ships have increased their port visits to Africa's East coast and Indian Ocean island states. These goodwill visits to Africa's Indian Ocean Rim countries and naval exercises with African navies have helped to increase inter-operability and foster greater synergy between Indian Navy and African navies and coast guard. These regular port

visits also demonstrate the Indian Navy's blue water capability to deploy, operate, and sustain a maritime task force well away from home for an extended duration.

Additionally, India is partnering with Indian Ocean Rim countries for the development of monitoring stations. PM Modi's five-day Indian Ocean tour in March 2015, to Seychelles, Mauritius, and Sri Lanka was an important outreach. During the visits, PM Modi signed MoUs to develop infrastructure on Agalega Island in Mauritius and Assumption Island of Seychelles. These two island nations re of immense strategic importance since two-thirds of the world's energy supplies passes through the region. Agalega is more than 1000 km north of Mauritius and Assumption Island is 600 nautical miles southwest of Seychelles' capital Mahe. These two islands will add to the Indian monitoring station in Madagascar, off the coast of Africa, commissioned in 2007 to monitor activities of foreign navies in the Indian Ocean Region. Although these deals with Mauritius and Seychelles will help to improve India's strategic foothold in the region, both deals have faced protests and opposition by the locals in the region.

In recent years, India has adopted an expansive maritime strategy driven by its great-power aspirations and by strategic rivalry with China, which continues to expand its own maritime capabilities as it engages in unilateral actions in the IOR. To counter China's presence, India is seeking to expand its own and IOR littoral countries' naval capabilities and security partnerships, especially with Mauritius, Seychelles, Madagascar, and Comoros, at, or near the key entry points into the Western Indian Ocean. The Indian Navy is working to secure key maritime 'chokepoints' at the entrances to the Indian Ocean, like Bab-el-Mandeb, Strait of Hormuz, and Mozambique Channel.

INDIA'S BILATERAL MARITIME PARTNERSHIPS WITH SELECT AFRICAN COUNTRIES IN WIO:

Mozambique – Mozambique has emerged as an important maritime partner for India. The Indian Navy had provided security for the Maputo AU summit in 2003 and during the World Economic Forum meeting in 2004, by patrolling the Mozambique Channel. Three recent high-level visits underline New Delhi and Maputo's re-engagement in maritime and military cooperation. In July 2017, then Indian Chief of Naval Staff Sunil Lanba visited Mozambique and reiterated India's willingness to cooperate in hydrography and explore newer avenues of defence cooperation. Former MoS for External Affairs Gen (Dr.) V K Singh's visit in February 2018 further emphasised on the growing synergy in Indo-Mozambique maritime cooperation.

Tackling non-traditional threats in the Indian Ocean is one of the Indian Navy's most prominent roles. India's capacity to respond to non-traditional threats was amply demonstrated in the aftermath of 'Cyclone Idai' which hit the port city of Beira in March this year. Four Indian ships were immediately diverted from their course to render assistance and

provide dry provisions, epidemic-related medicines, clothes, and ready-to-eat meals. Its operational readiness allowed the Indian Navy to be the first responder during the incident. Indian naval ships on overseas deployment are mandated to carry additional HA/DR kits for such possible events, thereby enabling them to be prepared to undertake relief work. The most recent visit was undertaken by Indian Defence Minister, Rajnath Singh in July 2019, during which India handed over two Indian-made Fast Interceptor Boats (FIBs) to Mozambique, and signed two MoUs on sharing White Shipping Information and cooperation in the field of Hydrography.

Kenya – India and Kenya are maritime neighbours and have historical maritime trading links. Regular port visits are a vital component of India-Kenya maritime cooperation. During President Uhuru Kenyatta's two-day visit to New Delhi in January 2017, a host of agreements and MoUs on defence and maritime security were signed, aimed at boosting maritime surveillance, sharing security intelligence and white shipping information, and conducting joint hydrographic surveys.

Both New Delhi and Nairobi have identified maritime security cooperation in the IOR, especially in the Western Indian Ocean, as the critical sector for furthering and strengthening bilateral ties. The Kenyan Navy also participates in the Indian Ocean Naval Symposium (IONS) under which Indian and Kenyan naval professionals share and exchange information to enable a common understanding of regional maritime issues. Regular port visits are also an important dimension of India and Kenya's maritime cooperation, as seen in the three-day visit of Indian Navy's First Training Squadron to the port of Mombasa in early October.

Tanzania –Tanzania has a small navy and is not sufficiently equipped to deal with the emerging threats. Moreover, with the discovery of large deposits of natural gas off Tanzania's coast, the government is now wary of the threat to the emerging natural gas infrastructure in the region. India is an important partner for Tanzania in dealing with such threats. During PM Modi's visit in July 2016, he emphasized closer cooperation in the field of maritime security. India also extended a Line of Credit of $92 billion for the rehabilitation and improvement of Zanzibar's water supply system. From an Indian perspective, "cooperation in maritime security and blue economy is extremely vital and mutually beneficial." Therefore, it will be interesting to see how maritime cooperation between India and Tanzania progresses in the coming years, especially in sectors like maritime-port connectivity, blue economy, and marine resource management.

Djibouti – With the coming into force of the Djibouti Code of Conduct (DCoC) in 2009, Djibouti has emerged as a strategic pivot in the fight against Somalia piracy and terrorism in the region. The country is strategically located at the entrance of the Red Sea. India has cultivated close relations with Djibouti, whose port has always been hospitable to Indian naval ships transiting to and from the Mediterranean Sea. Djibouti was also crucial in 'Operation Raahat' in April 2015, during which Indian warships rescued over 3,000 stranded

citizens from war-torn Yemen. After taking office in October 2017, Indian President Ram Nath Kovind made Djibouti his first destination for a state visit. During the meeting, President Kovind and his counterpart, Ismail Omar Guelleh reiterated the two countries' desire to cooperate on maritime security issues in the IOR.

Madagascar – New Delhi and Antananarivo share a robust maritime partnership in the IOR. Madagascar's strategic location in the IOR makes it a vital partner for India. India's Ministry of Shipping organised the first ever Maritime India Summit in April 2016, with the objective of attracting potential investors in the maritime sector. The event was attended by senior government officials and representatives from Madagascar, along with all the countries in the Western Indian Ocean region.

Since 2007, India has also had a monitoring station in Northern Madagascar, complete with radar and surveillance gear to intercept maritime communication and protect the important sea lanes of commerce. President Kovind's visit to Madagascar in March 2018 was a historic first and reinforced the two states' ties. During the visit, an MoU on Defense Cooperation was signed which emphasized deeper cooperation in areas of mutual interest like maritime security and safety, fight against piracy and IUU fishing, and greater cooperation among Indian and Madagascar's coast guard's and naval forces.

Mauritius – Since 2003, the Indian Navy has regularly patrolled the Mauritian EEZ and also deputes a naval officer to manage the National Coast Guard of Mauritius. As early as in 1974, India gifted Mauritius a seaward defence boat, INS Amar. Since then, India has periodically provided Mauritius with "reconnaissance assets including an interceptor patrol boat (2001), three Dornier Do-228 maritime surveillance aircraft (2004 and 2010), a Dhruv helicopter (2009), and three island aircraft engines (2009). The Indian-made offshore patrol vessel (OPV) 'CGS Barracuda' was commissioned into the National Coast Guard of Mauritius in 2015 during PM Modi's visit. This OPV was the first custom-built vessel exported by India. India has also helped Mauritius in installing an Automated Identification System and a Coastal Surveillance Radar System, besides carrying out joint hydrographic surveys and patrols with the Mauritian coast guard. During this visit, India also signed a deal with Mauritius to develop facilities in Agalega Island.

In May 2017, Mauritian PM Pravind Jugnauth embarked on a state visit to India, during which an agreement on maritime security was signed and extended $500mn line of credit to help in implementing Mauritian priority projects. Moreover, in August 2017, the Indian built water jet fast patrol vessel 'CGS Valiant' was commissioned at Port Louis. This was the third ship supplied by the Indian defence shipyard to be commissioned in the National Coast Guard of Mauritius. It is clear that India and Mauritius' engagement on maritime security issues in the Indian Ocean has intensified in recent years, as seen in President Kovind's visit to Mauritius in March 2018 during which India extended a Line of Credit of USD 100

million for defence procurement of a Multi-Purpose Offshore Patrol Vessel (MPOPV) and extended an additional grant of USD 5 million.

Seychelles – As maritime neighbours, India and Seychelles are committed to secure their shared oceanic space in order to bring sustainable development. Seychelles is of immense importance to India owing to its strategic location close to the global lanes of shipping and communication. During PM Modi's 2015 visit, a number of agreements were signed, including: inauguration of Coastal Surveillance Radar Station (CSRS); gifting of a Dornier aircraft; MoU on Hydrography; a protocol on sale of navigational charts/electronic navigational charts; and the agreement on the development of facilities on Assumption island. In 2005, India gifted the Seychelles Coast Guard a fast track vessel INS Tarmugli and in 2009, India dispatched naval ships to patrol and guard the Seychelles EEZ against pirate attacks. India also gifted one Dornier Do-228 aircraft and two Chetak helicopters in 2010, and conducts biennial army-to-army exercise called LAMITYE.

The most significant development took place when President Danny Faure visited India in June 2018. India handed over a Dornier Do-228 aircraft and $100mn line of credit to augment the island nation's defence capability. Both PM Modi and President Faure agreed to work on the stalled Assumption island project, although it still needs to be ratified by the Seychelles parliament. For the deal to move forward, India will need to assuage Seychellois' fears and concerns about breach of sovereignty and harm to the environment. India's credentials as an established democracy, and non-interference in Seychelles' domestic affairs is well-appreciated by the country. Therefore, in the future, if President Faure is able to secure a majority in Seychelles National Assembly, then the Assumption island agreement will likely be submitted, ratified and implemented.

Comoros – In order to develop a collaborative security architecture in the Indian Ocean, the tiny island nation of Union of Comoros is an important partner for India as seen in Vice President Venkaiah Naidu's visit in October 2019. Maritime security is the foremost sector with potential to deepen India and Comoros' partnership. During the visit, the two countries signed an MoU on defence cooperation. India also gifted USD 2 million for Interceptor Boats and extended a Line of Credit of USD 20 million for the procurement of High Speed Interceptor Boats to augment the capabilities of the National Agency of Maritime Affairs (ANAM), which is responsible for promoting Comoros' National Maritime and Port Policy.

INDIA'S MARITIME COOPERATION WITH AFRICAN LITTORALS: KEY CHALLENGES

The challenges and limitations confronted by the Indian Navy in its engagement with African countries are twofold: inherent limitations, and the China factor.

1. Internal and Inherent Limitations

1.1. Low capital allocation – While the Indian Navy is now more networked and technology-enabled than it was in the past, it still continues to face budgetary constraints. The allocation to the Navy has reduced from 18 percent of the defence budget in 2012-13, to 13 percent in 2018. Such low levels negatively impact future force planning and capability development. Therefore, according to Indian CNS Admiral Karambir Singh, the need of the hour is to ensure long-term 'assured budgetary support'.

1.2 Gap between promises and delivery – For the Indian Navy to be recognised as a 'net security provider' in the IOR, it needs to bridge the gap between commitment and implementation. Most IOR littorals lack the necessary capacity to ensure the security of their declared maritime zones and perform their rights and duties. These littorals look towards India to ensure its security. However, India has a poor track record in converting capital into deliverables or influence. Therefore, India needs to develop a defence diplomacy fund through which the current situation of poor delivery can be altered.

1.3 Poor allocation of resources – When it comes to allocation of resources, there is no concept of prioritisation in the Ministry of Defence. There is also hardly any adequate dialogue between the Ministry of Defence and Ministry of External Affairs. While the resource pool is indeed limited, the allocation which Indian Navy receives for foreign assistance has to be prioritised and shared with the relevant executing agencies. India must look to engage in a participative programme between the service provider and the agencies that are the sources of funds. This will go a long way in ensuring the Indian Navy's ability to convert money into influence.

1.4 Weak coordination in the various maritime aspects– Maritime security entails not only hard-security aspects like protecting EEZ, HA/DR operations, asset allocation, or conducting anti-piracy patrols, but also includes issues related to blue economy, climate change, and coastal maritime infrastructure. Coordination and building synergy between the various stakeholders is the most important and challenging task. All agencies concerned should be coalesced under one umbrella agency and work together to sort out the different inter-agency issues. The Indian National Security Council Secretariat (NSCS) or a proposed National Maritime Commission (NMC), will be the most appropriate organisation to carry out this role.

1.5 The China challenge - China has made massive inroads in advancing its strategic and economic interests in the IOR, particularly by gaining access to strategic ports and military bases and deploying illiberal and predatory economic practices. There is a continuous increasing presence of Chinese Navy in the Indian Ocean. Indeed, no other navy has grown so rapidly in the last 200 years as the Chinese Navy, which is investing massive sums of money in shipbuilding, developing its military capability, and modernising its forces and command structure. At the Raisina Dialogue 2019, then Indian Chief of Naval Staff Sunil Lanba cautioned about the rise of PLAN in Indian Ocean, which has "added over 80 new ships in the last five years, and at any time deploys six to eight ships in the northern part of the Indian Ocean."

China's quest for Indian Ocean military access and bases to surround India is described as "String of Pearls", or a network of strategic naval outposts constructed by Beijing to advance its military, strategic, and economic interests in the IOR. This quest is now being realised through China's 2013 Maritime Silk Infrastructure (MSR) investment programme, yielding potential naval bases via 'debt trap' acquisitions. As shown by the establishment of a naval base in Djibouti, "China's strategy is evolving – both in nature and geographical scope." Its heavy dependence on overseas resources and energy supplies, especially oil and natural gas, is playing a crucial role in shaping Chinese strategy and interests in IOR, especially in the Western Indian Ocean region.

Much of India and China's jostling for influence in the Indian Ocean is concentrated in the Western Indian Ocean waters and its littoral countries. However, in the last 10 years, New Delhi has been left far behind by Beijing's dramatic push and overtures, spearheaded by cheap loans, massive widespread investments in natural resources, and huge infrastructure projects.

There is little doubt that "China is strengthening its ability to protect its interests in the Western Indian Ocean and setting the stage for power projection even further into the Mediterranean and around South Africa." Although so far, China's strategy has not raised serious concerns in WIO littoral states, the story is entirely different for India and other players like the US and EU. Beijing's aggressive search for resources, markets, economy, political, and military influence, as a revisionist power with the intent of making them anti-India, could have serious implications for regional security and stability in the IOR. As a result, India wants to ensure that China does not pursue hegemonic goals in the region.

Given the broad nature of these aforementioned challenges, there is a lot more that India can do to increase its maritime partnerships with African littorals.

1. Develop a Pan-African approach – For the most part, especially beginning in the year 2000 when the menace and threat from piracy caught the attention of Indian leadership, India has remained concerned about its own security concerns in African waters. Indeed, India has

tended to look towards African countries only when its own interests (security and energy) have been threatened. Looking towards Africa from the narrow lens of national security may be couched in a misplaced philosophy. India must explore moving beyond such narrow interests and developing a Pan-African approach in accordance with African needs and priorities. However, the Indian government's meagre expenditure and allocation to the Navy is unlikely to increase in the immediate future. Therefore, the Indian Navy needs to reprioritize, develop larger commitments, and focus on its core competencies – which is war fighting. The declaration of the Ten Guiding Principles for India Africa Engagement has been a step in the right direction in this regard.

2. Develop multiple strategies and impose costs on adversarial stance - To be successful in the emerging competition arising in the Indian Ocean, India needs to be willing to pay the costs and develop multiple strategies in various domains ranging from diplomatic, informational, military, maritime research, blue economy, industrial development, cultural and educational domain, energy, to climate and weather concerns. Developing these multiple strategies should involve not only the navy, military or the Ministry of Defence, but a multitude of other government agencies as in the case of China. Developing friendly, supportive, and accommodative relationships has always driven Indian engagement in the IOR. Since most littorals do not want to be in a position of choosing sides between major players like India and China, at worse, India should accept neutrality. Therefore, India must look to develop multiple strategies that impose costs on adversarial stance against Indian interests.

3. Greater cooperation on Blue Economy –

The ocean or blue economy holds immense potential for both India and African littorals. The African Union has already declared the 'Blue' economy as the "new frontline of Africa's renaissance." Similarly, both the African Union's Agenda 2063 and the 2050 Africa Integrated Maritime Strategy (AIMS 2050) lay emphasis on the development of blue economy for the continent's growth. PM Modi, during his address at the International Fleet Week in Vishakhapatnam in February 2016, has referred to oceans as "the lifelines of global prosperity," and the Blue Chakra in Indian National Flag as representing the potential of 'Blue' economy. Subsequently, in the 2015 Delhi Declaration, both India and Africa reiterated their desire to collaborate more closely on blue economy. The African island nations in the WIO are the main proponents of this concept, since most of these countries are heavily dependent on the ocean for livelihood and sustenance. Seychelles has taken a leading role in advancing the concept. Currently, three WIO region countries (Seychelles, Mauritius and South Africa) have initiated their own Blue Economy policies to sustainably manage shared ocean assets. If India is serious about cooperating more on blue economy with African littorals, it must look to apply innovative technology (like Triple 'A' – appropriate, affordable, adaptable) in WIO in areas such as water reuse, wastewater recycling, saltwater to

freshwater conversion, marine-based renewable energy production, including wave and tidal energy, and management of the health of ocean environment for nutrient-rich food sources.

4. Work to develop a multilateral security architecture for the Western Indian Ocean – Over the years, various maritime security cooperation mechanisms have been developed in the Western Indian Ocean. Few examples include: Combined Maritime Forces (CMF), Contact Group on Piracy off the Coast of Somalia (CGPCS), Djibouti Code of Conduct (DCoC), and Regional Maritime Information Fusion Center (RMIFC) in Madagascar. However, while these frameworks exist, they remain under-optimised. While some have remained as loose, ad hoc form of cooperation, others are heavily dependent on funding from the European Union, or lack the necessary political buy-in. Therefore, the need of the hour is developing a security architecture for the WIO by strengthening existing frameworks and working together to serve the interests of the region. India, which has long maintained a presence in Western Indian Ocean, is well-placed to play a greater role and shape the maritime security architecture in the region. India should look to offer greater capacity building assistance, training and skilling of professionals in maritime domain and sharing operational experience to countries in the WIO. The Information Fusion Centre-Indian Ocean Region (IFC-IOR) launched in December 2018 has established linkages with 13 international maritime agencies and more than 16 countries, including various WIO littorals that can play a more prominent role in increasing regional maritime domain awareness. This has been a big step towards achieving the Indian vision of SAGAR (Security and Growth for All in the Region) and working towards capacity building, coordinating incident responses, sharing submarine safety information, and assisting in keeping the global maritime commons open and accessible for all. As a tool for diplomacy, the IFC-IOR should cooperate closely with regional mechanisms including the Djibouti Code of Conduct network, Regional Maritime Information Fusion Center (RMIFC) in Madagascar and Regional Coordination Operations Center (RCOC) in Seychelles to develop shared standard operating procedures.

INCIDENTS OF PIRACY THAT TOOK PLACE IN INDIA:

In 2017, Somali pirates have hijacked an Indian cargo vessel off the coast of the Puntland region, officials say. It was believed to have been travelling between Dubai and Bosasso, in Puntland, when it was seized. It is the second such attack recently. Last month, pirates seized a tanker bound for Mogadishu but released it apparently without conditions. That incident was the first hijack of a large commercial ship off the Somali coast since 2012. Maritime sources have identified the vessel as the Al Kausar with 11 crew on board. The AFP news agency said it had contacted the vessel's owner and been told it was carrying goods such as wheat and sugar. A crew member had apparently phoned the owner to tell him the vessel was hijacked at sea last Friday. Five gunmen were said to be on board, but no-one had been hurt.

In 2018, The Navy's stealth frigate INS Trishul foiled a piracy attempt against an Indian bulk carrier in the Gulf of Aden. The piracy attempt was made on the Indian ship MV Jag Amar at

12:30 pm and the INS Trishul, which was on an anti- piracy deployment in the region, responded immediately.

Actions taken by India to combat piracy:

Gulf of Aden (East Coast of Africa), Malacca Strait and West Coast of Africa are shipping routes which suffer incidents of pirate attacks. The Indian Ministry of shipping has released the number of Indian crew hijacked by pirates during the last three years and the current year along with the number of crew.

Year	Indian crew Hijacked	Indian crew Released
2013	46	46
2014	30	29*
2015	Nil	Nil
2016(Till date)	Nil	Nil

Actions Taken

- Guidelines for anti-piracy measures issued through Merchant Shipping Notice No.1 of 2011 dated 14.1.2011 to be implemented by Indian Ships. The guidelines provide for elaborate anti-piracy measures (Best Management Practices), including safe house/citadel for vessels.
- Banning of sailing vessels to ply in waters south or west of the line adjoining Salalah and Male through Merchant Shipping Notice No. 3/2010 dated 31.3.2010.
- Naval escorts provided by Indian naval ships in the Gulf of Aden since 2008 for Indian flag merchant ships.
- Enhanced vigil by the Indian Navy in the Indian Exclusive Economic Zone (EEZ) and westward up to 65 degree east longitude.
- Active participation of India in the security meetings of the International Maritime Organization, Contact Group on Piracy off the Coast of Somalia (CGPCS) and other international fora.

In order to curb the menace of piracy, India had also introduced Maritime Piracy bill in the Lok Sabha in 2012.

Maritime piracy Bill 2012:

The Piracy Bill, 2012 was introduced in Lok Sabha on April 24, 2012 by the Minister of External Affairs, Shri S.M. Krishna. According to the statement of objects and reasons, piracy as a crime is not included in the Indian Penal Code (IPC). This has led to problems in prosecution of pirates presently in the custody of Indian police authorities.

The Piracy Bill intends to fill this gap and provide clarity in the law. This Bill contains 14 sections. The salient features of the bill are as follows-

- The Bill defines 'piracy' as any illegal act of violence or detention for private ends by the crew or passengers of a private ship or aircraft on high seas or at a place outside the jurisdiction of any State. It also prescribes that any act which is held to be 'piratical' under international law shall be included in the above definition.
- The Bill seeks to punish piracy with imprisonment for life. In cases where piracy leads to death, it may be punished with death. The Bill also lays down punishments for attempts to commit and abet piracy. Such acts shall be punishable with imprisonment up to 14 years and a fine.
- The Bill provides that if arms/ ammunition are recovered from the possession of the accused, or if there is evidence of threat of violence, the burden of proof for proving innocence shall shift to the accused.
- The Bill empowers the government to set up designated courts for speedy trial of offences and authorizes the court to prosecute the accused regardless of his/ her nationality. It also provides for extradition.

Although the bill was introduced in 2012, it still not has been passed. India does not have a separate domestic legislation to deal with piracy-related offences. In the absence of a clear and unambiguous reference to the offence of maritime piracy in the Indian law, problems have been faced in ensuring effective prosecution of the pirates.

MODULE-II

Marine Environmental Law

MARINE ENVIRONMENT

The marine environment has unique characteristics that distinguish it from other elements of nature. Since seas and oceans cover more than two thirds of the earth, the marine environment, thus, plays a vital role in achieving a sort of biological balance on the planet. It also plays an important role in human life, since it has plenty of nutritious and industrial resources that are important to human life and welfare.

The marine environment has become one of the recent concerns in international and national laws. It is part of the international ecosystem and consists of seas, oceans, and their tributaries in addition to what they contain of living organisms, whether plants or animals, and other resources, such as minerals of different kinds.

A number of jurists have provided a definition of the marine environment as "the saline water bodies which are naturally connected to each other, including their bottoms and soils with their contents of animals, plants, and natural resources forming in total the elements of marine life, as an ecosystem."

According to the earlier definition of the marine environment, it comprises all areas covered with saline water, and its parts are naturally connected. Therefore, its scope includes internal and territorial waters. It also includes the adjacent zone, the economic or investment area, the continental shelf and high seas. Each of these zones has a limited area according to the 1982 UN Convention on the Law of the Sea, by which all countries should abide. The convention put an end to international disputes among countries regarding the delineation of the width of their territorial waters in general. In addition, the 1982 UN Convention on the Law of the Sea promulgated the key guidelines and rules about the extent of each country's control over each zone of the marine environment and the enactment of laws that guarantee the necessary legal protection. Accordingly, the marine environment can be categorized into five areas as follows:

1. Coastal Waters

Coastal water is entirely found inside the marine borders of a country, including ports, roadsteads, and shores. The 1982 UN Convention of the Law of the Sea defined internal waters as "waters on the landward side of the baseline of the territorial sea form part of the internal waters of the State." The Geneva Convention 1958 defined internal waters as follows: "Waters on the landward side of the baseline of the territorial sea form part of the internal waters of the State."

Accordingly, coastal waters include ports, roadsteads, straits, semi-enclosed lakes, and harbors. These waters are governed by the regulations that govern the land region of the state, i.e. the state has full legal sovereignty over these waters without exception.

2. Territorial Waters or Territorial Sea

Territorial sea is the part of the waters adjacent to the coast of a state that is considered to be part of the territory of that state and subject to its sovereignty. Delineating the territorial waters of a state was problematic because of many considerations relating to the rights to fishing, economic utilization, and scientific research in addition to the security of the state itself. Until the early 1900s, the delineation of territorial waters of a state was governed by a conventional principle that a coastal state's authority included only marine areas under its actual control starting from its land territory. This zone was three nautical miles.

However, the 1982 UN Convention on the Law of the Sea put an end to the disagreements among many countries of the world regarding the determination of the area of the territorial sea of each state, which was the source of disputes. The 1982 UN Convention on the Law of the Sea accurately determined the territorial sea in a way that protects the rights of each state. Every State has the right to establish the breadth of its territorial sea up to a limit not exceeding 12 nautical miles, measured from baselines determined in accordance with this Convention.

The 1982 UN Convention on the Law of the Sea stressed the coastal state's sovereignty over its territorial waters. Pursuant to this sovereignty, the state has the power to exercise all of its sovereignty over these territorial waters, which means that it has complete authority over fishing, security, customs, and legislation concerning such waters. Despite this absolute sovereignty of the coastal state over the territorial waters, there are a number of restrictions. For instance, the coastal state has to adopt laws and regulations in conformity with the provisions of this Convention and other rules of international law relating to innocent passage through the territorial sea.

3. Contiguous Zone

Under the 1982 UN Convention on the Law of the Sea, in a zone contiguous to its territorial sea, described as the contiguous zone, the coastal state may exercise the control necessary to:

(a) prevent infringement of its customs, fiscal, immigration or sanitary laws and regulations within its territory or territorial sea; and
(b) punish infringement of the above laws and regulations committed within its territory or territorial sea.

The contiguous zone may not extend beyond 24 nautical miles from the baselines from which the breadth of the territorial sea is measured. The coastal state will have legislative, administrative and punitive authority over the contiguous zone in a way that allows it to obligate others to respect it by seizing, arresting, penalizing, or fining. Since the safety and security of this zone are the responsibility of the coastal state, it has the right to set rules,

regulations and procedures necessary to protect this zone from pollution in light of the international commitment to preserve and protect the marine environment.

4. Exclusive Economic Zone

As defined by the 1982 UN Convention on the Law of the Sea, the exclusive economic zone is an area beyond and adjacent to the territorial sea, subject to the specific legal regime established in this Part, under which the rights and jurisdiction of the coastal State and the rights and freedoms of other States are governed by the relevant provisions of this Convention. Under the same Convention, the exclusive economic zone shall not extend beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured.

However, the coastal state does not necessarily have an economic zone with a breadth of 200 miles. Geographic conditions may reduce this breadth below 200 miles, as is the case in the Arabian Gulf, where Iran has sovereignty over the eastern side of the zone and Kuwait, Saudi Arabia, Qatar, Bahrain, and Oman have sovereignty over the western side of it.

In view of the above, no state will be affected by a contiguous zone apart from other states. For instance, if Bahrain has sovereignty over an economic zone adjacent to its territorial sea, this area cannot by any means be measured without reaching the Iranian coast and entering the Iranian territorial sea and shores. Therefore, the UN Convention on the Law of the Sea regulated the delineation of the exclusive economic zone among states that have adjacent or opposite shores through agreement based on international law.

Article 56 of this Convention underlines the coastal state's sovereignty over the exclusive economic zone and its rights to explore and exploit, conserve, and manage the natural resources, scientific research, establish and use artificial islands, installations and structures, and protect and preserve the marine environment from pollution.

Article 57 of this Convention states that the exclusive economic zone shall not extend beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured.

5. Continental Shelf

The 1982 UN Convention on the Law of the Sea states that the continental zone of a coastal state comprises the seabed and subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its land territory to the outer edge of the continental margin, or to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured, where the outer edge of the continental margin does not extend up to that distance. The Convention states that the coastal State shall establish the

outer edge of the continental margin wherever the margin extends beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured.

The 1982 UN Convention on the Law of the Sea stressed that the coastal state exercises over the continental shelf sovereign rights to explore it and to exploit its natural resources. Therefore, the coastal state must take all precautions necessary to protect the marine environment in this zone.

The 1958 Geneva Convention defines the continental shelf as "(a) to the seabed and subsoil of the submarine areas adjacent to the coast but outside the area of the territorial sea, to a depth of 200 meters or, beyond that limit, to where the depth of the superjacent waters admits of the exploitation of the natural resources of the said areas; (b) to the seabed and subsoil of similar submarine areas adjacent to the coasts of islands." Paragraph 2 states that the continental margin comprises the submerged prolongation of the land mass of the coastal state and consists of the seabed and the subsoil of the shelf, the slope and the rise. It does not include the deep ocean floor with its oceanic ridges or the subsoil thereof. This area located outside the territorial jurisdiction of the state is called the "common heritage of mankind."

Paragraph 5 set two criteria for delineating the maximum limit of the continental shelf, stating that it shall not exceed 350 nautical miles from the baselines from which the breadth of the territorial sea is measured or shall not exceed 100 nautical miles from the 2,500 meters isobaths, which is a line connecting the depth of 2,500 meters.

Paragraph 9 of Article 1 of the 1958 Geneva Convention obligated the coastal state to publish charts or lists of geographical coordinates that show the outer limits of the continental shelf and to deposit a copy of each such chart or list with the Secretary-General of the United Nations. Accordingly, subject to its right to take reasonable measures to explore the continental shelf, exploit its natural resources and prevent, reduce and control pollution from pipelines, the coastal state may not impede the laying or maintenance of such cables or pipelines.

The coastal state must pay or contribute in kind with respect to the exploitation of the non-living resources of the continental shelf beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured. The payments and contributions shall be made annually with respect to all production at a site after the first five years of production at that site pursuant to the UN Convention on the Law of the Sea.

PROTECTION OF MARINE ENVIRONMENT UNDER INTERNATIONAL LAW

The legal regime for the protection of the marine environment has its own peculiarities compared to the one governing the protection of the terrestrial environment. At sea states are not as free to take protective measures as they are on land; they have to act according to the jurisdictional rules of the law of the sea. These rules place some constraints on the capacity

of coastal States to unilaterally control the environmental impact of sea-based activities and call for multilateral and uniform solutions. The largest part of the ocean space lies outside national jurisdictions and is open for use to all nations and most of the marine living resources move between different maritime areas. Due to the physical characteristics of the marine environment, the effects of human activities (e.g., shipping) and extractive uses (e.g., fisheries) may spread far beyond national jurisdictions and affect the interests of other states. Marine environmental protection, therefore, requires a high degree of cooperation compared to environmental issues on land.

The protection of the marine environment is an area where the jurisdictional rules of the law of the sea and the objectives, principles and approaches of international environmental law meet and influence each other to form the "international environmental law of the sea". Part XII of the 1982 United Nations Convention on the Law of the Sea (LOSC) is the result of this combination.

The international regime for the protection of the marine environment is based on two interdependent frameworks:

(a) an umbrella framework (i.e., principles of customary international law; the LOSC, and Chapter 17 of Agenda 21, the plan of action adopted at the 1992 UN Conference on Environment and Development (UNCED) along with the Plan of Implementation adopted at the World Summit on Sustainable Development (WSSD), held in Johannesburg in 2002) which sets out general principles and rules of global application, and
(b) a regulatory regime composed of a variety of instruments implementing the general rules at the global (e.g., global regulatory instruments addressing specific sources of pollution; multilateral environmental agreements (MEAs)) and regional levels (e.g, regional seas conventions).

These two separate bodies interact and complement each other creating a dynamic, coherent and uniform system. The LOSC constitutes the link between these two bodies. It does not contain detailed technical standards, but provides the legal basis for the multilateral development of rules within the "competent international organizations" and for the uniform implementation and enforcement of "generally accepted international rules and standards." Chapter 17 of Agenda 21 has introduced the new objectives, principles and concepts of international environmental law into the law of the sea and has worked as a catalyst for the implementation and further development of the environmental regime set out by the LOSC.

Degradation of the Marine Environment Life on earth strongly depends on the integrity and health of the oceans and seas, which cover over 70% of the planet's surface. They provide fundamental ecological services and sustain economic development in many countries all around the world. During the past three decades, the protection and preservation of the

marine environment has become a primary goal for the international community and important results have been achieved in controlling the traditional sources of marine pollution (e.g., shipping and dumping) and in the reduction of the most hazardous contaminants (e.g., lead, mercury and oil). Nevertheless, most of the problems identified in the past are still unsolved and new threats are placing oceans under increasing pressure (e.g., overexploitation of renewable resources; global warming; alteration of habitats and the loss of biodiversity; introduction of alien species transported in ballast waters; uncontrolled development of coastal areas; fish farming and aquaculture; hydrological changes and tourism). Technological development, moreover, has shown new ways to use the sea and to exploit its resources and has progressively extended human activities further offshore and deeper into its waters. The major threats to the marine environment, however, still come from activities on land (e.g., agricultural practices and industrial discharges). As a result, the state of the marine environment and its resources are deteriorating worldwide.

The impact of human activities on the marine environment varies depending on a multiplicity of ecological and geographical factors. Pressure is normally higher in coastal waters compared to offshore waters and is particularly severe in enclosed and semi-enclosed seas, which, due to their shallow waters and limited circulation, renovate themselves much more slowly compared to open seas. Socio-economic factors, such as population density, the concentration of industrial activities along the coastlines as well as the presence of major navigational routes and ports used for international trade, increase the exposure of the marine environment to anthropogenic pressures and show the existence of a direct link between ocean degradation and socioeconomic development.

ROLE OF THE UNITED NATIONS IN MARINE ENVIRONMENT

The United Nations plays a major role in governing and protecting the marine environment, through its various committees and conventions. This section will examine one of the most significant UN Conventions with relevance to the marine environment - the UN Convention on the Law of the Sea (UNCLOS) covering the background and history of the development of that Convention and providing an overview of the scope of that Convention. It will also examine two of the most significant UN Conferences of the last few decades and their relevance to the marine environment – the 1972 UN Conference on the Human Environment (UNHCE) and the 1992 UN Conference on the Environment and Development (UNCED).

The 1982 UN Convention on the Law of the Sea: Its Development and Scope

The UNCLOS Convention was adopted on 10 December 1982 at Montego Bay, Jamaica and entered into force on 16 November 1994. It is the main Convention dealing globally with issues of protecting the marine environment, the rights of coastal states to maintain jurisdiction in areas such as customs, fishing and access to mineral and other resources within their territorial and contiguous waters and EEZs, and also the need to protect the

marine environment from pollution and misuse. However, the process of developing the Convention took several decades, starting with meetings to convene a UN Conference on the Law of the Sea until its final entry into force in 1994. This section will look first at developments which took place at an international level to first establish the need for a Convention and will then describe some of the main elements of the Convention itself.

Developments Leading to UNCLOS Convention

Between 1949 and 1956 an International Law Commission (ILC) met to discuss the issues of territorial waters, the high seas and territorial seas with draft articles on the continental shelf, fisheries and contiguous zones being submitted to the UN General Assembly fifth session in 1953. A final report on the territorial sea was adopted by the ILC in 1956 and a final draft of the Law of the Sea Convention was agreed at the same time. In February 1957 the UN General Assembly met and adopted Resolution 1105(XI) which agreed to convene a UN Conference on the draft convention. The first UN Conference on the Law of the Sea took place in Geneva, Switzerland, between 24 February and 27 April 1957. That Conference adopted 4 separate Conventions and an Optional Protocol which were open for signature by member states between 29 April and 31 October in 1958. Following on from that, other states and also certain specialized agencies were invited to become signatories to the Conventions as follows:

(a) Convention on Territorial Sea and The Contiguous Zone (Entered Into Force 10 September 1964):

Part I, Sections I and II, of this Convention set out how the territorial seas of states should be delimited by an individual state and included what constituted the baseline low water line for making that determination (for example how it should be calculated for straight coastlines, or for those fringed by islands). It also set out that such a baseline should appear on official charts produced by the state and outlined how territorial waters should be decided between adjacent coastal states. What this Convention did not do, however, was to set an actual distance from the baseline for the limit of such a territorial sea. Part I, Section III, identified the requirement that states maintain a right of innocent passage for vessels travelling through territorial seas, while subsections C and D set out rules for government ships and for warships specifically. Part II of the Convention then outlined what constituted a contiguous zone which could be up to a further 12 miles out from the boundary to the territorial sea zone of a state.

(b) Convention on the High Seas (Entered Into Force 30 September 1962):

Article 1 of this convention indicates that the high seas are any parts of the sea which are not part of the internal or territorial seas of a state. Article 2 sets out the right of freedom of the seas for all states, whether coastal or non-coastal, to have freedom of navigation, to fish, to lay submarine cables and pipelines and to fly over the high seas. States with no sea coast are

granted access to the high seas under Article 3. The Convention then goes on to set out specific articles including the right of vessels to fly the flag of, and be registered in, any state, articles on piracy including seizure of pirate vessels by states, and articles allowing a nations warships to pursue and board foreign flagged merchant vessels for inspection etc. The convention also, at Articles 24 and 25, sets out requirements on the prevention of pollution from vessels, which later forms the basis of the International Maritime Organization (IMO) Convention on the Prevention of Pollution from Ships (1973) and its Protocols (1978), known more commonly as MARPOL 73/78.

(c) Convention on Fishing and Conservation of Living Resources of the High Seas (Entered into Force 20 March 1966)

This Convention set out the rights and duties of states with respect to fishing and the exploitation of living resources of the seas, irrespective of whether a state had a coastline adjacent to the area where, for example, fishing was taking place, or even if they had any coastline at all. Articles within this Convention include issues such as fishery conservation and on how states competing for the same fish stocks and other resources should enter negotiations to reach agreement on conservation (Article 4). Further Articles set out how the UN should be notified, via the UN Food and Agriculture Organization, if there is a failure to reach agreement between states, while dispute between States over certain Articles could be put before a special commission to try and achieve a peaceful resolution of such a dispute.

(d) Convention of the Continental Shelf (Entry into Force 10 June 1964)

This Convention defined, in Article 1, what was meant by the term "continental shelf" and set out the rights of coastal and other states in areas such as exploration, the laying of pipelines and cables, exploitation of natural resources, issues of safety zones and access for scientific research, for example.

(e) Optional Protocol of Signature Concerning the Compulsory Settlement of Disputes (Entry into Force 30 September 1962)

This protocol was open for signature by any state which had already signed one or more of the Conventions adopted by the UN Conference on the Law of the Sea. Its main purpose was to set out how disputes over interpretation of the Conventions should be resolved, whether through the use of an arbitration tribunal or via the International Court of Justice (ICJ). Where disputes arose between states over the interpretation of the four Conventions outlined above, and where a settlement of that dispute was not possible, states adopting the optional protocol were able to take that dispute to the ICJ for settlement. Where states agreed that there was a dispute between them, a case could go before an arbitration tribunal for settlement as long as there was agreement (within a 2 month period following notification by one to the other) that a dispute existed. However, if there was no agreement within 2 months the dispute would have to be heard by the ICJ. This protocol excluded, however, disputes

arising from specific articles, mainly relating to the conservation of fishing stocks, as set out in the Convention on Fishing etc.

In addition to the Conventions and optional protocol discussed above, the 1957 Conference also adopted other resolutions including ones relating to nuclear testing and on pollution of the high seas by radioactive materials, together with various agreements on fishery conservation and other conservation measures, and on historic waters. It also convened a second UN Conference and paid tribute to the work of the ILC.

The second Conference on the Law of the Sea in 1960 was convened at the request of the UN General Assembly to consider issues of what constituted a territorial sea and on fishery limits, as no agreement had been reached at the first Conference. While the second Conference, held in Geneva between 17 March and 26 April 1960, did adopt two resolutions in its Final Act, it still did not reach a final decision on the breadth of the territorial seas or on fishery limits, these two issues again being deferred to a future meeting.

The third Conference on the Law of the Sea in 1973 finally led to the creation of UNCLOS. It was convened in New York and lasted for 9 years until 1982 when the Convention was adopted. Meetings were held in both New York and Geneva and over 160 states participated in the negotiations. The Convention arising from the third Conference superseded the four Conventions adopted in 1958 (discussed previously) and established a set of rules on governance of the oceans and seas. It included the agreement on the maximum width of territorial seas (12 nautical miles), an issue over which no agreement had been reached during the first and second Conferences. It also included the concept of 200 nautical mile EEZs.

Scope of the UNCLOS Convention

The UN Convention on the Law of the Sea finally entered into force in November 1994, following ratification by 60 states, and some 12 years after it was adopted in 1982. In part, the delay in ratification was due to differences in opinion and interpretation over articles relating to mineral resources and to governance of the deep seabed. There was a requirement that the Convention be accepted as a complete package with all aspects being agreed to and no opt-outs from any of its articles. In order to overcome the disputes which caused the delay in ratification, an Agreement Relating to the Implementation of Part XI of UNCLOS was produced in December 1982 which overcame most of the remaining differences. The Convention itself is made up of 17 Parts containing a total of 320 Articles and has 9 Annexes. As such it is far too complex to go into specific detail on all aspects of the Convention in this Chapter. However, some of the key components are described below.

Paragraph 4 of the Preamble to the Convention identifies that the main objectives of the Convention were to create a legal order for the seas, facilitate international communication and also to promote the peaceful use of the seas and oceans. This would, it was hoped, result

in equitable and efficient use of marine resources, the conservation of living organisms and the promotion of study, protection and preservation of the marine environment.

Part I sets out the terms and scope and, in particular, outlines what constitutes pollution of the marine environment, i.e. the introduction of any substances, directly or indirectly, by man that has a damaging effect on marine life, provides a hazard to human health and which can damage marine activities such as fishing, and which may impair the quality of sea water in some way. It also sets out what does and does not constitute dumping of waste at sea.

Parts II to X codify previous conventions with Part II setting out what constitutes the limits of territorial seas and contiguous zones, the right of innocent passage through territorial waters and the rules for government vessels and military vessels. Parts III to X include Articles on: use of Straits for international navigation; Archipelagic States (states made up of many small islands being seen as a single geographic, political or economic entity); EEZ; Continental Shelf; High Seas; Regime for Islands; Enclosed or Semi-Enclosed Seas; and the right of access of land-locked states to and from the sea, including freedom of transit.

Parts XI to XV have been categorised, according to Cincin-Sain and Knecht (1998, page 70), as introducing new concepts, new laws and new institutions in the area of marine governance. Part XI, Section 2, a set of Principles governing the area, were developed and emphasize that the oceans and their resources are the common heritage of mankind (Article 136), further noting that the oceans should be used to the benefit of all mankind (Article 140) and exclusively for peaceful purposes (Article 141). It notes that marine scientific research should be carried out for peaceful purposes (Article 143) and that all necessary measures should be taken to protect the marine environment from the harmful effects of any activities that are undertaken (Article 145).

Part XI, Section 3 sets out policies on how the marine environment should be developed while Section 4 outlines the different levels of a newly established International Seabed Authority (ISA) with an associated Assembly, Council and Secretariat. The Assembly is made up of all members of the ISA – signatories to the Convention are members. It can establish general policies on any relevant provisions of the Convention falling under its competency (Article 160). The ISA Council consists for 36 members made up of representatives from different types of states (Article 161) elected to the Council at Assembly meetings. Reporting to the Council are an Economic Planning Commission (EPC) and a Legal and Technical Commission (LTC), both made up of 15 members. A Secretariat, led by an elected Secretary-General provides support to the various bodies of the ISA, produces an annual report on its work, and is a conduit for consultations and cooperation with international and non-governmental organizations. Part XI also covers financial arrangements of the ISA, legal status, privileges and immunities of the state parties (including how those rights and privileges may be suspended) and sets out how disputes may be settled.

Part XII deals with protection and preservation of the marine environment, states having an obligation to protect and preserve that environment (Article 192). While states have a right to exploit the natural resources of the marine environment, they are also expected to take measures to prevent, reduce and control pollution, to not transfer damage or hazards from one area to another, and to minimise the impact of technologies operating in their seas including preventing activities which may, intentionally or unintentionally, introduce alien species that could cause significant or harmful changes. In order to ensure that the marine environment receives the necessary protection, Sections 2 to 11 (Articles 197 to 237) include requirements in the areas of: technical assistance for developing states; monitoring and environmental assessment measures; international rules and national legislation to prevent, reduce and control pollution from sources including land-based or seabed activities, from dumping, and from vessels or from (or through) the atmosphere; and also enforcement measures for pollution from the different sources. Specific rules are also set out for ice-covered areas falling within the limits of a coastal state's EEZ (article 234), particularly where climatic conditions for most of the year cause hazards to navigation and also where pollution could cause irreversible disturbance of the ecological balance.

Of the remaining 5 parts to the Convention, Parts XIII to XV cover issues around marine scientific research, the development and transfer of marine technology and the settlement of disputes, the latter including the obligation that disputes should be settled by peaceful means and setting out the procedures in place to do so. Parts XVI and XVII set out general and final provisions including Articles on ratification, entry into force, procedures for amending the convention and Status of the Conventions. Finally, the Annexes to the Convention provide additional information on a range of issues including: the establishment of a Commission on the Limits of the Continental Shelf; basic conditions of prospecting, exploration and exploitation of mineral resources; conciliation procedures; arbitration procedures; and participation by international organizations.

Although UNCLOS has now been in force for over 15 years, it is important to note that with increasing awareness of global issues such as climate change, and increasing scientific knowledge of the impacts of different chemicals entering the marine environment, as just two examples, the Convention and the United Nations will play a continuing role in ensuring that state responses to those issues. As such, regular meetings of all State Parties to UNCLOS are held annually under Article 319 Paragraph 2(e) at which members of the International Tribunal for the Law of the Sea and members of the Commission on the Limits of the Continental Shelf are elected and reports from the Secretary-General on issues relevant to parties to UNCLOS are received, among other activities.

It remains vital that states continue to meet both the letter of the convention under its various requirements, and also meet the spirit of the convention through the promotion of peaceful uses of the seas and oceans and protecting the marine environment as laid out in the Preamble to the Convention. The Convention does not stand alone however at the UN level

as other measures have been developed through UN Conferences, the first of which was on the Human Environment (UNCHE) in 1972, leading to the establishment of the UN Environment Programme (UNEP), and the second of which was the UN Conference on the Environment and Development (UNCED) in 1992 which resulted in outputs including Agenda 21, the Rio Declaration and other outputs relevant to governance of the marine environment. These two Conferences are considered in more detail below.

The 1972 UN Conference on the Human Environment (UNCHE) and the United Nations Environment Programme (UNEP)

The ocean and coastal issues and the need for marine environmental protection were emphasized at the 1972 UN Conference on the Human Environment in Stockholm. That conference, attended by representatives of over 100 nations, was also attended by a range of NGOs campaigning on issues including the protection of whales and other cetaceans from being hunted by countries such as Japan and Norway, and also campaigners calling for greater protection of the environment from oil pollution. Two major events in 1965 and 1969 highlighted the significant damage which can be caused by oil spills and, with headlines in the press around the world together with increasing levels of television ownership and access to the broadcast media, the issue of oil pollution in the marine environment was one that had captured global attention.

In 1965 the vessel Torrey Canyon grounded on Seven Stones Reef between the Scilly Isles and Lands End in the United Kingdom. The vessel which, at the time of the accident, had a capacity of 120,000 tons was fully laden with crude oil from the Middle East. Once aground, vast quantities of oil entered the seas around southern England and spread widely with the prevailing wind and tides to land on beaches in Cornwall and Devon in the UK and on beaches in Normandy, France. There was little that could be done to prevent the spread of the oil, despite vessels spraying chemical dispersants to try and break up the oil slick which it was estimated measured 35 miles by 20 miles. The vessel remained grounded for 11 days, starting to break up after 8 days. By day 11 – 29 March 1967 – it was decided that action should be taken to speed up the sinking of the vessel and so it was bombed by the RAF and Royal Navy in an attempt to burn off tens of thousands of tons of crude oil. Images of the grounded vessel, and of the oil fires resulting from the bombing, appeared in newsprint and broadcast media around the globe.

The Torrey Canyon had been chartered by British Petroleum from a US tanker company which was a subsidiary of Union Oil Company of California. Coincidentally, another major oil disaster was associated with Union Oil when, in January 1969, there was a blow-out on Union Oil‟s Platform A in the Dos Cuadras Offshore Oil Field in the Santa Barbara Channel, 6 miles off the coast of Santa Barbara in California. That blow-out resulted in around 80,000 to 100,000 barrels of oil (equivalent to 13,000 to 16,000 cubic metres of oil) being spilled into the Santa Barbara Channel over a 10 day period. This spill resulted in the deaths of

numerous sea birds and also animals such as seals and dolphins. It received significant publicity in the US in particular and resulted in the development of measures to protect the marine environment of the US over the next several years.

In light of these two major oil pollution incidents in particular, together with growing awareness of the need to protect the environment as a whole, with the publication of seminal works by authors such as Rachel Carson (1962) in her book "Silent Spring" and Garrett Hardin (1968) in his essay "The Tragedy of the Commons", many of the nations attending the 1972 UNCHE had prepared national reports setting out the current status of the environment in those countries.

A significant outcome of the 1972 Conference was the creation of a new UN body, the United Nations Environment Programme (UNEP) which, with its governing Council, was given responsibility to co-ordinate the environmental activities across the whole of the United Nations. UNEP also went on to establish a Regional Seas Programme which promotes sound environmental management of enclosed or semi-enclosed seas – seas which Article 122 of UNCLOS defines as being a "gulf, basin or sea surrounded by two or more States and connected to another sea or ocean by a narrow outlet [through the] territorial seas and [EEZs] of two or more coastal states" (see footnote 7). At the current time UNEP operates 13 Regional Sea programmes globally, with over 140 countries participating in those schemes.

Two Conventions directly related to protection of the marine environment also resulted from the 1972 UNCHE. The first of these was the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972 (also known as the London Dumping Convention - LDC), a global convention which entered into force in 1975 and which was designed to protect the marine environment from human activities resulting in all types of marine pollution and more than 80 states are currently parties to the convention. The second convention arising from the 1972 Conference is the International Convention for the Prevention of Pollution Ships 1973 (also known as MARPOL) and this Convention, together with its amendments and protocols (and now known as MARPOL 73/78).

Impacts of 1972 UNCHE and the Need for a New UN Conference on Environment and Development

The 1972 UNCHE and its outcomes had a positive effect through specific measures to protect the environment, including the marine environment. However, by the late 1970s and early 1980s it became clear that environmental degradation was still a significant problem. There was increasing awareness of links between poverty, illness and social deprivation and environmental degradation, particularly with the publication of the Brundtland Report (1987). This report, also known as "Our Common Future", was named after the Chairman of the World Commission on Environment and Development (WCED), Gro Harlem Brundtland, the then Prime Minister of Norway. The Commission was established by the UN

General Assembly in 1983 under Resolution 38/161. The report of the Commission was published in December 1987 and was particularly notable in that it examined the need to protect the environment at the same time as recognising that industrialisation and development would continue to take place, particularly in "third world" and developing countries. The report is also famous for its definition on what constitutes Sustainable Development, where any development undertaken to meet current needs should not compromise or prevent the needs of future generations from being met.

In addition to the activities of the Brundtland Commission and the publication of its report, evidence was being presented – and appearing in the media – highlighting possible links between emissions of manmade pollutants such as chlorofluorocarbons (CFCs) and the destruction of the ozone layer over Antarctica, and how the use of greenhouse gases (GHGs) was linked to climate change impacts including the possibility of increasingly severe flooding in coastal regions. New scientific knowledge, together with increasing public awareness and concern over how the environment was being used by man, meant that renewed action was needed to protect the environment as a whole. In addition, there was recognition of the ongoing threat to both mankind and the environment through the testing of nuclear weapons, tests which had the potential to cause significant damage to the marine environment and marine biota (everything living in the marine environment), together with the dumping of some radioactive wastes at sea.

In the case of nuclear testing, an attempt had been made to prevent this through the Limited Test Ban Treaty of 1963 which sought to ban nuclear weapons testing in the atmosphere, outer space and under water, although underground testing was still permissible. Testing under water and in the atmosphere both had a detrimental effect of the marine environment and there was also the issue of dumping of radioactive wastes at sea. While the London Dumping Convention (LDC) 1972 (see Section 2.2) had prohibited dumping of „high risk" nuclear wastes, the definition of what constituted high risk being determined by the International Atomic Energy Agency (IAEA). Dumping of low risk wastes was still permissible, with IAEA guidelines becoming a minimum standard to be used in developing national legislation. However, there was growing opposition among both signatories of the LDC and from non-governmental organisations which eventually resulted in a moratorium on dumping of any nuclear waste at sea in 1983.

A number of measures were set in place in preparation for a new Conference on the environment - the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in June 1992, also known as the Earth Summit. Preparatory Committee meetings, open to any member of the UN, were held in various locations between 1990 and 1992. The Preparatory Committee established three working parties, one of which looked at environmental issues including those relating to coasts and oceans.

Three Intergovernmental Committees/Panels were also established: the Intergovernmental Negotiating Committee for a Framework Convention on Climate Change; the Intergovernmental Negotiating Committee on Biological Diversity; and the Intergovernmental Panel on Climate Change. Of these the most significant in respect of the marine environment was the Intergovernmental Panel on Climate Change (IPCC) which was created in 1989 by the World Meteorological Organization (WMO) and UNEP as a scientific intergovernmental body to provide independent scientific advice on the issue of climate change. The IPCC is open to all UN member countries and 194 participating countries in 2010.

UN General Assembly Resolution 45/53 of December 1988 endorsed the establishment of the IPCC by the WMO and UNEP (Para. 5) and called for the IPCC to conduct a comprehensive review of climate change and to provide recommendations on the scientific, social and economic aspects of climate change including the development of response strategies which might be included in any future international legislation on climate change. As a result of this remit, the IPPC played, and continues to play, a significant role particularly in the areas of climate change but also looking at the potential impacts on low-lying coastal areas and nations of sea-level rises associated with climate change. For its ongoing work on climate change, the IPPC received the Nobel Peace Prize in 2007.

The United Nations Conference on Environment and Development 1992: Background and Key Outputs:

The United Nations Conference on Environment and Development took place between 3 rd and 14th June 1992 at Rio de Janeiro in order to build upon the Declaration of the 1972 UN Conference on the Human Environment (UNCHE), Stockholm. Also known more informally the Earth Summit, the UNCED Conference resulted in outputs on Climate Change, on Biodiversity and to the document entitled Agenda 21. The Conference was attended by representatives of 172 nations including 108 Heads of State, together with representatives of over 2,400 non-governmental organisations and a vast array of the world‟s print and broadcast media. There were five main outputs from the Rio Conference: the Rio Declaration on Environment and Development; Agenda 21; the Framework Convention on Climate Change; the Convention on Biological Diversity; and the set of Forest Principles. The relevance to the marine environment of the first four of these outputs is discussed below.

Rio Declaration 1992

The Rio Declaration on Environment and Development 199216 is a non-binding document which set out 27 principles intended to guide future sustainable development around the world. The first ten principles are mainly related to the issue of sustainable development and helping developing countries, acknowledging that all countries have responsibility for resolving environmental problems, and that any actions must promote a supporting and open

international economic system. While none of the principles make direct reference to the marine environment, some of the key principles are outlined briefly.

Principles 10 sets out that that resolution of environmental issues is best handled at a national level, with public participation and access to information being very important, while Principle 11 notes that states should enact legislation on environmental standards, management and priorities within the context of that state, since some countries will be unable to achieve similar standards without unwarranted economic and social costs. Principle 13 sets out information on liability and compensation issues arising from pollution including international cooperation. Principle 15 sets out a precautionary approach (sometimes known as the "Precautionary Principle" which indicates that action should be taken by states when protecting the environment, even if scientific evidence is not currently available to confirm the risk of serious or irreversible damage, and that this does not mean that those states can postpone measures to prevent environmental degradation. Principle 16, sometimes known as the "Polluter Pays Principle" sets out that the polluter should bear the costs of the pollution they cause, that this should be in the public interest and that it should not have an impact on international trade or investment.

Agenda 21 – The United Nations Programme for Action from Rio, 1992

Agenda 21 (1992) was a 40 chapter action plan. Although non-binding on the part of signatories, there was an assumption that any nation signing up to the Agenda would take note of its principles. The Preamble to the Action Plan, paragraph 1.1, noted that "Humanity stands at a defining moment in history [being faced with issues of] a worsening of poverty, hunger, ill health and illiteracy, and the continuing deterioration of the ecosystems on which we depend for our well-being". The Action plan was set out in four sections: Social and Economic Dimensions (Chapters 1 to 8); Conservation and Management of Resources for Development (Chapters 9 to 22); Strengthening the Role of Major Groups (Chapters 23 to 32); and Means of Implementation (Chapters 33 to 40). It covered areas as diverse as combating poverty (Chapter 3), protection of the atmosphere (Chapter 9), conservation of biological diversity (Chapter 15), children and youth in sustainable development (Chapter 25), and promoting education, public awareness and training (Chapter 36).

A number of Chapters from Agenda 21 specifically relate to the marine environment and these are described briefly below. However, many other chapters are applicable to the marine environment in some way. For example, Chapter 15 – Conservation of Biological Diversity – noted that action should be taken to conserve biological diversity and ecosystems including marine and aquatic areas (Section A, part (g)) and that surveys should be established to obtain baseline information on biological and genetic resources including in aquatic, coastal and marine environments (Section B, part (c)).

Chapter 17 – Protection of the Oceans, all kinds of seas etc. – noted the importance of the oceans as a "global life support system" (Para 17.1). This chapter set out the need for a range of approaches in seven sections covering: integrated management and sustainable development of coastal areas including EEZs; marine environmental protection; sustainable use and conservation of marine living resources of the high seas (and similarly for resources under national jurisdiction); analysing uncertainties for the management of the marine environment; strengthening international cooperation and coordination, including at a regional level; and the sustainable development of small islands.

There are many requirements set out in each Chapter of Agenda 21. As an example, Chapter 17, Section 17.30 set out requirements for states, acting at different levels (individually, bilaterally, regionally, multilaterally) to protect the marine environment from degradation caused by shipping (12 activities including cooperation in monitoring vessels for illegal discharges and enforcing MARPOL discharge provisions (see Section 3.3.3); promoting safe navigation by adequately charting coasts and shipping routes; and assessing the need for stricter regulations to reduce the risk of accidents from different types of vessels, for example). There are also additional sections covering the prevention of dumping, pollution coming from offshore oil and gas platforms, and pollution from ports through the provision of facilities in ports to collect oily wastes, chemical wastes and garbage from ships (again a requirement of the MARPOL Convention).

While Chapters 19 to 22 covered the environmentally sound management of toxic chemicals, hazardous wastes (including illegal trafficking of toxic wastes), solid wastes and sewage wastes, and finally radioactive wastes, it is only the last chapter that contains explicit mention to the marine environment. Chapter 22 – Managing Radioactive Wastes called for nations to take measures and cooperate in the area of managing these wastes, including a Code of Practice on trans-boundary movement of those wastes (Para. 22.5(a)). In addition, the Principle also set out the need for further research on the disposal of low-level radioactive wastes at sea to determine whether the moratorium in place at that time should be replaced by a ban (Para. 22.5 (b)). It also notes that radioactive waste should not be stored near sea coasts or open seas unless evidence is provided to show it does not provide an unacceptable risk to people and the marine environment (Para 22.5(c)).

Arising from Agenda 21, in 1997 the UN General Assembly adopted a Programme of Further Implementation of Agenda 21. Section 36 sets out achievements in the area of oceans and seas since UNCED. It notes progress in negotiations for agreements and voluntary instruments in the areas of conservation and management of fishery resources and for the protection of the marine environment, including progress on the utilisation of fish stocks. It did, however, highlight that there was still a decline in fish stocks and that levels of marine pollution were rising, and called for Governments to take action, during the International Year of the Ocean 1998, to: improve decision making at national, regional and global levels; to implement Decision 4/15 of the Commission for Sustainable Development (CSD) which

called for periodic review by the CSD of all aspects of the marine environment (as described in Agenda 21, Chapter 17); and to improve cooperation in assisting developing countries to implement relevant agreements etc. so that they could fully participate in the sustainable use, management and conservation of fishery resources and achieve integrated coastal zone management (ICZM).

The Framework Convention on Climate Change 1992

Page 2 of the Framework Convention 1992 notes that the Parties to the Convention are aware that the seas and oceans play a role in providing sinks or reservoirs for greenhouse gases (page 2). In the case of the marine environment, carbon sinks are marine sediments which can absorb and sequester (remove) greenhouse gases including carbon dioxide from the atmosphere in order to help or reduce the global warming effects of those gases. As a result of the recognition of the marine ecosystem as a carbon sink, Article 4 - Commitments (page 5) notes that all parties to the Framework Convention must take account of their common responsibility to (d) promote sustainable management and cooperation in the conservation of sinks and reservoirs including oceans and coastal marine environments while part (e) sets out the need for cooperation in preparing for adaptation to impacts of climate change, which includes developing ICZM plans and also protecting areas affected by flooding. Coastlines of low lying areas and islands would be particularly threatened by any sea-level rise resulting from climate change.

Convention on Biological Diversity, 1992

The Convention on Biological Diversity 1992 entered into force on 29 December 1993 and, by June 2000, had 168 signatories. Article 1 of the Convention sets out its aims as being to conserve biological diversity, sustainably use its components, and equitably share the benefits of using genetic resources. There is very limited reference to the marine environment in this Convention. Article 2 indicates that biological diversity covers living organisms from all sources including marine and other aquatic ecosystems. Article 22, Part 2, indicates that all contracting parties to the convention should implement it with respect to the marine environment and consistent with the rights and obligations of those states set out under the Law of the Sea Convention.

Other Outputs of UNCED 1992

The UN General Assembly (1995) adopted a Fish Stocks Agreement which entered into force in December 2000. This agreement, which in part was negotiated as a result of discussions at the Earth Summit, aimed to prevent overfishing and also sought to ensure the long-term conservation and sustainable use of fish stocks, including highly migratory fish stocks.

A Global Conference on the Sustainable Development of Small Island Developing States (SIDS) was held in Bridgetown, Barbados between 25 April and 6 May 1994, following which 111 Governments adopted the Barbados Declaration and Programme of Action which set out strategies that would deal with issues of concern to small island states including: climate change and sea-level rise; management of wastes; coastal, marine, freshwater and land resources; biodiversity resources; and human resource development, The Barbados Conference was considered the first conference to translate Agenda 21 into a programme of action for a group of countries.

MEMORANDA OF UNDERSTANDING ON PORT STATE CONTROL (MOUS) AND MOU REGIMES

MOUs are a series of regional agreements which have a responsibility to ensure compliance with the requirements of international maritime conventions such as those set out by the UN and IMO. MOU regimes are agreements between states which aim to enforce the requirements of the different conventions through the use of vessel inspections, vessel detention, and by ensuring that any remedial work is carried out at the earliest possible opportunity to make vessels comply with the conventions.

Port State Control is a system under which foreign flagged vessels entering a port may be inspected by appointed agencies to ensure that they comply with all relevant international conventions. Inspections, which should normally cause no undue delay to a vessel, are used to ensure that all statutory certificates (for the vessel, its equipment and its crew) are available and are up to date. They can also examine the vessel to ensure that there are no deficiencies with its structure or equipment that would make it unsafe for it to travel to its next port of call or identify where there is a risk of the vessel polluting the sea during its normal operations.

A major advantage of the MOU agreements is that, when a foreign flagged vessel enters a port within its region, and then sails on to other ports in the same region, the MOU regime can provide a coordinating body to monitor and track a vessel's activities. The result of this is that it helps identify substandard vessels and can also act as a disincentive for intentional pollution by the vessel‟s crew since there is a high risk that such pollution can be identified and even a suspicion of it taking place can result in even more thorough inspections while it is in a MOU region port. It should also help reduce the risk of accidental pollution incidents by identifying vessel deficiencies. While it is the responsibility of a flag state to ensure that vessels flying its flag meet all the international standards set out in IMO and other Conventions, it is often only when a vessel enters a port state and is inspected that deficiencies are identified and action taken to ensure that these are dealt with.

Between January 1982 and June 2005, nine MOU Regimes were established around the globe and cover all the world‟s oceans. An overview of the geographical coverage of the

MOU regimes, in order of their establishment and including details of signatories to the agreements, appears in Table 4. While the United States is not a signatory to any of the MOU regimes, it does hold observer status with both the Tokyo and Black Sea MOUs and also conducts its own port state control activities and inspections under the aegis of the US Coast Guard.

Overview of Regional MOU Regimes in chronological order of establishment

MOU Regime	MOU Date	Region	Signatory Maritime Authorities at July 2010
Paris MOU	Jan 1982	Europe and North Atlantic Region	Belgium, Bulgaria, Canada, Croatia, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Latvia, Lithuania, Malta, Netherlands, Norway, Poland, Portugal, Romania, Russian Federation, Slovenia, Spain, Sweden and United Kingdom
Acuerdo de Viña del Mar	Nov 1992	Latin American Region	Argentina, Bolivia, Brazil, Chile, Colombia, Cuba, Ecuador, Honduras, Mexico, Panama, Peru, Uruguay and Venezuela
Tokyo MOU	Dec 1993	Asia-Pacific Region	*Members*: Australia, Canada, Chile, China, Fiji, Hong Kong (China), Indonesia, Japan, Republic of Korea, Malaysia, New Zealand, Papua New Guinea, The Philippines, Russian Federation, Singapore, Thailand, Vanuatu, Vietnam. *Observers*: Macao (China), Democratic People's Republic of Korea, Solomon Islands, United States of America
Caribbean MOU	Feb 1996	Caribbean Region	*Members:* Antigua & Barbuda, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, the Netherlands Antilles, Suriname and Trinidad & Tobago. *Observers*: Anguilla, British Virgin Islands, St. Kitts & Nevis, St. Vincent & The Grenadines, Turks & Caicos Islands
Mediterranean MOU	July 1997	Mediterranean Region	Algeria, Cyprus, Egypt, Israel, Jordan, Lebanon, Malta, Morocco, Tunisia, Turkey and the Palestine Authority
Indian Ocean MOU	June 1998	Indian Ocean Region	Australia, Bangladesh, Djibouti, Eritrea, Ethiopia (Observer), India, Iran, Kenya, Maldives, Mauritius, Mozambique, Oman, Seychelles, South Africa, Sri Lanka, Sudan, Tanzania and Yemen
Abuja MOU	Oct 1999	West & Central African Region	Angola, Benin, Cameroon, Cape Verde, Congo, Cote d' Ivoire, Gabon, Ghana, Guinea, Equatorial Guinea, Liberia, Mauritania, Namibia, Nigeria, Senegal, Sierra Leone, South Africa, The Gambia, and Togo
Black Sea MOU	April 2000	Black Sea Region	*Members:* Bulgaria, Georgia, Romania, Russian Federation, Turkey and Ukraine. *Observer:* United States Coast Guard
Riyadh MOU	June 2005	Arabian Gulf Region	United Arab Emirates, Kingdom of Bahrain, Kingdom of Saudi Arabia, Sultanate of Oman, State of Qatar and State of Kuwait

NOTE: The date in column 2 is the month and year when the MOU was initially finalised, although the agreements have been amended and additional states have signed up to them at later dates.

In the case of the Tokyo MOU, one of the main seafaring states that had not signed a memorandum of understanding at September 2010 to become a member of that body, and which also does not hold observer status, is Taiwan. In 2003 Taiwan established its own PSC inspection regime, with appropriately trained and certified inspectors in each of its major international ports. Inspectors will normally have held a senior rank (e.g. Master Mariner, Chief Engineer), or have held a lower rank but worked on vessels which operate internationally. As this example illustrates, it is not necessary that a state signatory to

international conventions and required to undertake PSC inspections should also be a member of an MOU regime.

Many international conventions contain a requirement that PSC inspections are carried out on foreign flagged vessels to ensure both vessel and crew safety, and to help reduce the risk of intentional and accidental marine pollution. The first five conventions which appear in Table, together with their amendments and Protocols, have been examined below. Four further IMO Conventions requiring inspections are identified later part of the module, Relevant Instruments, of the Paris MOU Agreement. These are summarised below:

- *TONNAGE 1969* was originally introduced as a universal tonnage measurement system. It provides gross and net tonnages for cargo vessels by calculating the volume of all enclosed spaces on a ship (gross tonnage) and the volume of all cargo spaces of a ship (net tonnage), with gross tonnage being used to calculate manning levels, safety rules and port fees, for example.
- *CLC 1969* sets out how compensation is to be paid for damage caused by oil spills from ships which carry more than 2,000 tons of oil as cargo, with most other vessels not being covered by the Convention. Its subsequent Protocols and Amendments mainly set out the monetary value of compensation, including compensation for environmental damage and the cost of reinstating contaminated environments. It makes a ship's owners liable for any damage caused and also requires them to maintain adequate levels of insurance equivalent to the monetary value of the loss of the ship and its cargo.
- *AFS 2001* is concerned with prohibiting the use of anti-fouling paints on ships. These paints are particularly hazardous to the marine environment, with many containing harmful chemicals such as organotin compounds - organic compounds based on tin such as tributylin (TBT) which can be sprayed on ship's hulls to control the growth of barnacles, algae and other organisms. Chemicals such as TBTs can leach into the marine environment and can be extremely toxic to marine life. Only 45 states had ratified AFS 2001 by June 2010 out of 169 Contracting States to the IMO Convention.
- *BUNKERS 2001* is modelled on CLC 1969. It covers vessels not included under that convention and aims to ensure that adequate, prompt and effective compensation is available for damage to a state's territorial seas or EEZ as a result of oil spills from ships‟ bunkers (or fuel tanks). The owners of ships over 1,000 gross tonnage are required to have mandatory insurance to cover the costs of any pollution incidents.

The final convention appearing in Table 2 is a convention of the International Labour Organization (ILO), the UN specialized agency which seeks to promote social justice and internationally recognized human and labour rights. ILO Convention C147 of 1976 and its Protocol of 1996 set out to ensure the safety of seafarers, particularly those working on

substandard vessels and which are registered under flags of convenience. It is applicable to the vast majority of sea-going vessels, with limited exclusions including sailing vessels, fishing and whaling vessels and some other small vessels. It requires those states which have ratified the Convention to have in place regulations or laws for ships that are registered in that state, and sets out that those regulations or laws should cover aspects such as safety standards, hours of working, and the provision of adequate social security for crew members. ILO C147 is open for ratification by states which are also parties to SOLAS, LL and COLREG.

In the case of vessel inspections conducted under the aegis of the Paris MOU, specific Appendices of ILO C147 are identified as requiring vessel inspections and these sections are:

- Minimum Age Convention, 1973 (No. 138);
- Minimum Age (Sea) Convention (Revised), 1936 (No. 58);
- Minimum Age (Sea) Convention, 1920 (No. 7);
- Medical Examination (Seafarers) Convention, 1946 (No. 73);
- Prevention of Accidents (Seafarers) Convention, 1970 (No. 134, Articles 4 and 7);
- Accommodation of Crews Convention (Revised), 1949 (No. 92);
- Food and Catering (Ships‟ Crews) Convention, 1946 (No. 68, Article 5); and
- Officers Competency Certificates Convention, 1936 (No. 53, Articles 3 and 4).

The Paris MOU also has a responsibility to ensure vessel compliance with a range of EU Directives and Regulations in the area of Marine Safety. Examples of these measures include:

- Directive on requirements for vessels carrying dangerous of polluting goods (93/75/EEC and amendments)
- Directive on common rules and standards for ship inspection (94/57/EC and amendments)
- Directive on Port State Control (95/21/EC and amendments)
- Directive on safe loading and unloading of bulk carriers (2001/96/EC)
- Segregated ballast oil tankers: tonnage measurements (Regulation (EC) No. 2978/94)
- Safety management of ro-ro passenger vessels (Regulation (EC) No. 3051/95 as amended)
- Directive on mandatory surveys of ro-ro ferry etc. (1999/35/EEC and amendments)
- Directive on marine equipment (96/98/EC and amendments)
- Directive on safety rules and standards for passenger ships (98/18/EC and amendments)
- Directive on registration of persons sailing on board passenger ships etc. (98/41/EC and amendments)

- Directive on port reception for ship-generated waste and cargo residues etc. (2000/59/EC) – previously discussed.

Similarly, signatories to the Mediterranean MOU and Black Sea MOU that are also EU Member States will also have to ensure compliance with relevant EU Directives which may be applicable to the whole of the EU or for a specific region such as the Mediterranean. In the case of other MOU regimes such as Tokyo MOU, Caribbean MOU, there will similarly be a range of regional agreements, treaties or regulations for which port state control inspections will be required and which will be conducted by the inspectors for that regime.

Ensuring Compliance through Vessel Inspection

In order to ensure that vessels comply with the requirements of the various Conventions and other legal instruments, a system of vessel inspections is in place for each MOU Regime. Each MOU regime sets out a minimum number of vessels to be inspected each year. In the case of the Paris MOU, this is 25% of the estimated number of foreign flagged merchant ships entering a member state's ports. The level of vessel inspections differs widely between the different MOU regimes, with the Tokyo MOU indicating that it will endeavor to inspect 80% of the total number of ships operating within its region each year (both foreign flagged and MOU member flagged vessels), while the Indian Ocean and Riyadh MOUs specify 10%. Of the other MOUs, Viña del Mar specifies 20% and the Mediterranean, Abuja and Black Sea regimes specify 15%.

Vessel inspections are conducted by recognized organizations or private bodies which are able to carry out surveys and issue or verify Certificates such as those required under SOLAS, MARPOL etc. discussed previously. In the example of the Paris MOU, inspections in the United Kingdom are conducted by the Maritime and Coastguard Agency while in Sweden they are conducted by the Swedish Maritime Authority. In the example of the Tokyo MOU region, inspections in China are conducted by its Maritime Safety Authority. The case of Taiwan with its own PSC inspection system separate from the Tokyo MOU has been discussed previously.

Vessels are selected for inspection under a set of criteria which are normally set out in the text of the MOU. The Paris MOU provides a comprehensive list of criteria and target factors for selecting vessels for inspection and the full list is available in the MOU Text (2009 , Annex 1, Section 1, page 2) and there is a degree of similarity between the various MOU regimes. Table 2 sets out the most common selection criteria for identifying vessels for inspection but excludes the Caribbean and Black Sea MOUs for which this information is unavailable.

The use of selection criteria such as those set out in Table 2 have the advantage of reducing the opportunity for vessel owners or captains to claim that they have been unfairly targeted in a port or region.

Vessels can be inspected in a port and may be detained for rectification of any deficiencies identified during those inspections and where the vessel is deemed unsafe to travel on to its next port of call. Vessels with more minor deficiencies may be allowed to proceed but will be given a deadline by which any repairs should be undertaken and can then be inspected once that deadline has elapsed and the next time it enters a member state's port, to ensure that work has been undertaken. The Paris MOU provides details of its Port State Control inspection procedures which identifies as a minimum requirement the examination of some 46 different certificates (as they apply to the type of vessel being inspected), and these include certificates covering safety equipment and radio equipment, showing that the vessel is in compliance with the requirements of SOLAS, and has an International Ship Security Certificate, a Minimum Safe Manning Document and Medical Certificates. Additionally, inspections will examine the vessel to check its engine room, crew accommodation and other areas to ensure they meet the standards set out in the relevant certificates.

Table 2: International Conventions against which ships may be inspected for compliance

Main International Conventions for Compliance Inspection MOU Regime	Paris	Viña del Mar	Tokyo	Caribbean	Mediterranean	Indian Ocean	Abuja	Black Sea	Riyadh
Load Lines (LL 1966)	/	/	/	/	/	/	/	/	/
Load Lines 1988 Protocol	/	/	/		/	/		/	/
Safety of Life at Sea 1974 (SOLAS 1974)	/	/	/	/	/	/	/	/	/
Safety of Life at Sea 1974, Protocol of 1978	/	/	/		/	/	/	/	/
Safety of Life at Sea Protocol of 1988	/	/	/		/	/		/	/
Prevention of Pollution from Ships 1973, and Protocol of 1978 (MARPOL 73/78)	/	/	/	/	/	/	/	/	/
Standards of Training, Certification and Watch Keeping for Seafarers 1978 (STCW 1978)	/	/	/	/	/	/	/	/	/
Regulations for Preventing Collisions at Sea 1972 (COLREG 197272)	/	/	/	/	/	/	/	/	/
Tonnage Measurement of Ships 1969 (TONNAGE 1969)	/	/	/			/	/	/	/
Merchant Shipping (Minimum Standards) Conv.1976 (ILO 147) and Protocol of 1996	/		/	/	/	/	/	/	/
Civil Liability for Oil Pollution Damage 1992 (CLC 1992)	/	/							
Control of Harmful Anti-Fouling Systems on Ships 2001 (AFS 2001)	/		/					/	
Civil Liability for Bunker Oil Pollution Damage 2001 (BUNKERS 2001)	/							/	

NOTE: Blank cells indicate where Memorandum of Understanding does not explicitly state that all amendments and protocols to the relevant instruments will be adhered to

Deficiencies against which vessels can be detained include: lack of necessary certificates or out of date certificates on board; structural problems with the vessel including corrosion or cracks in the vessels hull; deficiencies in equipment such as fire suppression systems or damaged cargo hatches which may affect the vessel's buoyancy in the event of bad weather; out of date equipment; and the failure to adequately undertake operational drills such as fire

drills or abandon ship drills where an inspector witnessing those drills sees that the crew does not understand what they should do.

As noted above, when looking at the number of states which have ratified the various IMO (and ILO) Conventions and the coverage of those states in terms of world shipping fleet tonnage, the vast majority of vessels entering ports should already be adhering to the terms of those conventions.

Main Selection Criteria and Target Factors for Vessel Inspections by MOU Region

		MOU Region						
	Most common selection criteria set out in MOU documents for selection of vessels for inspection. Inspections should take place where the vessel:	Paris	Viña del Mar	Tokyo	Mediterranean	Indian Ocean	Abuja	Riyadh
Selection Criteria for Inspections	has been reported by pilots or the Port Authority as having deficiencies prejudicial to safe navigation	1		/	/	/	/	/
	is carrying dangerous or polluting goods where all relevant information (e.g. ships particulars, movements, types of dangerous goods) have not been fully provided	2		/	/	/	/	/
	is subject of a report/notification by another Authority	3	/	/				
	is subject of a report or complaint by the master, a crewman or other relevant persons unless any such report has been deemed to be unfounded	4	/	/				
	has been suspended or withdrawn from its class for safety reasons in the last 6 months	6			/	/	/	/
Target Factor for conducting inspections	has not visited port in a member state of an Agreement within last 12 months, or where data on the vessel is not available from regional database	1			/	/	/	/
	has not been inspected by any Authority within the last 6 months (which can be less if there are clear grounds for inspection)	2	/	/	/	/	/	/
	has statutory certificates on construction and equipment that have been issued by an organisation not recognised by the MOU authority (or not issued in accordance with relevant instruments)	3			/	/	/	
	has been permitted to leave port with deficiencies under certain conditions*	5		/	/	/	/	/

Despite measures taken over many years, there are still a small minority of vessels, some sailing under flags of convenience but also some sailing under the flags of countries that have ratified conventions, that continue to hold invalid or out of date certificates, that fail to meet the required standards for their crewmen, and that have significant deficiencies with either the vessel itself of the equipment on board. To illustrate this, three examples of deficiencies identified by Paris MOU inspections in the first 9 months of 2010 are outlined below:

- Vessel 1: Panama-registered Chemical Tanker – 15 deficiencies of which 9 resulted in 4 days detention. Included operational deficiencies with MARPOL, lifeboats not

ready to use, problems with fire safety equipment, electrical equipment, radar, and out of date charts

- Vessel 2: German-registered Passenger Ship – 17 deficiencies, 8 of which resulted in 9 days detention. Included a range of fire safety issues, problems with life-saving appliances, out of date charts, and a lack of emergency lighting
- Vessel 3: Bulgarian-registered Bulk Carrier – 17 deficiencies, 7 of which resulted in 9 days detention. Included lifesaving appliances, load lines issues, abandon ship drill, structural safety with corroded beams and floors, missing documentation.

Approximately 70 ships were also banned from entering the region's ports in September 2010. These vessels sailed under the flags of countries around the world including Turkey, Cambodia, Sierra Leone, Panama, Nigeria, Tonga and the Russian Federation. All of these vessels had either failed to call into a specified repair yard, had multiple detentions which had not been adequately dealt with, had invalid certificates or had previously jumped detention.

ROLE OF THE INTERNATIONAL MARITIME ORGANISATION IN PROTECTION OF MARINE ENVIRONMENT

Shipping – which transports about 90% of global trade – is, statistically, the least environmentally damaging mode of transport, when its productive value is taken into consideration. For example, the vast quantity of grain required to make the world's daily bread could not be transported any other way than by ship. Moreover, set against land-based industry, shipping is, overall, a comparatively minor contributor to marine pollution from human activities.

IMO's original mandate was principally concerned with maritime safety. However, as the custodian of the 1954 International Convention for the prevention of pollution of the sea by oil (OILPOL Convention), the Organization, soon after it began functioning in 1959, assumed responsibility for pollution issues and subsequently has, over many years, adopted a wide range of measures to prevent and control pollution caused by ships and to mitigate the effects of any damage that may occur as a result of maritime operations and accidents.

These measures have been shown to be successful in reducing ship-sourced pollution and illustrate the commitment of the Organization and the shipping industry towards protecting the environment. Of the 51 treaty instruments for the regulation of international shipping IMO has adopted so far, 21 are directly environment-related.

The work of the Marine Environment Division is, in the main, directed by the Marine Environment Protection Committee, the MEPC in short, which is IMO's senior technical body on marine pollution related matters. It is aided in its work by a number of IMO's Sub-Committees, in particular the Sub-Committee on Pollution Prevention and Response (PPR).

The original focus of its work was the prevention of marine pollution by oil, resulting in the adoption of the first ever comprehensive antipollution convention, the International Convention for the Prevention of Pollution from Ships (MARPOL) in 1973. This has changed over the last few decades to include a much wider range of measures to prevent marine pollution, and the original MARPOL Convention was amended many times to also include requirements addressing pollution from chemicals, other harmful substances, garbage, sewage and, under an Annex VI adopted in 1997, air pollution and emissions from ships.

Other international instruments in the remit of the Division regulate oil pollution preparedness, response and co-operation (OPRC Convention and its 2000 OPRC-HNS Protocol), control of harmful anti-fouling systems on ships (AFS Convention), prevention of the potentially devastating effects of the spread of invasive harmful aquatic organisms carried by ships' ballast water (BWM Convention), safe and environmentally sound recycling of ships (Hong Kong Convention), to name just a few.

IMO also carries out Secretariat functions in connection with the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, the London Convention as well as its 1996 Protocol. Its objective is to promote the effective control of all sources of marine pollution and to take all practicable steps to prevent pollution of the sea by dumping of wastes and other matter.

Many developing countries cannot yet give full and complete effect to these instruments, for various reasons. IMO has established an Integrated Technical Co-operation Programme (ITCP), with the sole purpose of assisting countries in building up their human and institutional capacities for uniform and effective compliance with the Organization's regulatory framework. Assisting these countries in working towards sustainable socio-economic development and enhancement of marine environment protection will ultimately result in cleaner waters and coasts, increased tourism, greater access to protein through improved and uncontaminated fish catches and integrated coastal zone management.

POLLUTION PREVENTION

In 1973, IMO adopted the International Convention for the Prevention of Pollution from Ships, now known universally as MARPOL, which has been amended by the Protocols of 1978 and 1997 and kept updated with relevant amendments. The MARPOL Convention addresses pollution from ships by oil; by noxious liquid substances carried in bulk; harmful substances carried by sea in packaged form; sewage, garbage; and the prevention of air pollution from ships. MARPOL has greatly contributed to a significant decrease in pollution from international shipping and applies to 99% of the world's merchant tonnage.

Other treaties address anti-fouling systems used on ships, the transfer of alien species by ships' ballast water and the environmentally sound recycling of ships. Reductions of

pollution generated by ships have been achieved by addressing technical, operational and human element issues and are all the more noteworthy when compared with the significant growth in the world's shipping industry – both in the size of the world fleet and the distances that it travels. IMO is continuously pursuing a pro-active approach to enhance implementation and enforcement, both by flag and port States, including a pro-active action plan to ensure that shore-based reception facilities for ship generated waste keep up with international regulatory requirements.

MARPOL Annex I – Prevention of Pollution by Oil

Oil tankers transport some 2,900 million tonnes of crude oil and oil products every year around the world by sea. Most of the time, oil is transported quietly and safely...

Measures introduced by IMO have helped ensure that the majority of oil tankers are safely built and operated and are constructed to reduce the amount of oil spilled in the event of an accident. Operational pollution, such as from routine tank cleaning operations, has also been cut.

The operational and construction regulations introduced by MARPOL, which entered into force in 1983, have been a success, with statistics from reputable industry and independent bodies showing that these regulations, along with other safety-related regulations such as the introduction of mandatory traffic separation schemes and international standards for seafarer training, have been instrumental in the continuous decline of accidental oil pollution that has taken place over the last 30 years.

The MARPOL convention, in 1983, introduced a number of radical new concepts, such as a requirement for new oil tankers to be fitted with segregated ballast tanks, so as to obviate the need to carry ballast water in cargo tanks. This was superseded by the requirement for oil tankers delivered from 1996 onwards to be fitted with a double hull. The protection of the marine environment was thus greatly enhanced.

As far as operational oil pollution is concerned, the many innovations introduced by MARPOL on allowable discharges of bilge water through the oily water separator (with the well-known 15ppm standard), or oily waters from the cargo tanks, through the oil discharge and monitoring system, have contributed greatly to a noticeable decrease in the pollution of the world's seas, though it is fair to recognise that a greater effort to impose compliance must be carried out.

Carriage of chemicals by ship

Regulations governing the carriage of chemicals by ship are contained in the International Convention for the Safety of Life at Sea (SOLAS) and the International Convention for the

Prevention of Marine Pollution from Ships, as modified by the Protocol of 1978 relating thereto (MARPOL).

Chemicals carried in bulk

Carriage of chemicals in bulk is covered by regulations in SOLAS Chapter VII - Carriage of dangerous goods and MARPOL Annex II - Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk.

Both Conventions require chemical tankers built after 1 July 1986 to comply with the International Bulk Chemical Code (IBC Code), which sets out the international standards for the safe carriage, in bulk by sea, of dangerous chemicals and noxious liquid substances. The Code prescribes the design and a construction standard of ships involved in the transport of bulk liquid chemicals and identifies the equipment to be carried to minimize the risks to the ship, its crew and to the environment, with regard to the nature of the products carried.

The IBC Code sets out a list chemicals and their hazards, and identifies both the ship type required to carry that product and the environmental hazard rating.

Chemical tankers constructed before 1 July 1986 should comply with the requirements of the Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (BCH Code) – the predecessor of the IBC Code.

MARPOL Annex II - Carriage of noxious liquid substances in bulk

MARPOL Annex II Regulations for the control of pollution by noxious liquid substances in bulk sets out a pollution categorization system for noxious and liquid substances. The four categories are:

- Category X: Noxious Liquid Substances which, if discharged into the sea from tank cleaning or deballasting operations, are deemed to present a major hazard to either marine resources or human health and, therefore, justify the prohibition of the discharge into the marine environment;

- Category Y: Noxious Liquid Substances which, if discharged into the sea from tank cleaning or deballasting operations, are deemed to present a hazard to either marine resources or human health or cause harm to amenities or other legitimate uses of the sea and therefore justify a limitation on the quality and quantity of the discharge into the marine environment;

- Category Z: Noxious Liquid Substances which, if discharged into the sea from tank cleaning or deballasting operations, are deemed to present a minor hazard to either marine resources or human health and therefore justify less stringent restrictions on the quality and quantity of the discharge into the marine environment; and

- Other Substances: substances which have been evaluated and found to fall outside Category X, Y or Z because they are considered to present no harm to marine resources, human health, amenities or other legitimate uses of the sea when discharged into the sea from tank cleaning of deballasting operations. The discharge of bilge or ballast water or other residues or mixtures containing these substances are not subject to any requirements of MARPOL Annex II.

The annex also includes a number of other requirements reflecting modern stripping techniques, which specify discharge levels for products which have been incorporated into Annex II. For ships constructed on or after 1 January 2007 the maximum permitted residue in the tank and its associated piping left after discharge is set at a maximum of 75 litres for products in categories X, Y and Z (compared with previous limits which set a maximum of 100 or 300 litres, depending on the product category).

MARPOL Annex III - Chemicals carried in packaged form

Chemicals which are carried in packaged form, in solid form or in bulk are regulated by Part A of SOLAS Chapter VII - Carriage of dangerous goods, which includes provisions for the classification, packing, marking, labelling and placarding, documentation and stowage of dangerous goods.

MARPOL Annex III also sets out regulations for the prevention of pollution by harmful substances in packaged form and includes general requirements for the issuing of detailed standards on packing, marking, labelling, documentation, stowage, quantity limitations, exceptions and notifications for preventing pollution by harmful substances. For the purpose of Annex III, "harmful substances" are those identified as "marine pollutants" in the IMDG Code.

Both SOLAS and MARPOL refer to the International Maritime Dangerous Goods (IMDG) Code, which was developed by IMO as a uniform international code for the transport of dangerous goods by sea.

Preparedness, Response and Liability and Compensation for Chemical Pollution Incidents

Issues related to the preparedness for and response to incidents of chemical pollution is covered by the OPRC-HNS Protocol 2000. Liability and compensation for incidents involving chemical pollution incidents are covered by the HNS Convention 2010, which has yet to enter into force.

Prevention of Pollution by Sewage from Ships

Regulations for the prevention of pollution by sewage are contained in MARPOL Annex IV.

Sewage – the problem

The discharge of raw sewage into the sea can create a health hazard. Sewage can also lead to oxygen depletion and can be an obvious visual pollution in coastal areas - a major problem for countries with tourist industries.

The main sources of human-produced sewage are land-based - such as municipal sewers or treatment plants. However, the discharge of sewage into the sea from ships also contributes to marine pollution.

Annex IV of MARPOL

Annex IV contains a set of regulations regarding the discharge of sewage into the sea from ships, including regulations regarding the ships' equipment and systems for the control of sewage discharge, the provision of port reception facilities for sewage, and requirements for survey and certification.

It is generally considered that on the high seas, the oceans are capable of assimilating and dealing with raw sewage through natural bacterial action. Therefore, the regulations in Annex IV of MARPOL prohibit the discharge of sewage into the sea within a specified distance from the nearest land, unless otherwise provided.

Governments are required to ensure the provision of adequate reception facilities at ports and terminals for the reception of sewage, without causing delay to ships.

The Annex entered into force on 27 September 2003. A revised Annex IV was adopted on 1 April 2004 and entered into force on 1 August 2005.

The revised Annex applies to ships, engaged in international voyages, of 400 gross tonnage and above or which are certified to carry more than 15 persons. The Annex requires ships to be equipped with either an approved sewage treatment plant or an approved sewage comminuting and disinfecting system or a sewage holding tank.

The discharge of sewage into the sea is prohibited, except when the ship has in operation an approved sewage treatment plant or when the ship is discharging comminuted and disinfected sewage using an approved system at a distance of more than three nautical miles from the nearest land. Sewage which is not comminuted or disinfected may be discharged at a distance of more than 12 nautical miles from the nearest land when the ship is en route and proceeding at not less than 4 knots, and the rate of discharge of untreated sewage shall be approved by the Administration (see resolution MEPC.157(55))

The MEPC also adopted the *Recommendation on standards for the rate of discharge of untreated sewage from ships* (resolution MEPC.157(55)).

Special Areas

In July 2011, MEPC 62 adopted, by resolution MEPC.200(62), the most recent amendment to MARPOL Annex IV, which entered into force on 1 January 2013. The amendment introduced, inter alia, a definition for Special Area as well as relevant requirements for the discharge of sewage from passenger ships in Special Areas and for port reception facilities.

The discharge of sewage from passenger ships within a Special Area is generally be prohibited under the new regulations, except when the ship has in operation an approved sewage treatment plant which has been certified by the Administration (see resolution MEPC.227(64)). The sewage treatment plant installed on a passenger ship intending to discharge sewage effluent in Special Areas should additionally meet the nitrogen and phosphorus removal standard when tested for its Certificate of Type Approval by the Administration (resolution MEPC.227(64), section 4.2).

Currently, the Baltic Sea area is the only Special Area under Annex IV. In accordance with resolution MEPC.275(69), the discharge requirements for Special Areas in regulation 11.3 of MARPOL Annex IV for the Baltic Sea Special Area shall take effect:

1. on 1 June 2019, for new passenger ships;
2. on 1 June 2021, for existing passenger ships other than those specified in .3; and
3. on 1 June 2023, for existing passenger ships en route directly to or from a port located outside the special area and to or from a port located east of longitude 28˚10' E within the special area that do not make any other port calls within the special area.

Prevention of Pollution by Garbage from Ships

Regulations for the prevention of pollution by garbage from ships are contained in Annex V of MARPOL.

Background of MARPOL Annex V

Garbage from ships can be just as deadly to marine life as oil or chemicals. The greatest danger comes from plastic, which can float for years. Fish and marine mammals can in some cases mistake plastics for food and they can also become trapped in plastic ropes, nets, bags and other items - even such innocuous items as the plastic rings used to hold cans of beer and drinks together.

It is clear that a good deal of the garbage washed up on beaches comes from people on shore - holiday-makers who leave their rubbish on the beach, fishermen who simply throw unwanted refuse over the side - or from towns and cities that dump rubbish into rivers or the sea. But in some areas most of the rubbish found comes from passing ships which find it convenient to throw rubbish overboard rather than dispose of it in ports.

For a long while, many people believed that the oceans could absorb anything that was thrown into them, but this attitude has changed along with greater awareness of the environment. Many items can be degraded by the seas - but this process can take months or years.

Persuading people not to use the oceans as a rubbish tip is a matter of education - the old idea that the sea can cope with anything still prevails to some extent but it also involves much more vigorous enforcement of regulations such as MARPOL Annex V.

MARPOL Annex V

MARPOL Annex V seeks to eliminate and reduce the amount of garbage being discharged into the sea from ships. Unless expressly provided otherwise, Annex V applies to all ships, which means all ships of any type whatsoever operating in the marine environment, from merchant ships to fixed or floating platforms to non-commercial ships like pleasure crafts and yachts.

Although the Annex is optional[1], it did receive a sufficient number of ratifications to enable entry into force on 31 December 1988. Today, more than 150 Countries have signed up to MARPOL Annex V.

MARPOL Annex V generally prohibits the discharge of all garbage into the sea, except as provided otherwise in regulations 4, 5, and 6 of the Annex, which are related to food waste, cargo residues, cleaning agents and additives and animal carcasses. Exceptions with respect to the safety of a ship and those on board and accidental loss are contained in regulation 7 of Annex V

Under MARPOL Annex V, garbage includes all kinds of food, domestic and operational waste, all plastics, cargo residues, incinerator ashes, cooking oil, fishing gear, and animal carcasses generated during the normal operation of the ship and liable to be disposed of continuously or periodically. Garbage does not include fresh fish and parts thereof generated as a result of fishing activities undertaken during the voyage, or as a result of aquaculture activities.

To assist Governments, ships and port operators in implementing relevant requirements under MAPROL Annex V, MEPC has developed and adopted the Guidelines for the implementation of MARPOL Annex V, known as a living document, the latest of which is resolution MEPC.295(71).

Port reception facilities

The effectiveness of ships to comply with the discharge requirements of MARPOL depends largely upon the availability of adequate port reception facilities, especially within special areas. Hence, MARPOL Annex V also obliges Governments to ensure the provision of

adequate reception facilities at ports and terminals for the reception of garbage without causing undue delay to ships, and according to the needs of the ships using them.

As provided in regulation 8.3, Small Island Developing States (SIDS) could satisfy the requirements for providing adequate port reception facilities through regional arrangements when, because of those States' unique circumstances, such arrangements are the only practical means to satisfy these requirements. Parties participating in a regional arrangement must develop a Regional Reception Facility Plan, taking into account the guidelines developed by IMO[2].

Special areas

The special areas established under Annex V are:

- the Mediterranean Sea area
- the Baltic Sea area
- the Black Sea area
- the Red Sea area
- the Gulfs area
- the North Sea area
- the Wider Caribbean Region and
- the Antarctic area.

These are sea areas where for recognized technical reasons relating to their oceanographic and ecological condition and the particular character of traffic, such as heavy maritime traffic, low water exchange, extreme ice states, endangered marine species, etc., the adoption of special mandatory methods for the prevention of marine pollution by garbage is required.

Port State control

Provisions to extend port State control to cover operational requirements as regards prevention of marine pollution were adopted in 1994 and entered into force on 3 March 1996. Like similar amendments to the other MARPOL Annexes, regulation 9 of Annex V makes it clear that port State control officers can inspect a foreign-flagged ship at a port or an offshore terminal of its State "where there are clear grounds for believing that the master or crew are not familiar with essential shipboard procedures relating to the prevention of pollution by garbage".

Placard

Regulation 10.1 also requires every ship of 12 metres in length or over and every fixed or floating platform to display placards notifying passengers and crew of the disposal requirements of the Annex; these placards should be written in the working language of the

ship's crew and also in English, French or Spanish for ships travelling to other States' ports or offshore terminals.

Garbage management plan

All ships of 100 gross tonnage and above, every ship certified to carry 15 persons or more, and every fixed or floating platform must carry a garbage management plan on board, which includes written procedures for minimizing, collecting, storing, processing and disposing of garbage, including the use of the equipment on board (regulation 10.2). The garbage management plan must designate the person responsible for the plan and be written in the working language of the crew. Resolution MEPC.220(63) provides the *2012 Guidelines for the development of garbage* management *plans*.

Garbage Record Book

Implementation and enforcement is also the focus of regulation 10.3, which requires all ships of 400 gross tonnage and above and every ship which is certified to carry 15 persons or more engaged in voyages to ports and offshore terminals under the jurisdiction of another Party to the Convention and every fixed or floating platform to provide a Garbage Record Book and to record all disposal and incineration operations.

The date, time, position of the ship, description of the garbage and the estimated amount incinerated or discharged must be logged and signed. The Garbage Record Book must be kept for a period of two years after the date of the last entry. This regulation does not in itself impose stricter requirements - but it makes it easier to check that the regulations on garbage are being adhered to as it means ship personnel must keep track of the garbage and what happens to it. It could also prove an advantage to a ship when local officials are checking the origin of discharged garbage - if ship personnel can adequately account for all their garbage, they are unlikely to be wrongly penalised for discharging garbage when they have not done so. Appendix 2 of MARPOL Annex V provides a standard form for a Garbage Record Book.

Cargo residues

Cargo residues are defined as the remnants of any cargo which are not covered by other Annexes to the present Convention and which remain on deck or in holds following loading or unloading. They include loading and unloading excess or spillage, whether in wet or dry condition or entrained in wash water, but do not include cargo dust remaining on deck after sweeping or dust on the external surfaces of the ship (regulation 1.2 of Annex V). In addition to this definition, MARPOL Annex V also stipulates that only those cargo residues that cannot be recovered using commonly available methods for unloading could be considered for discharge.

As a general rule, cargo residues which contain substances classified as harmful to the marine environment (HME) must not be discharged at sea, but have to be taken to port reception facilities. Regarding the discharge of cargo residues which do not contain any HME substances, the Annex establishes different requirements depending on whether they are contained in wash water or not.

Solid bulk cargoes must be classified and declared by the shipper as to whether or not they are harmful to the marine environment, in accordance with the criteria set out in appendix 1 of MARPOL Annex V.

Shipboard incinerator

The Standard Specification for Shipboard Incinerators (resolution MEPC.244(66)) covers the design, manufacture, performance, operation and testing of incinerators designed to incinerate garbage and other shipboard waste.

Verification of compliance

Chapter 2 of MARPOL Annex V provides that Parties must use the provisions of the Code for Implementation in execution of their obligations and responsibilities, and be subject to the IMO Member State Audit Scheme (IMSAS) in accordance with the audit standard to verify compliance with and implementation of the Annex. The mandatory IMSAS commenced from 1 January 2016,

Polar Regions

Chapter 3 of MARPOL Annex V makes use of the environment-related provisions of the Polar Code mandatory, and requires that ships trading the Polar Regions must comply with strict environmental provisions specific to the harsh conditions in Polar waters – the Arctic waters and the Antarctic area.

Air Pollution, Energy Efficiency and Greenhouse Gas Emissions

Air Pollution

In 1997, a new annex was added to the International Convention for the Prevention of Pollution from Ships (MARPOL). The regulations for the Prevention of Air Pollution from Ships (Annex VI) seek to minimize airborne emissions from ships (SO_x, NO_x, ODS, VOC shipboard incineration) and their contribution to local and global ai r pollution and environmental problems. Annex VI entered into force on 19 May 2005 and a revised Annex VI with significantly tightened emissions limits was adopted in October 2008 which entered into force on 1 July 2010.

Energy Efficiency

In 2011, IMO adopted mandatory technical and operational energy efficiency measures which are expected to significantly reduce the amount of CO_2 emissions from international shipping. These mandatory measures (EEDI/SEEMP) entered into force on 1 January 2013.

IMO has adopted important guidelines aimed at supporting implementation of the mandatory measures to increase energy efficiency and reduce GHG emissions from international shipping, paving the way for the regulations on EEDI and SEEMP to be smoothly implemented by Administrations and industry.

The expected growth of world trade represents a challenge to meeting a future target for emissions required to achieve stabilization in global temperatures and so IMO has begun consideration of further technical and operational measures to enhance the energy efficiency of ships.

Data Collection System

Amendments to MARPOL Annex VI on Data collection system for fuel oil consumption of ships entered into force on 1 March 2018.

Under the amendments, ships of 5,000 gross tonnage and above are required to collect consumption data for each type of fuel oil they use, as well as other, additional, specified data including proxies for transport work. The aggregated data is reported to the flag State after the end of each calendar year and the flag State, having determined that the data has been reported in accordance with the requirements, issues a Statement of Compliance to the ship. Flag States are required to subsequently transfer this data to an IMO Ship Fuel Oil Consumption Database. IMO will be required to produce an annual report to MEPC, summarizing the data collected.

Technical Co-operation

IMO adopted a resolution on *Promotion of Technical Co-operation and Transfer of Technology relating to the Improvement of Energy Efficiency of Ships* and is focusing its efforts on technical co-operation and capacity building to ensure smooth and effective implementation and enforcement of the new regulations worldwide. To that effect, IMO has been undertaking a series of workshops in all regions of the world on implementation of the measures to address GHG emissions from international shipping.

Reduction of GHG Emissions from Ships

In 2012, international shipping was estimated to have contributed about 2.2% to the global emissions of carbon dioxide (CO_2). Although international shipping is the most energy efficient mode of mass transport and only a modest contributor to overall CO_2 emissions, a

global approach to further improve its energy efficiency and effective emission control is needed as sea transport will continue growing apace with world trade.

As already acknowledged by the Kyoto Protocol, CO_2 emissions from international shipping cannot be attributed to any particular national economy due to its global nature and complex operation. Therefore, IMO has been energetically pursuing the limitation and reduction of greenhouse gas (GHG) emissions from international shipping, in recognition of the magnitude of the climate change challenge and the intense focus on this topic.

POLLUTION PREPAREDNESS AND RESPONSE

Good prevention initiatives can go a long way in reducing the risk of pollution from ships. However, in spite of best efforts, spills will inevitably occur. When this happens, it is necessary to ensure that effective preparedness measures are in place that will ensure a timely and coordinated response to limit the adverse consequences of pollution incidents involving oil and hazardous and noxious substances (HNS).

The International Convention on Oil Pollution Preparedness, Response and Co-operation 1990 (OPRC 90) is the international instrument that provides a framework designed to facilitate international co-operation and mutual assistance in preparing for and responding to major oil pollution incidents and requires States to plan and prepare by developing national systems for pollution response in their respective countries, and by maintaining adequate capacity and resources to address oil pollution emergencies.

The Protocol on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances, 2000 (OPRC-HNS Protocol) extends this regulatory framework to address pollution incidents involving hazardous and noxious substances, i.e. chemicals.

States which are party to OPRC 90 and OPRC-HNS Protocol are required to establish a national system for responding to oil and HNS pollution incidents, including a designated national authority, a national operational contact point and a national contingency plan. This needs to be backstopped by a minimum level of response equipment, communications plans, regular training and exercises.

In addition to the requirement for implementing national response systems, the two instruments also promote cooperation amongst Parties through the establishment of bilateral and multilateral agreements to augment national-level response capacity, when needed. Most importantly, OPRC 90 and OPRC-HNS Protocol 2000 provide the mechanism for Parties to request assistance from any other state Party, when faced with a major pollution incident.

There are a number of key benefits for those States acceding to the instruments, notably:

- Access to an international platform for co-operation and mutual assistance in preparing for, and responding to, major oil and HNS pollution incidents and a mechanism for establishing co-operative arrangements with other States Parties.
- A means for urgently accessing relevant technical assistance and response resources in the event of an oil or HNS incident.
- A framework for the development of national and regional capacity to prepare for, and respond to, oil and HNS incidents.
- Participation in a network for the exchange of new research and development information, best practices and practical experiences in oil and HNS response.

Preparing for Marine Pollution Incidents

Preparing for all eventualities that might arise from a marine pollution incident requires careful consideration and planning. Contingency planning is fundamental to establishing the preparedness and response systems stipulated as a requirement under the OPRC Convention and OPRC-HNS Protocol.

To be effective, contingency planning must be a continuous process that evolves and adapts to address the changing risks that arise from shipping, offshore exploration, production and processing. The effectiveness of a response is very much dependent on the preparedness and ability of those involved to undertake specific emergency response and management tasks. At a minimum this requires the designation of roles and responsibilities, definition of response strategies and procedures to be followed in the case of an incident, in addition to training to provide the necessary knowledge and skills. The planning process must aim to support decision makers during all phases of a response, whether in implementing the most appropriate response strategy, facilitating the mobilisation and effective use of equipment and resources as well as managing the consequences and impacts of an incident.

Marine pollution incidents vary significantly in scale and complexity, therefore contingency plans should be developed to support the response to incidents that can be managed at both local and national levels, in addition to those that may exceed the national capacity to effectively respond, and therefore require assistance from countries within the wider region or further afield.

Achieving and maintaining a good level of preparedness requires sustained effort and investment. Countries have used a variety of methods to develop their spill response capacity and numerous scientific and response organizations emerged to support them. Globally there has been significant effort invested in developing response preparedness through regional cooperation, with the establishment of numerous Regional Agreements and Regional Centres dedicated to both the protection of the marine environment, and to working together to combat marine pollution at sea.

IMO has been supporting capacity building relating to preparing for marine pollution incidents for many years through its Integrated Technical Cooperation Programme and through the implementation of numerous projects and initiatives.

Responding to Marine Pollution Incidents

Responding to marine pollution incidents is a highly technical business, requiring specialized knowledge and expertise, as well as dedicated equipment and tools that are fit for purpose. The OPRC 1990 and OPRC-HNS Protocol 2000 collectively set out the international legal framework and requirements for oil and HNS pollution preparedness and response, but more practical technical guidance is needed for those tasked with building robust national response systems for pollution response.

Taking into account these requirements and recognizing that there are varying levels of knowledge and capacity that exists amongst state parties to the Convention and Protocol, IMO has developed a wide array of tools and practical guidance to assist countries in developing response capacity.

Much of this guidance was developed through the Organization's OPRC-HNS Technical Group, a former subsidiary body of IMO's Marine Environment Protection Committee, one of IMO's main technical bodies. This Group brought together marine pollution response experts from Member States and Observing Organizations worldwide to share experiences, lessons learned and identify best practices and new technologies and advancements in preparing for and responding to oil and HNS incidents at sea.

The Technical Group held its final meeting in 2014 having developed an array of resources to assist countries in all facets of pollution preparedness and response. This has included the development of model training courses, manuals and guidance documents, IMO circulars and other relevant resources and materials. This work now continues through the Pollution Prevention and Response (PPR) Sub-Committee.

The many resources developed through IMO are routinely used in the implementation of activities delivered through the Organization's Integrated Technical Cooperation Programme. States may also request assistance from IMO, through the ITCP, to build pollution response capacity and in implementing the provisions of the OPRC 90 and OPRC-HNS Protocol.

BALLAST WATER MANAGEMENT

Since the introduction of steel-hulled vessels, water has been used as ballast to stabilize vessels at sea. Ballast water is pumped in to maintain safe operating conditions throughout a voyage. This practice reduces stress on the hull, provides transverse stability, improves

propulsion and manoeuvrability, and compensates for weight changes in various cargo load levels and due to fuel and water consumption.

While ballast water is essential for safe and efficient modern shipping operations, it may pose serious ecological, economic and health problems due to the multitude of marine species carried in ships' ballast water. These include bacteria, microbes, small invertebrates, eggs, cysts and larvae of various species. The transferred species may survive to establish a reproductive population in the host environment, becoming invasive, out-competing native species and multiplying into pest proportions.

Scientists first recognized the signs of an alien species introduction after a mass occurrence of the Asian phytoplankton algae Odontella *(Biddulphia sinensis)* in the North Sea in 1903. But it was not until the 1970s that the scientific community began reviewing the problem in detail. In the late 1980s, Canada and Australia were among countries experiencing particular problems with invasive species, and they brought their concerns to the attention of IMO's Marine Environment Protection Committee (MEPC).

The problem of invasive species in ships' ballast water is largely due to the expanded trade and traffic volume over the last few decades and, since the volumes of seaborne trade continue to increase, the problem may not yet have reached its peak yet. The effects in many areas of the world have been devastating. Quantitative data show that the rate of bio-invasions is continuing to increase at an alarming rate and new areas are being invaded all the time.

The spread of invasive species is now recognized as one of the greatest threats to the ecological and the economic well being of the planet. These species are causing enormous damage to biodiversity and the valuable natural riches of the earth upon which we depend. Direct and indirect health effects are becoming increasingly serious and the damage to the environment is often irreversible.

Global response

Preventing the transfer of invasive species and coordinating a timely and effective response to invasions requires cooperation and collaboration among governments, economic sectors, non-governmental organizations and international treaty organizations; the UN Convention on the Law of the Sea (Article 196) provides the global framework by requiring States to work together to prevent, reduce and control pollution of the marine environment including the intentional or accidental introduction of species, alien or new, to a particular part of the marine environment, which may cause significant and harmful changes thereto.

IMO has been at the front of the international effort by taking the lead in addressing the transfer of invasive aquatic species (IAS) through shipping. In 1991 the MEPC adopted the *International Guidelines for preventing the introduction of unwanted aquatic organisms*

and pathogens from ships' ballast water and sediment discharges (resolution MEPC.50(31)); while the United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro in 1992, recognized the issue as a major international concern.

In November 1993, the IMO Assembly adopted resolution A.774(18) based on the 1991 Guidelines, requesting the MEPC and the MSC to keep the Guidelines under review with a view to developing internationally applicable, legally-binding provisions. While continuing its work towards the development of an international treaty, the Organization adopted, in November 1997, resolution A.868(20) - *Guidelines for the control and management of ships' ballast water to minimize the transfer of harmful aquatic organisms and pathogens*, inviting its Member States to use these new guidelines when addressing the issue of IAS.

After more than 14 years of complex negotiations between IMO Member States, the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention) was adopted by consensus at a Diplomatic Conference held at IMO Headquarters in London on 13 February 2004. In his opening address to the Conference the Secretary-General of IMO stated that the new Convention would represent a significant step towards protecting the marine environment for this and future generations. "Our duty to our children and their children cannot be over-stated. I am sure we would all wish them to inherit a world with clean, productive, safe and secure seas – and the outcome of this Conference, by staving off an increasingly serious threat, will be essential to ensuring this is so".

The Convention requires all ships to implement a ballast water management plan. All ships have to carry a ballast water record book and are required to carry out ballast water management procedures to a given standard. Parties to the Convention are given the option to take additional measures which are subject to criteria set out in the Convention and to IMO guidelines.

Several articles and regulations of the BWM Convention refer to guidelines to be developed by the Organization and Conference resolution 1 invited IMO to develop these guidelines as a matter of urgency and adopt them as soon as practicable and, in any case, before the entry into force of the Convention, with a view to facilitate global and uniform implementation of the instrument.

The MEPC, at its fifty-first session in April 2004, approved a programme for the development of guidelines and procedures for uniform implementation of the BWM Convention, listed in Conference resolution 1, including additional guidance required but not listed in the resolution. The programme was further expanded at the fifty-third session of the MEPC in July 2005 to develop and adopt 14 sets of Guidelines, the last one being adopted by resolution MEPC.173(58) in October 2008.

Approval of ballast water management systems

During the Convention development process, considerable efforts were made to formulate appropriate standards for ballast water management. They are the ballast water exchange standard and the ballast water performance standard. Ships performing ballast water exchange shall do so with an efficiency of 95 per cent volumetric exchange of ballast water and ships using a ballast water management system (BWMS) shall meet a performance standard based on agreed numbers of organisms per unit of volume.

Regulation D-3 of the BWM Convention requires that ballast water management systems used to comply with the Convention must be approved by the Administration taking into account the *Guidelines for approval of ballast water management systems* (G8). The Guidelines (G8) have been revised in 2016 and converted into a mandatory *Code for approval of ballast water management systems* (BWMS Code), which was adopted by MEPC 72 (April 2018) and enters into force in October 2019.

Regulation D-3 also requires that ballast water management systems which make use of Active Substances to comply with the Convention shall be approved by IMO in accordance with the *Procedure for approval of ballast water management systems that make use of Active Substances (G9)*. Procedure (G9) consists of a two-tier process – Basic and Final Approval – to ensure that the ballast water management system does not pose unreasonable risk to the environment, human health, property or resources.

A technical group of experts has been established under the auspices of GESAMP to review the proposals submitted for approval of ballast water management systems that make use of Active Substances. The GESAMP Ballast Water Working Group (GESAMP-BWWG) reports to the Organization on whether such a proposal presents unreasonable risks in accordance with the criteria specified in the Procedure (G9).

The Convention requires a review to be undertaken in order to determine whether appropriate technologies are available to achieve the standard. MEPC has conducted a number of such reviews and agreed that appropriate technologies are available to achieve the standard contained in regulation D-2 of the BWM Convention.

BWM Convention status

The BWM Convention entered into force on 8 September 2017. The adoption of all the required Guidelines for the uniform implementation of the BWM Convention and the approval and certification of modern ballast water treatment technologies have removed the major barriers to the ratification of the instrument and a number of additional countries have indicated their intention to accede to this Convention in the near future.

BWM Convention

Following the UN Conference on Environment and Development (UNCED), held in Rio de Janeiro in 1992, the IMO initiated negotiations to consider the possibilities of developing an internationally binding instrument to address the transfer of harmful aquatic organisms and pathogens in ships' ballast water. From 1999 onwards, the Ballast Water Working Group, established by the MEPC in 1994, focused on the preparation of a free-standing Convention on control and management of ships' ballast water and sediments.

The introduction of harmful aquatic organisms and pathogens to new environments had been identified as one of the four greatest threats to the world's oceans (the other three being land-sourced marine pollution, overexploitation of living marine resources and destruction of habitat) and in 2002 the World Summit on Sustainable Development held in Johannesburg called for action at all levels to accelerate the development of measures to address invasive aquatic species in ballast water.

Proper control and management of ships' ballast water became a major environmental challenge for IMO and the global shipping industry. At its eighty-ninth session in November 2002, the Council approved the convening of the Diplomatic Conference in early 2004. The decision of the Council was endorsed by the twenty-third session of the Assembly in December 2003 and the International Conference on Ballast Water Management for Ships' was held at IMO's Headquarters in London from 9 to 13 February 2004. The Conference adopted the International Convention for the Control and Management of Ships' Ballast Water and Sediments (the Ballast Water Management Convention), together with four conference resolutions.

Amendments to the Convention

At its seventy-second session in April 2018, MEPC adopted amendments to the Convention, which will enter into force in October 2019. The amendments are:

1. amendments to regulations A-1 and D-3 of the BWM Convention to make the BWMS Code mandatory (resolution MEPC.296(72));
2. amendments to regulation B-3 of the BWM Convention, concerning the implementation schedule of ballast water management for ships (resolution MEPC.297(72)), along with a resolution relating to the determination of the survey referred to in regulation B-3 (resolution MEPC.298(72)); and
3. amendments to regulations E-1 and E-5 of the BWM Convention, concerning endorsements of additional surveys on the International Ballast Water Management Certificate (resolution MEPC.299(72)).

MEPC 72 also adopted the BWMS Code (resolution MEPC.300(72)), which will supersede the 2016 Guidelines for approval of ballast water management systems (G8) from October 2019.

Further amendments to the BWM Convention may occur now that the Convention is in force, including a possible comprehensive set of amendments after the ballast water experience-building phase (EBP) (resolution MEPC.290(71)). Taking into consideration that challenges may arise during the implementation of any new convention that were not foreseen at the time of its adoption, the EBP was established by MEPC at its seventy-first session in July 2017 as a means for carrying out a systematic and evidence-based review of the BWM Convention.

BWM Guidelines

Several articles and regulations of the Ballast Water Management Convention refer to guidelines to be developed by the Organization and Conference resolution 1 invites IMO to develop these guidelines as a matter of urgency and adopt them as soon as practicable, and in any case before the entry into force of the Convention, with a view to facilitate global and uniform implementation of the instrument.

In a commendable effort to facilitate the process, the IMO Member States have developed 14 sets of Guidelines from July 2005 to October 2008, some of which have since been further revised. This outstanding and probably unique output in the working history of MEPC, would have not been possible without the dedication of the BWWG and the technical support of the BLG, FSI and DE Sub-Committees.

It should be noted that, due to the complexity and multi-disciplinary nature of the problem posed by invasive aquatic species in ships' ballast water, the work is in its pioneering phase and knowledge is only now gathering in this respect. The Guidelines are kept under review by the MEPC and updated as new technologies emerge and additional knowledge becomes available.

The following is the up-to-date list of Guidelines relating to the uniform implementation of the BWM Convention that have been developed, adopted and, in some cases, revised since MEPC 53:

- Guidelines for sediment reception facilities (G1) (resolution MEPC.152(55));
- Guidelines for ballast water sampling (G2) (resolution MEPC.173(58));
- Guidelines for ballast water management equivalent compliance (G3) (resolution MEPC.123(53));
- Guidelines for ballast water management and development of ballast water management plans (G4) (resolution MEPC.127(53));
- Guidelines for ballast water reception facilities (G5) (resolution MEPC.153(55));

- 2017 Guidelines for ballast water exchange (G6) (resolution MEPC.288(71));
- 2017 Guidelines for risk assessment under regulation A-4 of the BWM Convention (G7) (resolution MEPC.289(71));
- 2016 Guidelines for approval of ballast water management systems (G8) (resolution MEPC.279(70)) (this will be superseded by the BWMS Code (resolution.300(72)) in October 2019);
- Procedure for approval of ballast water management systems that make use of Active Substances (G9) (resolution MEPC.169(57));
- Guidelines for approval and oversight of prototype ballast water treatment technology programmes (G10) (resolution MEPC.140(54));
- Guidelines for ballast water exchange design and construction standards (G11) (resolution MEPC.149(55));
- 2012 Guidelines on design and construction to facilitate sediment control on ships (G12) (resolution MEPC.209(63));
- Guidelines for additional measures regarding ballast water management including emergency situations (G13) (resolution MEPC.161(56));
- Guidelines on designation of areas for ballast water exchange (G14) (resolution MEPC.151(55));
- Guidelines for ballast water exchange in the Antarctic treaty area (resolution MEPC.163(56)); and
- Guidelines for port State control under the BWM Convention (resolution MEPC.252(67)).

BIOFOULING

The *Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species* (Biofouling Guidelines) (resolution MEPC.207(62)) are intended to provide a globally consistent approach to the management of biofouling, which is the accumulation of various aquatic organisms on ships' hulls. They were adopted by the Marine Environment Protection Committee (MEPC) at its sixty-second session in July 2011 and were the result of three years of consultation between IMO Member States. The Biofouling Guidelines represent a decisive step towards reducing the transfer of invasive aquatic species by ships.

Invasive aquatic species

The introduction of invasive aquatic species to new environments by ships has been identified as a major threat to the world's oceans and to the conservation of biodiversity. A multitude of marine species, carried either in ships' ballast water or on ships' hulls, may survive to establish a reproductive population in the host environment, becoming invasive, out-competing native species and multiplying into pest proportions.

The problem of invasive species carried by ships has intensified over the last few decades due to the expanded trade and traffic volume and, since the volumes of seaborne trade continue to increase, the problem may not yet have reached its peak. The effects in many areas of the world have been devastating. Quantitative data show that the rate of bio-invasions is continuing to increase at an alarming rate and new areas are being invaded all the time.

The spread of invasive species is now recognized as one of the greatest threats to the ecological and the economic well-being of the planet. These species are causing enormous damage to biodiversity and the valuable natural riches of the earth upon which we depend. Direct and indirect health effects are becoming increasingly serious and the damage to the environment is often irreversible. Moreover, significant economic impact occurs to industries that depend on the coastal and marine environment, such as tourism, aquaculture and fisheries, as well as costly damage to infrastructure.

Biofouling as a vector for the transfer of invasive aquatic species by ships

Invasive aquatic species are introduced to new environments by ships mainly through ballast water or hull fouling.

While ballast water is essential for safe and efficient modern shipping operations, the multitude of marine species carried in it may pose serious ecological, economic and health problems. These include bacteria, microbes, small invertebrates, algae, eggs, cysts and larvae of various species.

Biofouling is also considered one of the main vectors for bioinvasions and is described as the undesirable accumulation of microorganisms, plants, algae and animals on submerged structures (especially ships' hulls). Studies have shown that biofouling can be a significant vector for the transfer of invasive aquatic species. Biofouling on ships entering the waters of States may result in the establishment of invasive aquatic species which may pose threats to human, animal and plant life, economic and cultural activities and the aquatic environment.

The potential for invasive aquatic species transferred through biofouling to cause harm has been recognized by the IMO, the Convention on Biological Diversity (CBD), several UNEP Regional Seas Conventions (e.g. Barcelona Convention for the Protection of the Mediterranean Sea Against Pollution), the Asia Pacific Economic Cooperation forum (APEC) and the Secretariat of the Pacific Region Environment Programme (SPREP).

Related international regulatory framework

Preventing the transfer of invasive species and coordinating a timely and effective response to invasions requires cooperation and collaboration among governments, economic sectors, non-governmental organizations and international treaty organizations; the UN Convention

on the Law of the Sea (UNCLOS) provides the global framework by requiring States to work together "to prevent, reduce and control human caused pollution of the marine environment, including the intentional or accidental introduction of harmful or alien species to a particular part of the marine environment."

IMO has been at the forefront of the international effort by taking the lead in addressing the transfer of invasive aquatic species through shipping.

With the adoption of the *International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004* (BWM Convention), IMO Member States made a clear commitment to minimizing the transfer of invasive aquatic species by shipping, specifically through ballast water.

On the other hand, while the *International Convention on the Control of Harmful Anti-Fouling Systems on Ships, 2001* (AFS Convention) addresses anti-fouling systems on ships, its focus is on the prevention of adverse impacts from the use of anti-fouling systems and the biocides they may contain, rather than the prevention of the transfer of invasive aquatic species through hull fouling.

The Biofouling Guidelines

The issue of the transfer of invasive aquatic species through ships' biofouling was first brought formally to IMO's attention in 2006 and in the following year MEPC agreed to task the Sub-Committee on Bulk Liquids and Gases (BLG) with the development of related guidelines. The ensuing deliberations over successive BLG sessions culminated in the preparation of the Biofouling Guidelines, which were adopted by MEPC in 2011.

The Guidelines were further supplemented by the Guidance for minimizing the transfer of invasive aquatic species as biofouling (hull fouling) for recreational craft, approved by MEPC at its sixty-fourth session in October 2012 and circulated as MEPC.1/Circ.792. This Guidance is for use by all owners and operators of recreational craft less than 24 metres in length, which may constitute an important vector for the transfer of invasive aquatic species due to their large numbers and their operating profile that may make them particularly susceptible to biofouling.

As scientific and technological advances are made, the Biofouling Guidelines may be refined to enable the risk to be more adequately addressed. Port States, flag States, coastal States and other parties that can assist in mitigating the problems associated with biofouling should exercise due diligence to implement the Guidelines to the maximum extent possible, which can play a significant role in reducing the risk of the transfer of invasive aquatic species.

In support of this review process, IMO has prepared the Guidance for evaluating the 2011 *Guidelines for the control and management of ships' biofouling to minimize the transfer*

of invasive aquatic species, approved by MEPC at its sixty-fifth session in May 2013 and circulated as MEPC.1/Circ.811. This Guidance is provided to assist Member States and observers who wish to collect information needed to undertake future reviews of the Biofouling Guidelines and to do this in a more consistent way. The Guidance identifies the types of performance measures that could help to assist in evaluating the different recommendations in the Guidelines. At its seventy-second session in April 2018, MEPC agreed to a new output for the Sub-Committee on Pollution Prevention and Response (PPR) to review the Biofouling Guidelines, which will be based on the principles of the Guidance.

To support the implementation of the Biofouling Guidelines, the IMO Secretariat is implementing technical cooperation activities under its Integrated Technical Co-operation Programme (ITCP) focusing on the issue of biofouling and the Biofouling Guidelines. The aims of these activities are, on the one hand, to raise awareness of the aspects and implications of the transfer of invasive aquatic species through ships' hull fouling and, on the other hand, to enhance the familiarity and understanding of the Guidelines in order to facilitate their global implementation and the minimization of species invasions. In addition, IMO initiated the GloFouling Partnerships project in 2017. This project aims to build capacity in developing countries to implement the Biofouling Guidelines and protect marine ecosystems. Implementation is planned from September 2018 for a period of five years.

Ship fouling and its management

All ships have some degree of biofouling, even those which may have been recently cleaned or had a new application of an anti-fouling system. Studies have shown that the biofouling process begins within the first few hours of a ship's immersion in water. The biofouling that may be found on a ship is influenced by a range of factors, such as:

1. design and construction, particularly the number, location and design of niche areas (e.g. sea chests, bow thrusters, hull appendages and protrusions, etc.);
2. specific operating profiles, including parameters such as operating speeds, ratio of time underway compared with time alongside, moored or at anchor, and where the ship is located when not in use (e.g. open anchorage or estuarine port);
3. places visited and trading routes (e.g. depending on water temperature and salinity, abundance of fouling organisms, etc.); and
4. maintenance history, including the type, age and condition of any anti-fouling coating, installation and operation of anti-fouling systems and dry-docking/slipping and hull cleaning practices.

Implementing practices to control and manage biofouling can greatly assist in reducing the risk of the transfer of invasive aquatic species.

Additional benefits from managing biofouling

Such management practices can also improve a ship's hydrodynamic performance, as hull fouling leads to significant increases in ship resistance, which in turn has a severe impact both on fuel costs and on emissions of air pollutants and greenhouse gases. Therefore, biofouling management can be an effective tool in enhancing energy efficiency and reducing air emissions from ships. This has been recognized by the IMO and is reflected in the 2016 Guidelines for the development of a Ship Energy Efficiency Management Plan (SEEMP) (resolution MEPC.282(70)).

ANTI-FOULING SYSTEMS

Background

Anti-fouling paints are used to coat the bottoms of ships to prevent sealife such as algae and molluscs attaching themselves to the hull – thereby slowing down the ship and increasing fuel consumption.

The new Convention defines “anti-fouling systems” as “a coating, paint, surface treatment, surface or device that is used on a ship to control or prevent attachment of unwanted organisms”.

In the early days of sailing ships, lime and later arsenic were used to coat ships' hulls, until the modern chemicals industry developed effective anti-fouling paints using metallic compounds.

These compounds slowly "leach" into the sea water, killing barnacles and other marine life that have attached to the ship. But the studies have shown that these compounds persist in the water, killing sealife, harming the environment and possibly entering the food chain. One of the most effective anti-fouling paints, developed in the 1960s, contains the organotin tributylin (TBT), which has been proven to cause deformations in oysters and sex changes in whelks.

The adoption of the new Convention marked the successful outcome of the task set by Chapter 17 of Agenda 21 developed by the 1992 Rio Conference on Environment and Development. Chapter 17 called on States to take measures to reduce pollution caused by organotin compounds used in anti-fouling systems.

The harmful environmental effects of organotin compounds were recognized by IMO in 1989. In 1990 IMO’s Marine Environment Protection Committee (MEPC) adopted a resolution which recommended that Governments adopt measures to eliminate the use of anti-fouling paint containing TBT on non-aluminium hulled vessels of less than 25 metres in

length and eliminate the use of anti-fouling paints with a leaching rate of more than four microgrammes of TBT per day.

In November 1999, IMO adopted an Assembly resolution that called on the MEPC to develop an instrument, legally binding throughout the world, to address the harmful effects of anti-fouling systems used on ships. The resolution called for a global prohibition on the application of organotin compounds which act as biocides in anti-fouling systems on ships by 1 January 2003, and a complete prohibition by 1 January 2008.

This instrument was later adopted as the International Convention on the Control of Harmful Anti-fouling Systems on Ships.

Anti-fouling systems

The International Convention on the Control of Harmful Anti-fouling Systems on Ships, which was adopted on 5 October 2001, will prohibit the use of harmful organotin compounds in anti-fouling paints used on ships and will establish a mechanism to prevent the potential future use of other harmful substances in anti-fouling systems. The Convention entered into force on 17 September 2008.

Under the terms of the Convention, Parties to the Convention are required to prohibit and/or restrict the use of harmful anti-fouling systems on ships flying their flag, as well as ships not entitled to fly their flag but which operate under their authority and all ships that enter a port, shipyard or offshore terminal of a Party.

Annex 1 attached to the Convention states that by an effective date of 1 January 2003, all ships shall not apply or re-apply organotins compounds which act as biocides in anti-fouling systems, and by 1 January 2008 (effective date), ships either:

(a) shall not bear such compounds on their hulls or external parts or surfaces; or
(b) shall bear a coating that forms a barrier to such compounds leaching from the underlying non-compliant anti-fouling systems.

This applies to all ships (except fixed and floating platforms, floating storage units (FSUs), and floating production storage and off-loading units (FPSOs) that have been constructed prior to 1 January 2003 and that have not been in dry-dock on or after 1 January 2003).

Ships of above 400 gross tonnage and above engaged in international voyages (excluding fixed or floating platforms, FSUs and FPSOs) will be required to undergo an initial survey before the ship is put into service or before the International Anti-fouling System Certificate is issued for the first time; and a survey when the anti-fouling systems are changed or replaced.

Ships of 24 metres or more in length but less than 400 gross tonnage engaged in international voyages (excluding fixed or floating platforms, FSUs and FPSOs) will have to carry a Declaration on Anti-fouling Systems signed by the owner or authorized agent. The Declaration will have to be accompanied by appropriate documentation such as a paint receipt or contractor invoice.

Anti-fouling systems to be prohibited or controlled will be listed in an annex (Annex 1) to the Convention, which will be updated as and when necessary. The Convention includes a clause in Article 12 which states that a ship shall be entitled to compensation if it is unduly detained or delayed while undergoing inspection for possible violations of the Convention.

The Convention provides for the establishment of a "technical group" to include people with relevant expertise to review proposals for other substances used in anti-fouling systems to be prohibited or restricted.

Amendments to the Convention

Article 6 provides the mechanism for proposing amendments to Annex 1 of the AFS Convention (controls on anti-fouling systems) and sets out how the evaluation of a substance should be carried out.

At its seventy-first session in July 2017, MEPC approved a new output to amend Annex 1 to the AFS Convention to include controls on cybutryne. While work on this matter is ongoing in the Sub-Committee on Pollution Prevention and Response (PPR), the scientific data presented so far indicates that cybutryne causes significant adverse effects to the environment, especially to aquatic ecosystems.

Resolutions and guidelines

The Diplomatic Conference adopted four resolutions:

Resolution 1 - Early and effective application of the Convention – This resolution requests Member States to prepare to be bound by the Convention and urges relevant industries to refrain from marketing, sale and application of the substances controlled by Annex 1 of the Convention.

Resolution 2 - Future work of the Organization pertaining to the Convention – The resolution invites IMO to develop guidelines for brief sampling of anti-fouling systems; guidelines for inspection of ships; and guidelines for surveys of ships. The guidelines are needed in order to ensure global and uniform application of the articles of the Convention which require sampling, inspection and surveys.

The following have been developed and adopted:

- Guidelines for survey and certification of anti-fouling systems on ships - adopted by resolution MEPC.102(48), superseded by resolution MEPC.195(61);
- Guidelines for brief sampling of anti-fouling systems on ships - adopted by resolution MEPC.104(49); and
- Guidelines for inspection of anti-fouling systems on ships - adopted by resolution MEPC.105(49), superseded by resolution MEPC.208(62).

Another guidance document relevant for the implementation of the Convention is the Guidance on best management practices for removal of anti-fouling coatings from ships, including TBT hull paints (AFS.3/Circ.3).

Resolution 3 - Approval and Test Methodologies for Anti-Fouling Systems on Ships – This resolution invites States to approve, register or license anti-fouling systems applied in their territories. It also urges States to continue the work, in appropriate international fora, for the harmonization of test methods and performance standards for anti-fouling systems containing biocides.

Resolution 4 - Promotion of Technical Co-operation – The resolution requests IMO Member States, in co-operation with IMO, other interested States, competent international or regional organizations and industry programmes, to promote and provide directly, or through IMO, support to States in particular developing States that request technical assistance for:

(a) the assessment of the implications of ratifying, accepting, approving, or acceding to and complying with the Convention;
(b) the development of national legislation to give effect to the Convention; and
(c) the introduction of other measures, including the training of personnel, for the effective implementation and enforcement of the Convention.

It also requests Member States, in co-operation with IMO, other interested States, competent international and regional organisation and industry programmes, to promote co-operation for scientific and technical research on the effects of anti-fouling systems as well as monitoring these effects.

RECYCLING OF SHIPS

The development of the Hong Kong Convention

The Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009 (the Hong Kong Convention), was adopted at a diplomatic conference held in Hong Kong, China, from 11 to 15 May 2009, which was attended by delegates from 63 countries. The Convention is aimed at ensuring that ships, when being recycled after reaching the end of their operational lives; do not pose any unnecessary risks to human health, safety and to the environment.

The Hong Kong Convention intends to address all the issues around ship recycling, including the fact that ships sold for scrapping may contain environmentally hazardous substances such as asbestos, heavy metals, hydrocarbons, ozone-depleting substances and others. It also addresses concerns raised about the working and environmental conditions at many of the world's ship recycling locations.

The text of the Hong Kong Convention was developed over three and a half years, with input from IMO Member States and relevant non-governmental organizations, and in co-operation with the International Labour Organization and the Parties to the Basel Convention.

Regulations in the new Convention cover: the design, construction, operation and preparation of ships so as to facilitate safe and environmentally sound recycling without compromising the safety and operational efficiency of ships; the operation of ship recycling facilities in a safe and environmentally sound manner; and the establishment of an appropriate enforcement mechanism for ship recycling, incorporating certification and reporting requirements.

Upon entry into force of the Hong Kong Convention, ships to be sent for recycling will be required to carry an inventory of hazardous materials, which will be specific to each ship. An appendix to the Convention provides a list of hazardous materials the installation or use of which is prohibited or restricted in shipyards, ship repair yards, and ships of Parties to the Convention. Ships will be required to have an initial survey to verify the inventory of hazardous materials, additional surveys during the life of the ship, and a final survey prior to recycling.

Ship recycling yards will be required to provide a "Ship Recycling Plan", specifying the manner in which each ship will be recycled, depending on its particulars and its inventory. Parties will be required to take effective measures to ensure that ship recycling facilities under their jurisdiction comply with the Convention.

The following guidelines have been developed and adopted to assist States in the early implementation of the Convention’s technical standards:

- 2011 Guidelines for the Development of the Ship Recycling Plan, adopted by resolution MEPC.196(62);
- 2012 Guidelines for Safe and Environmentally Sound Ship Recycling, adopted by resolution MEPC.210(63);
- 2012 Guidelines for the Authorization of Ship Recycling Facilities, adopted by resolution MEPC.211(63); and
- 2015 Guidelines for the development of the Inventory of the Hazardous Materials, adopted by resolution MEPC.269(68).

Also two further guidelines have been developed and adopted to assist States in the implementation of the Convention after it enters into force:

- 2012 Guidelines for the survey and certification of ships under the Hong Kong Convention, adopted by resolution MEPC.222(64); and
- 2012 Guidelines for the inspection of ships under the Hong Kong Convention, adopted by resolution MEPC.223(64).

Entry into force criteria

The Convention is open for accession by any State. It will enter into force 24 months after the date on which 15 States, representing 40 per cent of world merchant shipping by gross tonnage, have either signed it without reservation as to ratification, acceptance or approval or have deposited instruments of ratification, acceptance, approval or accession with the Secretary-General. Furthermore, the combined maximum annual ship recycling volume of those States must, during the preceding 10 years, constitute not less than 3 per cent of their combined merchant shipping tonnage. For more detailed information please refer to resolution MEPC.178(59) on the calculation of the recycling capacity for meeting the entry-into-force conditions of the Hong Kong Convention and document MEPC 64/INF.2/Rev.1 on the same topic.

Historic background

IMO's role in the recycling of ships, the terminology used to refer to ship scrapping, was first raised at the 44th MEPC session in March 2000 following which a correspondence group was established to research this issue and provide information about current ship recycling practices and suggestions on the role of IMO.

Guidelines were developed by the Marine Environment Protection Committee (MEPC) and finalized at the MEPC 49th session in July 2003. These guidelines were adopted as the: *Guidelines on Ship Recycling* by the 23rd Assembly in November-December 2003 by resolution A.962(23) and were subsequently amended by resolution A.980(24).

Resolution A.962(23) *IMO Guidelines on Ship Recycling* give advice to all stakeholders in the recycling process, including administrations of ship building and maritime equipment supplying countries, flag, port and recycling States, as well as intergovernmental organizations and commercial bodies such as shipowners, ship builders, repairers and recycling yards.

The guidelines noted that, in the process of recycling ships, virtually nothing goes to waste. The materials and equipment are almost entirely reused. Steel is reprocessed to become, for instance, reinforcing rods for use in the construction industry or as corner castings and hinges for containers. Ships' generators are reused ashore. Batteries find their way into the local economy. Hydrocarbons on board become reclaimed oil products to be used as fuel in rolling

mills or brick kilns. Light fittings find further use on land. Furthermore, new steel production from recycled steel requires only one third of the energy used for steel production from raw materials. Recycling thus makes a positive contribution to the global conservation of energy and resources and, in the process, employs a large, if predominantly unskilled, workforce. Properly handled, ship recycling is, without question, a "green" industry. However, the guidelines also recognized that, although the principle of ship recycling may be sound, the working practices and environmental standards in the yards often leave much to be desired. While ultimate responsibility for conditions in the yards has to lie with the countries in which they are situated, other stakeholders must be encouraged to contribute towards minimising potential problems in the yards.

The Guidelines on Ship Recycling also introduced the concept of a "Green Passport" for ships. It was envisaged that this document, containing an inventory of all materials used in the construction of a ship that are potentially hazardous to human health or the environment, would accompany the ship throughout its working life. Produced by the shipyard at the construction stage and passed to the purchaser of the vessel, the document would be in a format that would enable any subsequent changes in materials or equipment to be recorded. Successive owners of the ship would maintain the accuracy of the Green Passport and incorporate into it all relevant design and equipment changes, with the final owner delivering it, with the vessel, to the recycling yard.

Subsequently, at its 53rd session in July 2005, the Marine Environment Protection Committee (MEPC) agreed that the IMO should develop, as a high priority, a new instrument on recycling of ships with a view to providing legally binding and globally applicable ship recycling regulations for international shipping and for recycling facilities. MEPC 53 also agreed that the new IMO instrument on ship recycling should include regulations for the design, construction, operation and preparation of ships so as to facilitate safe and environmentally sound recycling, without compromising the safety and operational efficiency of ships; the operation of ship recycling facilities in a safe and environmentally sound manner; and the establishment of an appropriate enforcement mechanism for ship recycling (certification/reporting requirements). MEPC 53 further agreed that the above-mentioned instrument should be completed in time for its consideration and adoption in the biennium 2008-2009.

The IMO Assembly in November-December 2005 subsequently agreed that IMO should develop a new legally-binding instrument on ship recycling. Assembly resolution A.981(24) New legally-binding instrument on Ship Recycling requested the Marine Environment Protection Committee to develop a new instrument that would provide regulations for:

- the design, construction, operation and preparation of ships so as to facilitate safe and environmentally sound recycling, without compromising the safety and operational

efficiency of ships;
- the operation of ship recycling facilities in a safe and environmentally sound manner; and
- the establishment of an appropriate enforcement mechanism for ship recycling, incorporating certification and reporting requirements.

The resolution referred to the urgent need for IMO to contribute to the development of an effective solution to the issue of ship recycling, which will minimize, in the most effective, efficient and sustainable way, the environmental, occupational health and safety risks related to ship recycling, taking into account the particular characteristics of world maritime transport and the need for securing the smooth withdrawal of ships that have reached the end of their operating lives.

RECEPTION FACILITIES

IMO has recognized that provision of reception facilities is crucial for effective MARPOL implementation, and the Marine Environment Protection Committee (MEPC) has strongly encouraged Member States, particularly those Parties to MARPOL as port States, to fulfil their treaty obligations on providing adequate reception facilities.

In March 2006, MEPC 54 emphasized the importance of adequate reception facilities in the chain of implementation of MARPOL, and stated that the policy of "zero tolerance of illegal discharges from ships" could only be effectively enforced when there were adequate reception facilities in ports. Therefore the Committee urged all Parties to MARPOL, particularly port States, to fulfil their treaty obligations to provide reception facilities for wastes generated during the normal operation of ships. The Committee also agreed to develop a port reception facility database (PRFD) as a module of the IMO Global Integrated Shipping Information System (GISIS). The PRFD was designed to allow Member States to update the Database via a log-in password, and to allow the public to access all the information in the Database on a view-only basis. The Database went live to the public on 1 March 2006.

Action Plan to tackle the inadequacy of port reception facilities

In October 2006, MEPC 55 approved an Action Plan to tackle the alleged inadequacy of port reception facilities - seen as a major hurdle to overcome in order to achieve full compliance with MARPOL. The Plan was developed by the Sub-Committee on Flag State Implementation (FSI) in order to contribute to the effective implementation of MARPOL and to promote quality and environmental consciousness among administrations and shipping.

The Plan contained work items aimed at improving the provision and use of adequate port reception facilities, including work items relating to reporting requirements; provision of information on port reception facilities; identification of any technical problems encountered

during the transfer of waste between ship and shore and the standardization of garbage segregation requirements and containment identification; review of the type and amount of wastes generated on board and the type and capacity of port reception facilities; revision of the IMO Comprehensive Manual on Port Reception Facilities; and development of a guide to good practice on port reception facility providers and users. With regard to regional arrangements, in March 2012, MEPC 63 adopted, by resolution MEPC.216(63),the amendments to MARPOL Annex V, which provides that Small Island Developing States (SIDS) may satisfy the relevant requirements of reception facilities through regional arrangements when, because of those States' unique circumstances, such arrangements are the only practical means to satisfy these requirements.

As part of the work on the Action Plan a standard Advance Notification Form was developed to enhance the smooth implementation and uniform application of this requirement, thus minimizing the risk of a ship incurring delay. Also, a standard Waste Delivery Notification form was developed to provide uniformity of records throughout the world.

Also, under its work on the Action Plan, FSI developed the Guide of good practice on port reception facility providers and users, which provides guidance and easy reference to good practices related to the use and provision of port reception facilities as well as a list of applicable regulations and guidelines.

CONVENTION ON THE PREVENTION OF MARINE POLLUTION BY DUMPING OF WASTES AND OTHER MATTER

The "Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972", the "London Convention" for short, is one of the first global conventions to protect the marine environment from human activities and has been in force since 1975. Its objective is to promote the effective control of all sources of marine pollution and to take all practicable steps to prevent pollution of the sea by dumping of wastes and other matter. Currently, 87 States are Parties to this Convention.

In 1996, the "London Protocol" was agreed to further modernize the Convention and, eventually, replace it. Under the Protocol all dumping is prohibited, except for possibly acceptable wastes on the so-called "reverse list". The Protocol entered into force on 24 March 2006 and there are currently 51 Parties to the Protocol.

These pages include general information for the public and for States interested in becoming Parties to the London Protocol 1996. Please click on the links to the left for further information on related issues.

Information about the Convention and the Protocol can also be found in the information leaflet (currently available in English only) which contains details on what the London Convention is, achievements to date, the potential benefits and cost of membership, a

shortlist of the current activities under the instruments and their relationship with other international agreements.

The Office for the London Convention/Protocol and Ocean Affairs works closely with a number of international organizations and industry associations, a list can be found under the "Links and References" section to the left.

What are the purpose and objectives of the London Convention and Protocol?

The objective of the London Convention and Protocol is to promote the effective control of all sources of marine pollution. Contracting Parties shall take effective measures to prevent pollution of the marine environment caused by dumping at sea (see articles I and II of the Convention and article 2 of the Protocol).

The purpose of the London Convention is to control all sources of marine pollution and prevent pollution of the sea through regulation of dumping into the sea of waste materials. A so-called "black- and grey-list" approach is applied for wastes, which can be considered for disposal at sea according to the hazard they present to the environment. For the blacklist items dumping is prohibited. Dumping of the grey-listed materials requires a special permit from a designated national authority under strict control and provided certain conditions are met. All other materials or substances can be dumped after a general permit has been issued.

The purpose of the Protocol is similar to that of the Convention, but the Protocol is more restrictive: application of a "precautionary approach" is included as a general obligation; a "reverse list" approach is adopted, which implies that all dumping is prohibited unless explicitly permitted; incineration of wastes at sea is prohibited; export of wastes for the purpose of dumping or incineration at sea is prohibited. Extended compliance procedures and technical assistance provisions have been included, while a so-called transitional period allows new Contracting Parties to phase in compliance with the Protocol over a period of five years, provided certain conditions are met.

Compliance with the London Convention and Protocol

There are no compliance mechanisms under the London Convention, however, with the entry into force of the London Protocol on 26 March 2006, a set of Compliance Procedures and Mechanisms, pursuant to Article 11, were adopted in November 2007. It included the establishment of a subsidiary body - the Compliance Group - that meets in parallel to the Meeting of Contracting Parties and provides advice to the Parties on such matters. Further details are found in the document in the menu to the right.

The objective of the Compliance Procedures and Mechanisms under the London Protocol is to assess and promote compliance with the London Protocol with a view to allowing for the

full and open exchange of information, in a constructive manner. The Meeting of Contracting Parties retains overall responsibility for compliance matters.

Reporting requirements for dumping activities

Reporting requirements under Article VI (4) of the Convention and under Article 9.4 of the Protocol include:

1. Annual report on all permits issued, including NIL report when no permits are issued; and
2. Annual report on monitoring activities undertaken.

A report is also required on emergency permits or in cases of force majeure (as soon as possible).

Illegal Dumping Incidents

Under Article VII of the London Convention, Contracting Parties agreed to co-operate in the reporting of vessels and aircraft observed dumping in contravention of the Convention. The Protocol contains a similar provision (Article 10.3).

Past annual dumping reports

Reporting requirements under Article VI (4) of the Convention and under article 9.4 of the Protocol include: 1) Annual report on all permits issued, including NIL report when no permits are issued; and 2) Annual report on monitoring activities undertaken. The Secretariat publishes compilations of these reports on an annual basis.

Reporting of illegal dumping incidents

Under Article VII of the London Convention , Contracting Parties agreed to co-operate in the reporting of vessels and aircraft observed dumping in contravention of the Convention. The Protocol contains a similar provision. Specifically, if a mariner or other observer ("Incident Observer") witnesses a dumping incident in any ocean waters that appears to be in violation of the Convention or the Protocol, he or she is asked to:

Management of spoilt cargoes

Occasionally during a voyage, cargo may spoil and mariners are faced with the need to manage the problem. The ideal way to manage spoilt cargo would be to offload it from the ship to be managed on land – either to sell for an alternate use, recycle salvageable materials, or to be disposed of in an environmentally safe manner. However, in certain circumstances this may not be possible, and disposal at sea could then be the only viable option. However, spoilt cargo should only be considered for disposal at sea when there is a

marked degree of urgency, facilities on land are unavailable, and it will not cause harm to the environment or human health.

TECHNICAL COOPERATION ON MARINE ENVIRONMENT

Within the framework of the International Technical Cooperation Programme (ITCP), IMO provides assistance to Member States through activities aimed at implementing the following thematic priorities relating to the protection of the marine environment:

1. assisting countries in implementing the MARPOL Convention in general and more specifically in providing port reception facilities; establishing of Special Areas or PSSAs; uniform application of revised Annex V (Regulations for the prevention of pollution by garbage from ships) and Annex VI (Regulations for the prevention of air pollution from ships) and related waste management measures;
2. assisting countries in implementing the OPRC Convention and the OPRC-HNS Protocol and enhancing regional cooperation in marine pollution preparedness, response and cooperation as well as addressing aspects of the implementation of the relevant international regimes on liability and compensation for oil and HNS pollution damage;
3. strengthening national and regional capacity and fostering regional cooperation for the ratification and effective implementation of the Hong Kong Convention on Ship Recycling, the Ballast Water Management Convention and ships' biofouling guidelines; and
4. assisting countries in ratifying and implementing the London Protocol on prevention of pollution by dumping of wastes and other matters.

In 2015, the Marine Environment Division organized a total of 64 technical cooperation activities worldwide including workshops, seminars, trainings and other capacity building events.

Most of these activities are organized in partnership with regional organizations around the world, contributing to the successful implementation of technical cooperation activities. These regional organizations include the Black Sea Commission (BSC), the Permanent Commission for the South Pacific (CPPS), the Partnerships in Environmental Management for the Seas of East Asia (PEMSEA), the Regional Organization for the Conservation of the Environment of the Red Sea & Gulf of Aden (PERSGA), the Regional Marine Pollution Emergency Information and Training Centre for the Wider Caribbean (RAC/REMPEITC-Caribe), the Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC), the Regional Organization for the Protection of the Marine Environment (ROPME), the South Asia Co-operative Environment Programme (SACEP), and the Secretariat of the Pacific Regional Environment Programme (SPREP), among others.

Regional Partners

Over the years, IMO has concluded a number of Memoranda of Understanding (MoU) with several regional organizations which became strategic partners in the global effort to meet the capacity building needs of IMO Member States. Working together not only optimizes the use of the resources at regional level, but also ensures the delivery of tailor-made activities to address the needs of the recipient countries and to meet the objectives of the Organization. The regional partners have constantly contributed to the success of the IMO activities by providing technical expertise, financial and in-kind support and, most importantly, providing their valuable knowledge of their regions and the specific needs of the respective countries.

In 2015, the Marine Environment Division implemented the following activities with support from regional partners:

- Secretariat of the Pacific Regional Environment Programme (SPREP)
    - Regional workshop to promote PSSAs in countries in the South Pacific (29-31 July 2015, Fiji)
    - National consultancy to draft National Ballast Water Management Strategy (28 September-2 October 2015, Samoa)
    - National consultancy to draft National Ballast Water Management Strategy (18-19 November 2015, Tuvalu)
- The Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC)
    - Establishment of a National HNS Response System (7-2 June 2015, Egypt)
    - Meeting of the Mediterranean Network of Law Enforcement Officials relating to MARPOL within the framework of the Barcelona Convention (MENELAS) (29 September-1 October 2015, France)
- Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden (PERSGA)
    - Regional workshop on the establishment of PSSAs in the countries of the Red Sea and Gulf of Aden (26-28 May 2015, Saudi Arabia)
    - Regional workshop on the London Protocol (24-26 May 2015, Saudi Arabia)
    - Regional workshop on OPRC-HNS (8-10 June 2015, Egypt)
    - Regional workshop to raise awareness of the Biofouling Guidelines (14-15 September 2015, Egypt)
- Regional Organization for the Protection of the Marine Environment (ROPME)
    - Regional workshop on contingency planning for response to spills of HNS and oil in the marine environment (6-8 September 2015, Qatar)
- The Black Sea Commission (BSC)
    - Regional workshop on implementation and enforcement of MARPOL Convention (15-17 December, Georgia)
- South Asia Co-operative Environment Programme (SACEP)

- National preparatory meeting in Pakistan, India, Bangladesh and Maldives under the IMO-Norad project "Enhancing regional cooperation mechanisms on marine pollution preparedness and response in the SACEP region (Bangladesh, India, Maldives, Pakistan and Sri Lanka)" (2015)
- Regional exercise conducted under the IMO-Norad project "Enhancing regional cooperation mechanisms on marine pollution preparedness and response in the SACEP region (Bangladesh, India, Maldives, Pakistan and Sri Lanka)" to test the operational procedures of the regional contingency plan and identify any gaps, and Regional workshop to discuss the outcome of the Regional Exercise (2-6 November 2015, Sri Lanka)

MODULE-III

Maritime Accidents and Disaster Management

Introduction to marine safety and emergency response

Since time immemorial humans have had beneficial interactions with the sea—for food, transport, and pleasure. However, these interactions have not always been without cost—the risk of death has always been present. In the maritime fraternity, we tend to think of this risk in terms of ship incidents: capsizing, foundering, grounding, collision, fire, man-overboard. Over the past century improvements in technology, safety standards, enforcement of regulations, and education have reduced these risks for commercial vessels, and concurrently tremendous improvements have been made in rescue response.

In the 1820s there were about 1,800 shipwrecks each year around the British Isles alone. Amongst maritime folk the risks of going to sea were understood; significant loss of life was expected. Often in sight of a coastal community, a sailing ship would be blown aground, the crew would take to the rigging to try to survive, towns folk would see the plight of the hapless sailors and often would put to sea, in whatever craft they may have at hand, at significant risk to their own lives. These occurrences eventually led to the first purpose-designed lifeboat, the Original, built on the northeast coast of England in 1789.

Similar tragedies led Sir William Hillary to call, three decades later, for the establishment of a national organization to perform rescue around the coasts of the British Isles. The Royal National Lifeboat Institution (RNLI) was followed during the nineteenth century by similar organizations in many other countries, many private charities like the RNLI and some government funded organizations.

In the nineteenth century, lifeboats were propelled by sail and oar (with a few experimental steam-powered craft built in the latter years of the century). Shore-based apparatus, such as the ‘breeches buoy’ were developed and stationed with rescue crews. In some remote locations emergency huts, with supplies, were provided by the authorities for the shelter of shipwreck survivors who made it to shore. During this period the rescue of seafarers generally depended on visual contact with their rescuers. If a ship was grounded near a harbor, flares could be used to signal distress, but rescue depended on these flares being seen from shore. If the ship was in distress on the high seas, or near a remote shore, the odds of rescue were much smaller, and many ships were simply posted as ‘Missing at Sea with All Hands’.

In the early years of the twentieth century, things started to improve dramatically. Some experimental internal combustion engine powered lifeboats were built. In the period between the World Wars, most rescue lifeboats were fitted with engines, taking over from sail and oar, but speeds remained slow (approximately 8 knots, about 15 km per hour). Radio was used in the rescue of passengers and crew from the RMS Republic in 1909; more famously three years later it played a significant role in saving lives from the Titanic. After the Titanic

disaster, the International Convention for the Safety of Life at Sea (SOLAS) was introduced, improving both ship safety and rescue response.

Dramatic strides have been made in safety technologies since the Second World War. The Global Maritime Distress and Safety System (GMDSS) and emergency position indicating radio beacons (EPIRBS) allow the rapid alerting of shore-based rescue resources and other ships in the event of an emergency. Dedicated rescue resources have improved dramatically. The modern rescue lifeboats, and larger sea rescue cruisers, have speeds up to 25 knots, extended range, modern electronics for searching, navigation and communication, excellent sea-keeping for operation in heavy weather, and can operate in conjunction with other rescue resources. Aircraft can fly in extreme weather conditions, travel great distances to provide oversight, and possibly drop life-rafts. Helicopters can provide rescue over reasonable distances (potentially being refueled in flight), and in areas where it may be risky to attempt a rescue by ship, such as near shore. Search and rescue (SAR) technicians, an elite group of primary care paramedics, can provide on-scene medical aid and evacuation: they can parachute from aircraft or be lowered from helicopters to assist survivors until recovery is possible.

The regulatory regime affecting maritime safety and emergency response also continues to improve. The International Maritime Organization (IMO) has continually updated SOLAS. In addition to improving ship safety, requirements mandate ships to render assistance to persons in distress when safely feasible to do so. The International Convention on Maritime Search and Rescue (the SAR Convention), which entered into force in 1985, developed an international SAR plan, such that the rescue of persons in distress anywhere at sea will be co-ordinated by a SAR organization and, when necessary, by co-operation between neighboring SAR organizations. Concurrently with the revision of the SAR Convention, IMO and the International Civil Aviation Organization jointly developed and published the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual, with three volumes covering organization and management, mission co-ordination, and mobile facilities.

The International Maritime Rescue Federation (IMRF) represents over 100 of the world's SAR organizations—some private charities, others government organizations. The IMRF is focused on the prevention of loss of life in the world's waters. To achieve this mission, it works with its members, local governments, IMO and others to encourage and promote the formation and development of maritime search and rescue services throughout the world. Despite these advances, new maritime risks are emerging. In the developed countries, pleasure craft have increased the demand on SAR management and rescue resources. For instance, in Britain only about 10 percent of the RNLI's sorties involve commercial vessels. Some offshore races have required complex rescue responses. For example, the 1979 Fast net Race (England to Ireland) resulted in the loss of 15 lives and five yachts; numerous vessels

and aircraft were involved in the rescue efforts and a significant load was placed on the rescue co-ordination resources.

Terrible commercial shipping disasters have continued over the past decades. The world's worst peacetime sea disaster took place in December 1987; the Philippine passenger vessel Dona Paz sank after colliding with a small tanker carrying gasoline. Only 26 people survived from the two vessels, while over 4,300 died. When the Senegalese ferry Le Joola capsized in heavy weather in 2002, nearly 2,000 died. The Worldwide Ferry Safety Association lists over 160 ferry incidents in the developing world during the first fourteen years of this millennium, resulting in 18,000 deaths. In general, there were common emergency response shortcomings in these tragedies, namely, lack of, or late, notification of the emergency, poor shipboard emergency planning and management, and lack of rescue response due to lack of resources and/or lack of rescue organization.

Modern ferries have introduced another dimension to rescue requirements—large vessels, with significant numbers of persons onboard, which may rapidly require assistance due to fire or capsize. This is called a 'mass rescue operation' (MRO), where the size of the rescue overwhelms the resources available. In 1994 the 15,000 ton ferry Estonia sank in a storm in the Baltic Sea; out of nearly 1,000 persons onboard only 138 survived. The ship rapidly capsized and then sank half an hour after the first distress message was broadcast. Although numerous vessels were at hand, it was difficult for them to rescue survivors from the life rafts in the water; about 40 were rescued by ship, the remainder by helicopter (often working in conjunction with ships). As a result of the Estonia disaster, the IMRF held a series of exercises to help rescue organizations plan for national and international MROS; IMO updated SOLAS requirements so that ships have plans and procedures to recover persons from the water.

In addition to passenger-carrying vessels, fishing vessels and commercial ships continue to suffer losses, some disappearing without notification thus hampering rescue efforts. When the 260,000-ton Korean bulk carrier Stellar Daisy sank in the South Atlantic in early 2017, the two survivors were picked up by fortuitous circumstance; a fruitless air and sea search continued for weeks for the other crew over thousands of nautical miles.

Not all rescues end in failure, as management capability and resources can alter the outcome. In 1980 the Dutch cruise ship Prinsendam caught fire 120 nautical miles off the coast of Alaska. The US Coast Guard quickly mobilized and co-ordinated American and Canadian air and sea rescue resources, as well as commercial ships; all 520 passengers and crew were rescued without loss of life or serious injury.

In coming years, many emergency response improvements will be an evolution of initiatives already in place. The IMRF and IMO, along with other agencies, are working to improve international co-operation. This is particularly important in areas such as the Arctic and

Antarctic where the following can impact SAR response: large distances, harsh weather conditions, few local rescue resources, restricted SAR response management capability, limited facilities to receive (potentially thousands of) survivors, and increasing marine vessel traffic due to climate change. Ferry safety, and the associated lack of rescue response, in the developing world is recognized as an ongoing concern. The IMRF and IMO are promoting the development of regional emergency response capabilities.

New technologies may also bring about significant improvements, both for the persons being rescued, and for the rescuers. The IMRF Future Technology Panel is investigating the use of unmanned aerial vehicles (UAVs) to assist in maritime search and rescue, particularly in situations where direct human intervention may not be wise or possible. The application of unmanned marine vehicles (UMVs) to maritime SAR is still in its infancy, however it is easy to envisage their future application, ranging from small craft dropped from aircraft and remotely piloted, to stand-alone craft prepositioned in remote locations. Numerous hurdles remain; acceptance and understanding of the strengths and limitations of these technologies is needed (for instance, can a robotic vessel rescue someone who is incapacitated?). Other technologies, such as infrared cameras and improved satellite surveillance may assist with the search function.

Emergency preparedness and management requires an ongoing investment in training and resources. Simulated and live exercises develop skills and identify potential problems, and solidify working relationships with partners. This is particularly significant for mass rescue operations, which may overwhelm the resources normally available, and emphasizes the importance of management communication and co-ordination capabilities. Education, particularly for recreational boaters, is important. The usefulness of new technologies needs to be investigated on an ongoing basis.

Marine Accidents:

Maritime accidents, undesired abnormal events of a ship that often result in loss of life or major injury to any person on board and in various types of property damage, have been a major issue in the international maritime community since shipping began. The overall number of maritime accidents over the past 36 years is 63991, an average of 1777 per year. According to the Guardian, about 2000 seafarers lose their lives each year

Huge effort has been expended on developing measures to improve maritime safety, through a better understanding of the marine/coastal environment, improvement of the technology involved in shipbuilding and ship management, more advanced navigation technology, and better crew training. In addition, international organizations such as the International Maritime Organization (IMO) and many national Maritime Safety Administrations (MSAs) have published extensive rules and regulations on safety standards, and various guidelines on the safe operation of ships. The development of these measures and regulations has largely

been based on new findings regarding the major causes of maritime accidents, through detailed analysis and research in the possible causes of such accidents.

Common maritime Accidents:

1. Offshore Oil Rig Mishaps: Offshore oil rigs constitute great danger in terms of their heavy machinery and the complexities of the processes involved. Even a minor error by way of negligence of a simple process or overlooking in the working of a machinery part can lead to immense damaging consequences across the world.
   The grounding of the Exxon Valdez on March 24, 1989, at Prince William, Alaska, resulted in the spillage of approximately 10.8 million gallons of crude oil, which polluted an estimated 1300 miles of shoreline. In April 2010, the explosion and sinking of the British Petroleum (BP)-operated Deep water Horizon in the Gulf of Mexico caused an 87-day eruption of a seafloor oil gusher that spilled 5 million barrels of oil. BP reportedly paid more than $14 billion in clean-up, $8 billion in business claims, $4 billion in fines, a half a billion dollars in civil penalties. Moreover, oil spill hazards also have significant adverse impacts on human health. Studies revealed that cleanup staff working long hours in highly polluted areas are likely to experience headache, nausea, vomiting, dizziness, and chromosome damage. It is also identified that chronic stress and high levels of event-related psychological stress were experienced by local residents after the Exxon Valdez spill.
2. Cruise Vessel Mishaps: Cruise vessels form a very important part in the vacation itinerary of people. However, a major type of maritime accident occurs in cruise vessels. Cruise vessels could capsize or face tough weather conditions causing the ship to develop major problems. Another important case of accidents in cruise ships is because of the negligence on the part of workers. As per statistical data nearly 75% of fires are caused because of a mere mistake by people working on the cruise ship.
3. Commercial Fishing Mishaps: Even fishing for commercial purposes can lead to fatal incidents being caused. Inexperienced fishermen – sometimes even experienced ones – can fall overboard. Harsh weather conditions can also could severe damages to a commercial fishing expedition.
4. Accidents on Tugboats: Tugboats are those which help move huge ships to enter docks. They are small in nature but are powerful to ensure that the large vessels are handled safely. But sometimes because of the blockage of the visibility of tugboats by the larger vessels, maritime accidents occur. Also human error on the part of the pilot of the tugboat can also lead to unwanted and unexpected tugboat mishaps.
5. Accidents on Crude Oil Tankers and Cargo Ships The major cause of accidents on cargo tankers is explosions. Since the very nature of the materials these tankers transport is dangerous and highly flammable, even the most minor of explosions can cause enormous losses. According to statistics, one of the main reasons for oil tanker accidents occurring is because of workers' negligence – nearly 84-88%.

6. Grounding of Ships: Ship grounding occurs when the bottom of the ship's hull scrapes through the ocean-bed. This type of maritime accident has a lot of impact on the ship's hull and more on the overall oceanic area where the grounding has started to occur and has finally culminated. The danger to workers aboard the ship is another important consequence because of the mishap.
7. Maritime Accident because of Drugs and alcohol: Drug or substance abuse is a major problem across the world. Even in the marine world, substance abuse can cause irreparable damage. If the workers of a particular ship engage in substance abuse or alcohol, the addiction-induced frenzy could cause the worker to behave erratically and thereby lead to an unwanted maritime accident on board ships.
8. Crane Mishaps Just like crane operations on the land, marine crane operations on ports and on ship are also risky. The risk is further stressed because of the oceanic operations where the cranes are required. Because of faulty wires or winches, crane workers can lose their life or in a worst case scenario, be alive but with irreparable physical handicap. Alternatively, accidents because of crane operations are also caused because of negligence and inexperience on the part of the worker.
9. Accidents in Shipyards: The shipyard is the place where the ship is assembled and constructed in its entirety. Fitting and welding accidents are common in the shipyard which could spare the worker his life but hamper the worker's overall working abilities. Similarly constant inhaling of poisonous fumes also becomes another shipyard accident cause.
10. Maritime Accidents on Diving Support Vessels: People who want to explore the mysteries of the deep sea use a diving support craft to take a plunge into the water. However, if the diving support craft is unfit and if the crew also happens to be really unfit to oversee and manoeuvre the whole operation effectively, a major accident can be caused.
11. Accidents on Barges: Barge mishaps occur mainly because of the overall build of the barges themselves, which allows them limited movement on the water and because of the problems of the barge-towing equipment. These problems could be caused due to inexperience on the part of the person at the helm of the towing boats or due to usage of faulty towing cables.
12. Cargo Hauling Accidents: Cargo hauling maritime accidents are those accidents caused to workers who work as cargo haulers. However, according to several maritime accident investigations, it has been reported that cargo hauling workers overstate their cargo-hauling injuries. The maritime accident investigation, consequentially reports that because of this, this profession has one of the most severe rate of work-place absenteeism.

It can be seen from the above mentioned types of maritime accidents, that mistakes on the part of the workers and operators play a major role in the accidents being caused. But in order to find out what was the actual cause of the marine accident, a maritime accident

investigation is necessary. Maritime accident investigation will help to narrow down on the actual cause of the accident which will help the injury claimants to claim their rightful due with absolute clarity.

Causes for maritime accidents:

Marine accidents killed 1,163 people and caused $197 million in insured losses in 2017. The deadliest maritime disaster occurred in January when a passenger ferry sank, killing 88 people off Nonouti, an atoll in Kirbati in the Pacific Ocean, between Papua New Guinea and Hawaii. A boat carrying migrants capsized off the coast of Libyan Arab Jamahiriya Zawiyah, killing 74 people. In 2012, 30 people were killed in the costliest man-made disaster of that year when the Costa Concordia cruise ship carrying 4,200 passengers went aground off the coast of Italy, causing $515 million in insured damages losses when it occurred. By mid-2014, insured losses for the disaster had risen to about $2 billion. The greatest maritime disaster in peacetime happened in December 1987, when the Philippine ferry, the Doa Paz, collided with the Vector, a small coastal oil tanker, according to the National Maritime Museum in the United Kingdom. Only 24 of the 4,317 Doa passengers survived. By contrast, 1,500 perished in the sinking of the Titanic in 1912.

Top reasons for maritime accidents are as follows:

Equipment failure:

Maritime equipment is usually well-designed and built to tolerate the stresses that all vessels undergo while navigating the world's oceans and waterways. However, it is also increasingly complex and contains a myriad of moving parts.

Many maritime accidents are caused by engine breakdowns, problems with electronic systems, and other types of equipment failure. Sometimes equipment failure is a result of natural phenomena such as bad weather or heavy seas, but in many instances, there are other causal factors that come into play.

Common causes of equipment failure include:

- Lack of proper and constant maintenance to prevent equipment failure
- Failure to monitor a ship's systems in order to ferret out potential problems before they occur.
- Lack of the necessary equipment and/or protective parts or gear.
- Breakdowns in operating procedures.
- Breakdowns in communications procedures

Another major cause of equipment failure is a language barrier, especially when it comes to operating manuals. As Per the Institute of Sea transport, even though ship design and building methods have improved over the years, there is a need for well-written and properly translated operating manuals. In many cases, the documentation that comes with maritime is generic and written in languages that many ships' crews can't read. This problem can be remedied by the use of readily-available translation software, but many shipping companies don't exercise this option.

Lack of Proper Training and Human Error:

According to the Mariners Alerting and Reporting Scheme (MARS), human error accounts for the majority of maritime accidents. Human error typically occurs due to improper training and/or lack of training, inexperience, fatigue from being overworked, and overexertion. In some cases, such as the Costa Concordia grounding which caused 32 deaths in January of 2012, human error can be caused by the incompetence of a ship's captain.

Even in a world where many ships' functions are automated, experience and proper training make a considerable difference on how a vessel is operated. Many accidents occur because a seaman or a ship's officer does not react quickly or properly in an emergency situation, such as a collision with another vessel or a sudden shipboard fire. In most instances, well-trained personnel have faster reaction times and can cope with unexpected crises better than inexperienced crew members or junior officers. Trained and experienced seamen don't panic and can take the proper actions necessary to save the vessel, its contents, crew, and passengers.

Keep in mind that even if they are properly trained, overworked seamen are also dangerous seamen. Men and women who work on ships risk becoming physically and mentally exhausted. Overworked seamen and officers are more likely to make poor decisions, misread navigational charts or warning signals, or have slower reaction times than those who keep regular eight-hour watches. Chronic lack of sleep has the same effect on the brain as drinking alcoholic beverages, and many seamen have been killed or injured as a result of sailing on a vessel with an overworked crew.

Collisions at Sea:

Despite the existence of modern navigation and communications aids such as ship-to-ship radios, radar, GPS, and state-of-the-art computerized navigation charts, collisions at sea are still a major cause of maritime disasters. The worst peacetime maritime accident in history was the collision of the passenger ferry MV Dona Paz with the tanker MT Vector. This collision, which killed over 4,000 persons on a ship intended to carry only 1500 passengers, occurred off the Philippine Islands on December 20, 1987. Only 24 survivors were rescued.

Collisions at sea are more likely to occur in busy ports and crowded shipping lanes, especially near the coast or in narrow straits and inlets. These accidents are often the result of inexperienced watch-standers on the bridge, navigational errors, malfunctioning or misused radar systems, and poor decision-making by overworked personnel.

Poor Maintenance:

Maritime vessels are essentially a collection of interlinked systems that must work together in order to operate and navigate safely on the water. Every part of a ship is essential, no matter if it's the ship's engines or a watertight hatch. Even the most solid pieces of a ship are affected by wear and tear, so sticking to a proper maintenance plan helps to prevent maritime accidents.

Many seamen have been injured or killed, and many vessels damaged or lost, as a result of poor maintenance. Trip and fall accidents occur frequently when loose or corroded metal ladders are not properly secured or replaced. Seamen have lost fingers and other body parts to malfunctioning watertight doors, and poorly maintained fuel lines have caused fatal shipboard fires. These maritime accidents were not inevitable. They could have been avoided if proper steps were taken to keep the vessels safe and seaworthy.

Other than the above mentioned causes, there are several natural disasters which lead to the accidents. The reasons for disasters can be man-made or the nature itself. The other causes for accidents are marine disasters, which are discussed in subsequent part of this module.

MARINE DISASTERS

Marine disasters refer to those incidents that occur suddenly in ocean or coastal zone, formed or triggered by the ocean or anthropogenic activities or by both together, which can cause damage to properties or casualties.

In terms of the hazard-formative factors, marine disasters can be divided into 5 categories, namely, marine meteorological disasters, marine hydrological disasters, marine geological disasters, marine ecological disasters and man-made marine disasters.

- Marine meteorological disasters - Typhoon (including tropical cyclone), Strong wind, Sea fog
- Marine hydrological disasters - Storm surge, Sea wave, Sea ice, Sea-level rise
- Marine geological disasters - Coastal erosion, Coastal sand flow, Seawater invasion, Sand sediment in bay, sea-route and estuary.
- Marine ecological disasters - Red tide, Harmful marine creature bloom (including Enteromorpha spp., jellyfish, starfish, etc.), Harmful aufwuch
- Man-made marine disasters - Marine contamination, Marine engineering disaster

Marine meteorological disasters:

Typhoon (including tropical cyclone):

Typhoons are one kind of the most devastating natural disasters in the coastal zones which cause considerable personal injury and property damage.

Sea fog:

When heavy fog occurs at sea, severe marine accidents such as groundings and collisions between ships and unmapped objects such as icebergs can occur due to poor visibility, as it becomes difficult to observe objects and measure positions. Around 60% of marine accidents occur as a result of poor visibility due to fog or precipitation. Accordingly, navigation plans are typically created by properly understanding the characteristics of and conditions for the formation of fog.

To account for the difficulties in observation and measurement due to poor visibility in fog, it is necessary to exercise caution and undertake mitigatory actions such as bolstering lookouts, operating a radar, or taking depth measurements.

On May 12, 2007 near Korea, a vessel called the "Golden Rose" was traveling from China to Chungnam, Korea when it lost visibility due to heavy fog and collided with a Chinese container vessel called the "Jinsheng" and sank, an incident that raised awareness of sea fog in the wider community. All those on board the Golden Rose were killed by the accident, and around eight billion dollars of property damage was incurred.

The marine hydrological disasters:

Storm surges:

Storm surges associated with severe tropical cyclones constitute the world's worst coastal marine hazard. Storm surge disasters cause heavy loss of life and property, damage to the coastal structures and the losses of agriculture which lead to annual economic losses in affected countries. Death and destruction arise directly from the intense winds characteristic of tropical cyclones blowing over a large surface of water, which is bounded by a shallow basin. As a result of these winds the massive piling of the sea water occurs at the coast leading to the sudden inundation and flooding of coastal regions.

About 300,000 lives were lost in one of the most severe cyclone that hit Bangladesh (then East Pakistan) in November 1970. The Andhra Cyclone devastated the eastern coast of India, killing about 10,000 persons in November 1977. These two and most of the world's greatest human disasters associated with the tropical cyclones have been directly attributed to storm surges.

Sea waves:

Sea waves refer to the severe waves caused by typhoons or cold tides. The combination of sea waves, strong winds and sea-level increase caused by storm surges can damage ships, coastal buildings and structures, and result in casualties.

Sea ice:

Sea ice disaster assessment of marine engineering is more complex than that of other natural disasters. Firstly, due to the influences of complex environmental conditions including meteorological and hydrological events, the thermodynamic characteristics such as generation, disappearance, movement, and migration of sea ice are unstable and uncertain.

Sea-level rise:

Sea-level rise is mainly caused by the volume expansion of seawater and the acceleration of melting glaciers under the influence of global warming; it may also be caused by excessive use of groundwater which leads to ground subsidence and thereby a relative sea- level rise. Climate warming has been a basic trend of global change since more than a century ago. Therefore, sea-level rise and its secondary disasters such as coastal erosion, storm surges have become more and more serious in recent years.

The marine geological disasters:

Coastal erosion:

Coastal erosion is caused by natural and anthropogenic factors such as storm surges and sea waves, the reduction of sediment discharge from rivers into the sea, sea-level rise, urbanization, sand mining, coastal engineering construction, etc.

Seawater invasion:

Seawater invasion refers to the underground brackish-water interface moving from sea to land, which is mainly caused by over exploitation of groundwater in coastal areas. Seawater invasion may raise the chloride ion content and salinity of groundwater and thus lead to regional water resource shortage.

Coastal sand flow:

Coastal sand flow is a kind of chronic marine disaster which may affect the environment and the land use of coastal areas.

The sedimentation of bays, channels and river mouth bars:

The sedimentation of bays and channels has dramatically changed the marine environment, aggravating marine pollution of the offshore areas. The construction of mariculture ponds

and salterns along the coast changes the seawater movement and the reclamation and further accelerate the coastal sedimentation.

The marine ecological disasters:

Red tides:

Red tides refer to the phenomena of marine phytoplankton proliferation and abnormal seawater colors at the estuaries, bays and offshore areas caused by serious contamination and eutrophication of seawater. When red tides strike, seawater quality deteriorates, the dissolved oxygen content of seawater decreases sharply, and the contents of nutrients, harmful substances and toxin in seawater increase, resulting in massive death of marine organisms (especially juvenile fish) and a decrease in fishery production, which brings great harm to marine aquaculture. Eutrophication of seawater due to the discharge of industrial and agricultural waste waters or urban sewage has brought several red tide disasters in many shores.

Green tides (Enteromorpha prolifera bloom):

Due to the seaweed cultivation in the offshore areas, the increase of nutrient contents of the sewage into the sea, the continuous increase of nutrient contents of seawater and overfishing, marine ecological disasters brought by harmful marine organisms, such as Enteromorpha spp., jellyfish and starfish, significantly affecte the seashore environment and mariculture.

Jellyfish bloom:

Jellyfish bloom has now become a global marine ecological environmental problem. One of the reasons for the jellyfish bloom is the eutrophication of seawaters. Pollution, the development of coastal zones and a series of other reasons account for the growth of the eutrophication of seawaters. With the continuous rising ratios of nitrogen to phosphorus and nitrogen to silicon in seawaters obviously dinoflagellate will have more competitive advantages than diatom, which benefit to jellyfish breeding; besides, since jellyfish and fish feed on the same food, the decrease of marine fishery resources due to overfishing will inevitably spare more food for jellyfish and thus lead to a faster growth of them.

Starfish bloom:

In recent years, shellfish aquaculture and abalone breeding in the intertidal beach have been strongly affected by blooms of starfish, which is, according to analysis, caused by overfishing which reduces the natural predators of starfish.

Harmful aufwuch:

Harmful aufwuch disasters mainly refer to the cases that some biological softwares are attached to the bottom of ships which affect the ocean shipping.

Man-made marine disasters:

Marine contamination:

Contamination to the offshore areas is mainly due to sewage pollutants and ship oil spilling into the sea. By timely and effective cleaning measures such as setting the oil boom, spreading dispersants, and artificial removal, pollution will be effectively controlled and would not have long-term impact on the marine creatures in the offshore areas.

Marine engineering disasters:

The land reclamation for projects, construction of breeding pools and saltern which lead to siltation, area reduction and tidal prism in bays etc are considered as Marine engineering disasters.

Need for disaster management:

Over the past decade coastal and marine natural disasters largely due to climate change have led to substantial social and economic damages around the world, as exemplified by the impacts of hurricanes Katrina (in 2005) and Sandy (in 2012) to the North American coastline, the humanitarian disasters caused by tsunamis in the Indian Ocean countries (in 2004) and Japan (in 2011), and the devastating damages caused by typhoon Haiyan (in 2013) to the Philippines. Scientific studies suggest that climate change might lead to an increase in the occurrence or the strength of weather-related natural disasters in the near future. The increasing risk of natural dis- asters may trigger substantial social, economic and political instability as well as damages to transport infrastructures. Located along shorelines, seaports (hereinafter called ‘‘ports’’) are highly vulnerable to coastal and marine natural disasters. With more than 80% of globally traded goods being carried by maritime transportation, natural disasters may impose severe damages to the global economy, as well as unprepared ports.

Nowadays, the development of effective measures in preventing or alleviating such risks is not a choice but a necessity. There is certainly no shortage of research investigating this topic, but the research is often dominated by either greenhouse gas (GHG) emission measurement/control due to ship and port operations or the impacts and consequences if such disasters are to take place, such as the risks posed by climate change and the vulnerability of coastal areas.

Theories for analysis of marine accidents, risk assessment and disaster management:

The overall volume of maritime accidents and associated trends can be analyzed and predicted using appropriate mathematical methods. This is because there is always an inherent regularity to such accidents, regardless of the complexity associated with the interacting factors that result in an accident. In theory, if these factors can be more accurately

identified and quantified, then it is possible to establish a prediction model for multi-factorial causality. In practice, however, it is difficult to fully and accurately identify all relevant factors. In addition, there are also challenges associated with data collection for all of the individual factors involved in an accident, which are needed for quantifying the data and developing metrics.

Regression model, grey system model, exponential smoothing model and two optimization models (residual GM (1,1) model and Markov model) that represent time, with the ultimate purpose of predicting the occurrence of maritime accidents are discussed below along with other models for assessing and predicting the marine risks and accidents and manage the disasters.

Unary linear regression model:

When analyzing observation data, a model can be established using regression analysis as long as there is a correlation among the variables, but not if there is completely determined function. A unary linear regression model for maritime accidents based on a time series (Wei and Qiu 2014) is different from a general regression prediction because it does not establish a model that includes data from different factors. Instead, time is regarded as the only independent variable, whereas the volume and trends of maritime accidents are dependent variables, which establishes the unary regression equation:

$$y = a + bt,$$

where t is the time ordinal number, which usually consists of equidistant intervals (such as month, quarter, year); y is the volume and trends of maritime accidents, which is typically expressed in accident quantity; and a, b are the parameters of the regression equation, which represents the interaction between various factors in and outside the maritime accident.

In many cases, the regression relationship between two variables is nonlinear. Therefore, before establishing the actual model, a scatter plot of historical data associated with maritime accidents should first be developed. Then, the curve type should be analyzed to establish the model.

Grey system prediction:

Grey prediction theory studies the uncertainties of a small sample, lacking information, where part of the information is known, and some information is unknown. In addition, the grey process consists of random variables that change during a certain range of time. It considers that although the behavior phenomena of a system are vague, and the data, disorganized, it actually conforms to an intrinsic functional order, meaning that some type of structure must exist for the data underlying the chaos.

A water transportation system is a sophisticated ‘people–boat–environment’ organization in which the main factors are known, and the quantitative relationship among various factors and the interaction are unknown. Therefore, such a system has obvious characteristics associated with grey prediction. In addition, the original model requires only a small amount of data, where it can be predicted using just four data points. There- fore, the model has been applied to maritime accident data, where insufficient data has a negative impact on the prediction result. In this case, it has been used to predict maritime accidents. The most commonly used grey system prediction model is GM (1,1).

Exponential smoothing prediction method:

Using the exponential smoothing prediction method, we can obtain information about the maritime transportation system itself and identify its dynamic variation while avoiding many factors affecting the system. This is formally known as non-factor prediction but is actually full-factor prediction. The advantage of this method is that as long as the previous time period and the actual prediction value are known, the predicted value of the next period can be calculated. This can save a significant amount time spent processing data and reduce the amount of data that must be stored. It also compensates for the lack of historical maritime accident data.

The exponential smoothing prediction method follows the principle of focusing on recent numbers rather than previous numbers, assigning the most recent observations the greatest weight while assigning other prediction data (or actual values) decreased weight. Therefore, the predictive value not only reflects the latest information but also reflects historical data. This has the result of reducing the influence of historical data on maritime accident prediction, causing predictions to be more realistic.

In cases where maritime accident data present obvious linear lifting characteristics, it is possible to achieve better results by establishing a quadratic exponential smoothing trend prediction model. The three-exponential smoothing prediction model applies to situations in which the data present a quadratic trend.

Scenario analysis: (for disaster management)

Scenario analysis is an analysis method which forming future scenario by using some means, such as hypothesis, forecast, simulation, and analyzing the influence of future scenario to the target. It is a technical method of analyzing the developing process of scenario. As a method for predicting the future situation, scenario analysis is different from traditional predicting methods which are based on statistical analysis. Instead, it works out various possible solutions through detailed and rigid reasoning and description of the future on the basis of various key assumptions of fundamental economic, industrial or technical evolutions. The biggest advantage of scenario analysis is that it can enable administrators to find out some

changing trends of the future and avoid two most common errors in the decision-making: overestimation and underestimation of future changes and their influences.

Scenario analysts hold that scenario consists of four elements: end state, plot/story, driving force and logic, which develops in many ways of their own and interrelates with one another so that they may produce three kinds of different competition scenarios—emergent scenario, unconstrained ‘‘what-if’’ scenario and constrained ‘‘what-if’’ scenario.

Scenario analysts argue that the future is full of uncertainties, but the uncertain features determine that some certain contents can be predictable. Two main factors account for the future uncertainty: one is essential in the system of the interrelating and co-influencing factors which affect the development and trend of an event, but essentially unpredictable; the other is the lack of information and understanding of the system. If the predictable contents can be separated from those unpredictable with scientific and systematic methods, then the predictable and regular elements that affect the system will be better known and the uncertainty will be remarkably reduced and some developing trends will be predicted. In addition, the following factors also make the external environment predictable: some of its trends can be found when an event was closely observed; once things start developing, inertia forces will sustain their development for some continuous period of time; some events always co-occur with other events; there may be cause–effect relationship between one event and another, both of which may share correlation of causal factors, space or time contacts or pattern similarity.

The application of scenario analysis:

Scenario analysis was first applied in military in late 1940s. The defense analysts of Rand Corporation described and analyzed a variety of possible scenarios of nuclear attack to the Unite State by hostile countries, symbolizing the beginning of the application of scenario analysis; it was reused and developed by the Rand Corporation in the 1970s for the consultation of the Department of Defense of the United States as regard to the missile defense plans; during 1970–1980s, the American Shell Oil Company successfully predicted the oil crisis by using scenario analysis for several times, which promoted the company from the 6th to the 2nd largest oil company in the world in the year of 1973; in addition, many companies such as the German BASF Company, Mercedes-Benz Company and Boeing in the United States began to use the method of scenario analysis when making strategic plans; the government of the white people in South Africa applied scenario analysis to analyze the racial segregation and all possible options for peaceful revolution and finally solved it successfully. In recent years, the scenario analysis has been widely employed in the research on the fields such as industrial development, resources and environment changes and natural disaster prevention and so on.

The method of scenario analysis of marine disasters:

There are a variety of methods to predict future events by using the theory of scenario analysis. At present, most international organizations and companies are using the analysis steps proposed by Stanford Research Institute. The analysis steps are as follows:

Step-1: make clear about the decision focus, which is difficult to accomplish due to its importance and uncertainty.

Step-2: decide on the key factors that influence the decision making.

Step-3: analysis the external driving forces which directly influence the decision.

Step-4: choose the uncertain axial surfaces so as to classify comprehensively the driving forces in accordance with their levels of impact and degrees of uncertainty and then choose 2-3 axial surfaces (related dimension facets) among high impact level and high uncertain driver groups as the main body structure of the scenario content.

Step-5: develop the logics of scenario, set up 2-3 possible scenarios which include all focuses according to the developing scenario logic of the context of the subject and try to describe all the possible details of various scenarios.

Step-6: analyze scenario contents using the character consistency of audition test scenarios and observation of the possible reaction of each role in the environment in the future so as to make sound managements of all possible emergencies.

Event tree analysis: (for marine accidents prediction)

Event Tree is a constructive and modelling way of detecting and analyzing the different events of pragmatic accident possibilities with safety features following an initial event. The Event Tree Analysis (ETA) shows the sequences of events related to success or failure of a management. Various kinds of possibilities and sometimes probabilities are shown on a tree structure called Event Tree (ET). First an Initial Event (IE) is predicted and then it is determined whether this will make any further danger and how much or other variables are sufficient to control the mishap.

Analytical hierarchical process (AHP) based approach:(vulnerability index)

The intensification of both natural and human-induced climate change impacts demands a more objective perspective towards recognizing the critical vulnerabilities associated with the occurrence of natural hazards along the coastal regions. Some of the appropriate climate changes and their impacts include sea-level rise, the increase in the frequency and intensity of storms, coastal inundation associated with increased precipitation and shoreline erosion. These vulnerable coastal regions face serious threats from the developmental activities that are carried out in these areas. Socio-economic pressures, intensive human alteration, and

over-exploitation of coastal environments have reduced the resilience of the coastal system to a great extent, making it more susceptible to damage by natural calamities.

Understanding coastal hazards and managing risk exposure are essential pre-requisites for deci- sion making for mitigating the impact of potential disasters and ensuring sustainable coastal zone management. The evaluation of the hazard potential of the natural as well as anthropogenic event involves identification as well as quantification of factors that contribute to risk and vulnerability. Vulnerability is defined as the degree to which a system is likely to experience harm by exposing to a hazard. In the present context, the coastal vulnerability can be described as the susceptibility of the natural system and coastal societies (persons, groups or communities) to coastal hazards. Therefore, vulnerability is a composite of multiple interacting factors emerging from the social, economic and environmental spheres of an exposed unit.

An efficient way of quantifying vulnerability is by constructing a vulnerability index based on several sets of indicators that result in the vulnerability of a coastal region. Formal vulnerability indices are an essential step towards realistic assessment of risk as they provide consistent and rapid characterizations across a various scale. However, coastal vulnerability assessments to climate change are mainly centered on sea-level rise and less focused on other climate change scenarios and even less on socio-economic changes. This is restricting, as with the increase in human-induced climate change, such assessments need to address both climatic and non-climatic drivers. However, considering that climate change impacts and risks are very dependent on regional geo- graphical features, climate and socio-economic conditions, it is desirable that impact studies should be performed at local or at the regional level. Hence, over a period, there is an urgent necessity for suitable techniques for assessing vulnerability on a regional basis so that areas susceptible to various natural hazards can be identified within a coastal region and priorities can be set to ensure management on a finer scale.

The Analytic Hierarchy Process (AHP) or the Saaty method was mainly developed to calculate the weighting factors, selecting the best alternatives by taking into consideration both the objective and subjective fac- tors. This is achieved by constructing a preference matrix, where all identified relevant criteria are compared against each other with reproducible preference factors.

Operational Storm Surge Prediction:

In India, the study of the numerical storm surge prediction was pioneered by Das (1972). Subsequently several workers attempted the prediction of storm surges in the Bay of Bengal and Arabian Sea.

Operational numerical storm surge prediction models have been developed and are being routinely used for several coastal regions of the world such as North Sea, the Gulf of Mexico and Atlantic coast, Hong Kong, China etc.

Most of the operational models require large computing power. Therefore for routine forecasting of storm surges, especially providing multiple forecast scenarios, the models cannot be used in the absence of access to sufficient computing facility. To overcome this difficulty, most of the forecasting offices use the nomogram methods of Jelesnianski (1972) for prediction of storm surges associated with tropical cyclones. The nomograms have been developed from modelling studies of a large number of bathymetries and approach angles.

Prediction of Tropical Cyclone Tracks:

Prediction of the tracks of tropical cyclones is one of the most difficult and challenging problems of current international tropical cyclone research. The focal point of this research is to minimize the forecast errors to the extent that the forecast can be used effectively for issuing appropriate warnings for disaster management purposes. The level of importance is reflected in the large number of forecast techniques that have been developed using wide range of approaches, from empirical through statistical and dynamical. However, due to complexities of the problem, no single technique has proven to have outstanding performance relative to the others.

Strong winds, heavy and torrential rains and worst of all, the cumulative effect of storm surges and astronomical tides are the three major elements of tropical cyclone disaster. In the Indian region, the storm surge is the most devastating element. Much of this is contributed by extremely shallow coastal bathymetry of certain segments of the east coast of India and Bangladesh. The track prediction of tropical cyclones in this region is therefore crucial especially for the purpose of storm surge forecasting as a minor deviation of the landfall point may generate altogether different peak surge height. Storm surge prediction is intimately related to the intensity of the cyclone in terms of maximum sustained surface winds and minimum sea level pressure. Fortunately, there has been good progress towards the development of storm surge prediction models in the Indian region. Das (1972) did the pioneering work in this field. Subsequently, there were a large number of such studies in the region.

Track prediction techniques:

The tropical cyclone track prediction techniques are grouped into the following two categories: Subjective and Deterministic. Synoptic, Satellite, and Radar methods are examples of Subjective techniques. Statistical and dynamical methods are broadly categorized as objective or Deterministic techniques.

Oil spill emergency response:

To mitigate environmental damage and harm to human health, the International Maritime Organization adopted the International Convention on Oil Pollution Preparedness, Response, and Co-operation (OPRC) in 1990. The OPRC promoted an effective international mechanism for oil spill prevention, response, and cooperation. Accordingly, many countries have established and updated their respective marine oil spill contingency plans (OSCPs) to clarify responsibilities and operations in the oil spill emergency response process.

Some examples of OSCPs include the Emergency Contingency Plan for National Major Marine Oil Spills in China (Ministry of Transport of China, 2018), Marine OSCP in the USA (Maine Department of Environmental Protection, 2011) and Environmental Emergency Response Planning in Denmark (The Ministry of Environment and Food of Denmark and the Danish Environmental Protection Agency, 2016). Various similar OSCPs have also been generated and substantially updated by the United Kingdom (Maritime and Coastguard Agency, 2017), Norway (The Norwegian Coastal Administration, 2015), Ireland (Irish Coast Guard, 2013), India (Ministry of Defence, 2015), and Australia (Department of Transport of Western Australia, 2015).

An OSCP refers to a set of instructions that outline the steps to be taken before, during, and after an emergency. In general, a complete OSCP includes four components, namely risk assessment, strategic policy, operational procedures, and information directory. The effectiveness of an OSCP depends on the rationality of its formulation and the feasibility of its implementation.

The feasibility of an OSCP, that is, the probability of its successful implementation, depends on many factors, such as the properties of the oil spill, organizations involved and the cooperation among them, response strategy, and available resources and information. Among these factors, information is the most critical factor. However, in actual practice, most of the information used in the emergency response process is preliminary and inaccurate. Sometimes, the required information is unavailable. This considerably decreases the effectiveness of OSCP execution and makes it impossible to achieve the expected result. Therefore, understanding the impact of the availability and accuracy of the required information on the successful implementation of an OSCP is essential.

Conceptualization of the oil spill emergency response process

Process description:

According to the International Tanker Owners Pollution Federation (ITOPF),2014 the response steps include establishing notification routes, estimating oil spill trajectories, determining the responsibilities of response organizations and obtaining their contact details, arranging emergency resources, and cleanup operations.

The complete emergency response process can be generalized into four phases that can be explained as follows:

1. Accident reporting and preliminary response phase:

Immediately after the oil spill accident occurs, the ship captain should report the accident to the local maritime safety administration (MSA). The local MSA should gather information from the monitoring and tracking facilities, examine the response suggestions from the decision support system (DSS), and provide recommendations to the ship crew on how to deal with the accident. Accordingly, the ship captain should decide the preliminary responses.

2. Risk assessment and mobilization phase

In this phase, the local MSA should obtain real-time reports from the monitoring facilities, accident vessel, and on-site MSA staff regarding the development of the oil spill. The risks of the spill should be assessed with the aid of a specialized consultant and the DSS. The MSA should also liaison with the collaborating departments and exchange information regarding the accident and response resources. The risk should be continuously assessed until the contingency plan is generated. Finally, the MSA should also provide real-time response orders to the cleanup team and follow the cleanup progress.

3. Contingency plan generation and resource distribution phase

This phase mainly consists of the dynamic assessment of the risks and real-time resource distribution. The local MSA commander should continuously receive real-time reports from the on-site MSA staff and the ship's captain, communicate information to the DSS and collaborating agencies, continuously evaluate the contingency plan, order the MSA staff to inform the cleanup team regarding resource distribution, and obtain information from the cleanup team regarding the functionality of the emergency response resources.

4. Contingency plan implementation and performance evaluation phase

In this phase, the local MSA commander should continue to monitor real-time information regarding the oil spill obtained from the ship's captain and on-site MSA staff. The MSA should also make full use of the DSS to support the implementation of the contingency plan and evaluate its effectiveness. It should also have real-time communication with the cleanup team (through the MSA staff) regarding the control and progression of the contingency plan.

Information requirements:

There are eight tasks in the four phases of the oil spill emergency response process. The eight tasks have the following specific information requirements:

1. Accident reporting:

Information from multiple sources: Accident location, oil leak speed, quantity and area of spilled oil, oil spill type, oil film thickness, tide velocity and direction, and wind speed and direction.

Information from the shipping company: Ship name, ship nationality, number of people on board, accident cause, time, and visibility.

2. Preliminary response:

Information from multiple sources: Accident location, cleanup progress, tide velocity and direction, and wind speed and direction.

Information from the shipping company: Response suggestions from the MSA, shipping company, and cleanup institution.

3. Risk assessment:

Information from the shipping company: Change in oil quantity and area contaminated by the spilled oil, dynamic information regarding the ship, and emergency measures adopted by the ship captain.

Information from multiple sources: Sea conditions and weather in the accident area.

Information from the MSA: Trend of the spilled oil, the severity of the spilled oil, suggestions for emergency measures.

4. Mobilization

Information from the cleanup institution: Information regarding the ships recovering the floating oil, deployment of oil-containment booms, treatment of the oil–water mixture, facilitation vessel, oil barge, and oil boom.

Information from multiple sources: Communication of information among collaborative departments.

Information from the MSA: Information regarding response resources.

5. Contingency plan generation

Information from multiple sources: Information regarding the ship, similar accidents, environmental sensitivity analysis, the severity of the spilled oil, and the sea conditions and weather in the accident area.

Information from the MSA: The variation in the trend of the spilled oil and communicated information among collaborative departments.

6. Resource distribution

Information from the MSA: The number of emergency response personnel and their status, response resources for the situation, change in the quantity and area of the spilled oil, storage of response equipment, estimated cleanup time, quantity of spilled oil eliminated, and progress of the emergency response task.

Information from multiple sources: Sea conditions and weather in the accident area.

7. Contingency plan implementation

Information from the shipping company: Real-time information regarding the ship and the measures adopted by the ship.

Information from multiple sources: Sea conditions and weather in the accident area and change in the quantity and area of the spilled oil.

Information from the MSA: Estimated cleanup time, quantity of the spilled oil eliminated, and progress of the contingency plan.

8. Performance evaluation

Information from the MSA: Resource consumption situation, cleanup cost and effectiveness, and environmental damage.

Information from multiple sources: Real-time assessment of the response performance and real-time adjustment of the contingency plan.

Sea ice disaster risk assessment index system:

Human activities in cold waters started in the middle of the last century. In Canada and some European countries, icebreakers are widely used and large-span bridges and light- houses have been constructed. Many oil platforms and supporting facilities (such as wind turbine foundation) as well as other marine engineering structures have been constructed in various ice fields. The force of sea ice applied on these marine structures in ice fields is much greater than other environmental loads. Sea ice in China is mainly distributed in the Bohai Sea and the northern Huanghai Sea. Sea ice may overturn offshore platforms, destroy ships and marine engineering facilities, and hinder sailing and sea ice disasters which may lead to significant economic losses in coastal and beach aquaculture.

In the winter of 1969, the entire Bohai Sea was covered by sea ice with the average thickness of 20–30 cm. The maximum ice thickness reached 60 cm. The sea ice disaster overturned the Living and Drilling Platform and led to the huge economic loss in China. In 1977, the beacon tower drilling well was pushed down by sea ice. On January 28, 2000, JZ20-2 MSW Platform was subjected to violent steady-state vibration due to the influence of flat ice, thus

resulting in the fatigue fracture of ventilation pipelines of the well, natural gas leakage, and platform shutdown. The sea ice disaster during the winter from 2009 to 2010 seriously impacted the economic development in coastal areas and resulted in huge losses. In coastal provinces and municipalities (Liaoning, Hebei, and Shandong Provinces, and Tianjin), the sea ice disaster affected 61,000 personnel, 7157 ships, and 296 frozen ports and piers, and the damaged aquaculture area reached 207,870 hm. Direct economic losses caused by the disaster reached ¥ 6.318 billion.

Sea ice disaster prevention and mitigation measures have been gradually changed from the physical ocean process-oriented ice element observation in the 1960s to the disaster management process-oriented sea ice risk monitoring. Therefore, the risk assessment of sea ice disasters becomes important. A series of ice risk assessment standards and specifications have been developed based on the main ice factors. According to the ship disasters caused by sea ice, some scholars determined three risk levels (low risk level, medium risk level, and high risk level) based on the three sea ice parameters (ice thickness, ice concentration, and ice phase). While some scholars assessed risks and vulnerability levels of sea ice disasters of the coastal zones with multiple indicators. Based on the comprehensive consideration of disaster factors and the classification, distribution, vulnerability, and disaster prevention and mitigation ability of disaster-bearing bodies, some analyzed the possibility and uncertainty of sea ice disasters and proposed the theoretical basis for the assessment and classification of sea ice disaster risks, and gave the assessment and classification methods of sea ice disaster risks with the disaster factor index system.

Sea ice disaster assessment of marine engineering is more complex than that of other natural disasters. Firstly, due to the influences of complex environmental conditions including meteorological and hydrological events, the thermodynamic characteristics such as generation, disappearance, movement, and migration of sea ice are unstable and uncertain. Sea ice parameters including ice type, ice thickness, ice velocity, ice concentration, and outer edge are closely related to each other. Therefore, it is difficult to obtain objective descriptions of sea ice. Secondly, the diversity of marine engineering in ice areas and the discrepancy of ice material lead to the diversity of sea ice disasters and risk patterns. Therefore, it is necessary to provide proper theoretical basis for exploring structure–disaster correlation and structural characteristics. The risk assessment of sea ice disasters involves natural elements, engineering factors, and management factors. At present, existing sea ice study results cannot meet the demands of sea ice monitoring and disaster prevention.

Existing marine engineering mainly includes nuclear power projects, oil and gas exploration projects, and port projects. Sea ice disaster risks of marine engineering exist in the whole life cycle including the structural design phase, construction phase, and operation phase. The selection of project location and development mode in the demonstration phase, the determination phase in defense facilities and environmental conditions in the design stage,

the structural difference caused by the construction limitation in the construction phase, and the accidents in the production stage may lead to various risks.

Principles for establishing the risk assessment index system:

The assessment index system of sea ice disaster risks should contain the main features of the actual influences of sea ice disasters. The assessment indices should reflect the causes, process, and consequences of sea ice disasters. The establishment process of the assessment index system should follow the principles of importance, practicality, and flexibility for the purpose of quantitative calculation.

Many indices of sea ice disaster risks are qualitative indices, such as the modifications in design standards and emergency defense measures, and should be converted into a certain value through a suitable quantitative method in order to reflect the safety of marine engineering.

The assessment index system should be simple and clear and has a clear hierarchy for the convenience of data collection and analysis. The system should reflect the situation of marine projects with appropriate indices.

In order to facilitate the comparison of various projects and different structural forms, all the indices of the index system should be quantified and the consistent assessment criteria should be adopted for different structures.

Establishment of the risk assessment index system:

Based on the analysis of all the sea ice disaster risk causes and previous results on the quantification methods of the risks of marine engineering, the risk assessment indices are divided into two types (accident probability and consequence severity) to establish the risk assessment system of sea ice disasters and the index hierarchy. The case analysis method and expert evaluation method are used to verify the risk assessment criteria based on the quantitative principle for the comprehensive assessment of the risk of sea ice disasters. The key factors in the risk assessment index system are selected according to the deductive and inductive methods to solve complex problems.

Port investments on coastal and marine disasters prevention:

Academic work on the prevention measures is relatively rare, however. In this case, one should note that damages caused by coastal and marine natural disasters can be prevented or alleviated if sufficient investments are made in a timely manner. The investments may include: building storm-surge barriers and promoting beach nourishments, raising the height of roads (causeways), improving groins, dykes, levees and seawalls, strengthening a port's storm water system, and improving potable and wastewater emergency response and maintenance for more common and more extensive coastal flooding in vulnerable areas.

These investments are in general lumpy and irreversible, and can be quite costly and time-consuming. For example, after the 1953 North Sea Flood, the Netherlands started the Delta Works to protect a large area of land around the Rhine–Meuse–Scheldt delta. The Works were made up of dams, sluices, locks, dykes, levees and storm surge barriers. The project was declared finished in 1997. Nevertheless, in 2008 the Delta Works Commission made 12 recommendations to the Dutch Cabinet, and called for an additional investment of 100 billion Euros over the next 100 years due to increased risks associated with climate change and sea level rise. In 1978 the construction of the Saint Petersburg Flood Prevention Facility Complex was initiated, aiming to protect the city from storm surges. This project was completed in 2011, costing US$3.85 billion (Reuters, 2011). The huge costs and lengthy durations call for careful planning and evaluation of these projects, so that invest- ments can be made in a timely and efficient manner.

Despite the wide range of investment options and extensive engineering knowledge, port investments on the prevention of coastal and marine disasters remain a challenging decision that involves great complexities. A major challenge is the uncertainty regarding the exact values brought by those projects. In most cases, such investments will render benefits only in the case of disasters (while providing little value otherwise). Such an uncertainty has led to somewhat arbitrary decisions in practice, which are also influenced by other considerations such as inter-port competition, operation revenues and job creations. Port facilities at Gulfport, Mississippi, were severely damaged by hurricane Katrina in 2005. Soon afterwards, US$570 million from the Federal Community Development and Block Grant was allocated to help in Gulfport's restoration. Somewhat ironically, only one day after hurricane Sandy hit New York City, the port announced that it would not raise its West Pier by 25 feet as recommended earlier. The stated reason was that building up that high would delay the port's ability to welcome new port tenants – instead, the focus should be shifted from disaster recovery to better serving current tenants, attracting new business and creating additional jobs.

Another challenge is related to the allocation of investment responsibilities. Many ports are operated under the ''landlord port'' model, under which a port authority owns basic infrastructure, land and access and protection assets and leases them out, mostly on a long-term concession basis, to private tenants who are usually expected to finance their own superstructure and heavy equipment. However, the responsibilities for investing disaster prevention are usually not clearly (if at all) specified in concession agreements. The investment responsibilities among port stakeholders in paying the (substantial) investment bills are usually not clearly defined, not helped by the substantial uncertainties associated with the likelihood and severity of the occurrence of such disasters (notably with the impacts of climate change), and the increasing complexity in the port community following the wave of neoliberal management reforms over the past decades.

Unsurprisingly, this sometimes leads to finger pointing between the port authority and its tenants (e.g., terminal operators, owners of other businesses on port land such as warehouse keepers, logistics service providers, owners of commercial facilities such as hotels, car parks and shipyards). In many cases, there is no clear government policy guidance on this issue either. As a result, investments are often delayed as each side may wish to free-ride the other side's investment. It should be noted, nevertheless, that delay of investments is not necessarily bad per se. It is well known that in the presence of uncertainty, it might be better to postpone irreversible investments until more information is available. Thus, there may exist optimal timing for environmental investments and policies.

In short, port investment on the coastal and marine disasters prevention is a complex decision, involving multiple issues such as the uncertainty of disaster occurrence and hence the value of projects, investment responsibility allocation and efforts coordination among stakeholders, and investment timing. There has been no clear policy or managerial guidance on such questions as who should pay for investments, how much should be invested, and whether government intervention is needed.

Maritime Disaster management in India:

As emphasized by Gibbs (2009), marine policymakers are facing increasing calls to consider the resilience of communities that rely on coastal and marine ecosystem goods and services, and the resilience of natural systems themselves. These calls are in response to increasing threats to coastal communities from external factors such as coastal hazards, possibly associated with climate change, and drivers that act to change local and regional economic conditions leading to changes in employment and inequality. While the global coast is trying to accommodate high concentration of populations, the government machineries are struggling to control, regulate and monitor the activities including those in several developed countries. Due to dynamic nature of the coast, there is no established method to be recommended for the global coast to uniformly demarcate the coastal zone and its appropriate management. Under this circumstance, India is making various attempts to manage its coastal zone by introducing regulatory measures during the last two decades and more specifically from 1991 by introducing the Coastal Regulation Zones (CRZ) by the Ministry of Environment and Forests (MoEF). This top-down regulatory approach has faced several constraints towards its implementation which has lead to dilution of its vigour in order to satisfy the stakeholders. However, major disasters like Orissa Cyclone in 1999, Indian Ocean tsunami in 2004 and floods in 2005 at both east and west coast of India reminded the importance of strict coastal regulations like CRZ 1991 after witnessing huge life and economic losses.

Performance Audit of Disaster Preparedness in India has strongly criticised the MoEF for not enforcing the CRZ notification effectively, resulting in extensive destruction in the coastal areas due to industrial expansion (Controller & Auditor General of India, 2013). Although,

the Government of India has introduced Disaster Management (DM) Act in 2005 and started the installation of warning system for tsunami and cyclone, yet, considering the cumulative effects of devastations by disasters and the improper implementation of CRZ there was an urgent need to revise the regulatory approaches based on scientific merits and also taking in to account peoples' aspirations which lead to the issuance of revision of CRZ notification in 2011.

Consequently, the CRZ Notification of 1991 was replaced by a new set of coastal zone regulation in 2011 (CRZ notification, 2011) which is considered to be more participatory in nature, however, not before of being amended by at least 25 times in consideration of requests made by various stake- holders including provincial governments, NGOs etc. Such requests were often backed by the legal constraints of developing the coast and mostly judged only from economical perspectives. While, it is also true that the country has made significant progress through Initiatives on coastal ecosystems management, national programmes on Marine Satellite Remote Sensing Service (MARSIS) and training and capacity development on Integrated Coastal Zone Management (ICZM). For example, over the last decade, the country has used satellite technology very effectively; especially in guiding the fishing villages about the Potential Fishing Zone (PFZ), development of village resource centre and many such programmes. Yet, the country's policy towards managing its coast was largely restrictive without addressing the need and requirements of local communities living across the coast. While one hand, enforcement of the regulatory provisions ended up in serious controversies, on the other, the idea of sustainable development of coast in the face of natural disasters & climate change was not adequately addressed. Under this backdrop, this paper attempts to critically review the progress of activities made in India in terms of coastal management and Disaster Risk Reduction (DRR) in coastal areas including future challenges by broadly focusing on entire India's coast with specific attention to three maritime states i.e. Tamil Nadu in the south, Maharashtra in the west (in specific the Greater Mumbai Region) and West Bengal in the east.

Regulatory approaches in coastal management

The Coastal Regulation Zone (CRZ) notification, 1991

The Coastal Regulation Zone (CRZ) notification was issued in the year 1991 by the Ministry of Environment & Forests (MoEF) under the Environmental Protection Act of 1986. Although, prior to this notification, India has several legisla- tions / Acts and rules to manage the activities along the coast, this notification serves as the first comprehensive policy guidelines for managing its huge coastal area. The CRZ notification of 1991 broadly demarcated a physical boundary of 500 m from the High Tide Line (HTL) towards land and further four zones were specified, which lists prohibited and permissible activities for implementation. Entire country's coastal zone has been classified in to four zones namely CRZ – I (ecologically sensitive intertidal area where no future developmental activities are

permitted), CRZ-II (an already developed urban coastal area), CRZ-III (an undeveloped rural coast where certain activities are permitted) and CRZ – IV (a special category includes Island coasts including the entire Andaman & Nicobar and Lakshadweep since the environ- mental issues are very complex in this zone). Although there are restrictions listed out but it also says that the clearance can be given for the activities, which absolutely require waterfront and foreshore facilities after special considerations approved by the Ministry of Environment and Forests.

Implementation challenges for CRZ (1991)

Adopting a top-down approach for implementation, the CRZ 1991 notification faced challenges of rapidly concentrated population growth and already established settlements includ- ing industrial developments. Several Committees such as B.B. Vohra Committee (1992), N. Balakrishnan Nair Committee (1996), Arcot Ramachandran Committee (1996), Saldanha Committees (1996 & 1997), D. M. Sukuthankar Committee (2000) and others have recommended for relaxation on CRZ (1991) and subsequently the MoEF has attempted to amend the following:

1. Promotion of coastal tourism by reducing the No Development Zone (NDZ) area all along the tidal water bodies from 100 m to 50 m. But due to litigation this amendment was quashed and status quo maintained by the MoEF,
2. Ministry of Petroleum and Natural Gas was granted per- mission to store petroleum products in CRZ area,
3. Permission for withdrawal of groundwater in CRZ area from 0 to 200 m only by manual method,
4. Mining of sand in CRZ area for a short period of 1–2 years, and
5. Construction of dwelling units in CRZ-III for bonafide traditional settlers subject to the condition that the area is adequately protected with sea-wall, the proposed con- struction is on the landward side of the existing buildings and the construction shall not be more than 100 sq m with 4.5 m height (MoEF, 2005).

The above relaxations have been made considering that CRZ boundary was not made through scientific methods since the designated 500 m CRZ boundary was empirically based on old Survey of India (SOI) topographical maps of 1970s, which lost its scientific validity over the years. More so, the boundary of 500 m from HTL was fixed in an arbitrary manner without the considerations of coastal geomorphology, land elevation, tidal amplitude etc. which has widespread geographic variation all across the Indian coast. The CRZ notification lists lagoons as tidal influenced water bodies but the water part of the lagoon is not covered in the notification and hence constituted N. Balakrishnan Nair committee in 1996 to study and recommend for Kerala coast. In 2000 the MoEF has constituted D. M. Sukuthankar Committee as a first time to formulate National Coastal Zone Policy of India (NCZP) by studying the coastal zone issues in the country including the recommendations of the Centre

for Earth Science Studies (CESS) in Trivandrum. The CESS has recommended that the coastal zone should be demarcated based on risk perspective by taking in to consideration of shoreline erosion and flooding. Also listed out areas / features that have to be protected and the high-risk zone and low risk zone in the coastal areas including the various developmental activities, which can be taken up in low risk and high risk areas. Additionally, the CESS has suggested the environmental clearance as a mandatory procedure to be adopted for such developmental activities. However, this has not been taken up by the MoEF in 2000. Finally, the regulatory approach of CRZ 1991 has not been implemented in the field and its impacts can be witnessed in the aftermath of 2004 Tsunami and 2005 Mumbai floods.

The Mumbai floods of 2005 highlighted the gaps in the CRZ notification of 1991 and its implementation challenges in terms of coordination with the state government and other stakeholders. The Coastal Zone Management Plan of 1995 for Maharashtra failed to designate Mangroves as CRZ-I and hence construction were allowed on the pretext of slum redevelopment and garbage dumps along the coast. In addition to this, the development of Bandra Kural Complex and Andheri on reclaimed land narrowed the Mithi River's opening into the sea. In a coastal city like Mumbai, wetlands, wastelands, saltpan lands and mangroves act as natural barriers against tidal movements. Dumping of the construction waste, sewage and industrial effluents in these areas lead to choking of the wetlands and creeks (Ministry of Environment and Forests, 2010a, b). As a considerable part of Mumbai is below high tide level, inadequate storm water drainage in the project areas and the exit points to the sea choked, the cloud burst on 26th July 2005 caused extensive flooding in the low lying areas of the city (Concerned Citizens' Commission draft report). On the other hand the 1991 CRZ notification was somewhat successful in controlling the boom of coastal aquaculture but was plagued by litigations from NGOs and other CBOs which at a later stage triggered the Coastal Aquaculture Authority Act in 2005. Even though coastal tourism and aqua- culture are considered to be more revenue generating sources but there is no direct benefit to the coastal environments. Majority of the stakeholders especially local fishermen communities, NGOs and environmentalists have considered both these revenue generating sources are long term potential threats to environmental quality and hence severely opposed towards their further expansion.

History of advocacy regarding Integrated Coastal Zone Management (ICZM) in India:

At the same time when the CRZ 1991 notification was facing several challenges towards its implementation, a strong advo- cacy on Integrated Coastal Zone Management (ICZM) was initiated in the country, with an intention of incorporating community participation in planning and management of the coast for the first time in the country. At that time the Council of the Organization for Economic Cooperation and Development (OCED) has adopted a series of recommendations towards coastal zone management by incorporating environmental and socio-economic aspects and also the Intergovernmental Oceanographic Commission (IOC) had convened its Second International Conference on Oceanography:

Toward Sustainable use of Oceans and Coastal Zones and re-affirmed the long-term commitment of the international marine science community in achieving sustainability in ocean use. In India, efforts were made to do stakeholders management in order to participate in CRZ 1991 implementation and to realize about the importance of Integrated Coastal Zone Management (ICZM) through train- ing and capacity building in different levels such as Integrated Coastal Zone Management Training (ICZOMAT) supported by the UK Department for International Development (UK- DFID) and coordinated by the MoEF. Several decision- makers in the country were trained through this programme on the importance of ICZM by providing field training in both India and UK coasts. While conducting ICZM training and stakeholders management programs it was noted that CRZ notification 1991 has also affected in putting shoreline erosion control measures along the erosion prone coasts. Strong recommendations were made for community participation in coastal management including the implementation of CRZ 1991. At this stage the MoEF came forward to revise the CRZ 1991 by constituting an expert committee under the chairmanship of M. S. Swaminathan in 2004 to carry out a comprehensive review on CRZ 1991 and its subsequent amendments. Prior to this an expert committee under the chairmanship of Arcot Ramachandran had come out with recommendations with details on zoning of coastal waters starting from LTL up to territorial waters as Ocean Regulation Zone (ORZ) I to IV. But unfortunately they were never taken up.

By that time India's space technology has gained momentum and the end user organizations were capable of monitoring the coastal ecosystems and environments more precisely using temporal multispectral remote sensing data and very ambitious national programmes such as Marine Remote Sensing Satellite Information Services (MARSIS), mapping of coastal wetlands, coral reefs, shoreline change etc. have been carried out to support ICZM. Spatial details derived from remote sensing data helped to quantify the coastal resources apart from understanding the underlying causes for degradation and to support decision-making. Remote sensing technology has really proved its capability up to the level of demarcating Potential Fishing Zone (PFZ) using the Sea Surface Temperature (SST) data from AVHRR thermal sensors together with primary productivity information in coastal waters to forecast the PFZ information to about 500 fishing villages all over the country. 1990–2000 is an important decade for India with advancement in remote sensing data in coastal ocean applications, which helped in updating earlier data pertaining to coastal ecosystems like mangroves, coral reefs etc. based on 1970's Survey of India (SOI) topographical maps and other field based surveys. With the improvements in spatial and spectral resolutions of remote sensing satellite helped consider- ably to understand the coastal ecosystems status including the underlying causes for degradation, coastal land use / cover change-detection, quantifying the pollution level in coastal wa- ters, shoreline changes etc. Additionally, the strong emergence of combined use of spatial information tools like GIS and remote sensing outputs the end users used them extensively as a Decision Support System (DSS) in planning process.

Revision of CRZ (1991) and its revisit in 2011:

M. S. Swaminathan expert committee recommendations were made in the backdrop of the 26th December 2004 Indian Ocean Tsunami. This led to modification in 500 m HTL boundary with coastal vulnerability and set back boundary as detailed below:

- CMZ I : Areas designated as ecologically sensitive,
- CMZ II : Areas identified as Areas of particular Concern such as economically important areas, high population areas and culturally/strategically important areas,
- CMZ-III: All other open areas, including the coastal areas, excluding those areas classified as CMZ-I and CMZ-II, and
- CMZ –IV: Pertains to the Andaman & Nicobar Islands and Lakshadweep Islands.

Due to the variations in terrain, geography, climate etc. all along the Indian coast, the expert committee felt that there is a need of micro-level survey based on technology tools like remote sensing data to enable the listing of coastal assets in greater details. But till the completion of such micro-level surveys, CRZ 1991 notification should be strictly adhered. It was felt more useful by the scientific community in order to manage the coastal areas including the potential threats posed by disasters since the scientific outcomes on tsunami vulnerability and inundation mapping were carried out along east coast have highlighted that the maximum damage was caused within the 500 m from HTL (Krishnamurthy et al. 2014). Several stakeholder felt that unregulated developmental activities on the coast without the strong implementation of CRZ 1991 have resulted in several life loss, damages to properties, environment damages etc. But there were others like local communities especially the fisher folk and their unions who strongly opposed the recommendations made by M. S. Swaminathan expert committee as CMZ did not address the conservation and preservation of the environment and socio- economic needs of coastal communities and traditional fishermen. This lead to constitution of a second expert committee by MoEF under the chairmanship of M. S. Swaminathan and the committee brought out revised recommendations entitled "The Final Frontier" in July 2009 (MoEF, 2009) with the following positive recommendations to satisfy the coastal communities:

I. Inclusion of marine areas including the sea-bed up to 12 nautical miles and intertidal water bodies in the ambit of coastal regulation,
II. Formally recognising the rights of traditional fisher communities in and to coastal spaces, and
III. Expressing concern on the cumulative impacts of ports on the coast, the report called for a comprehensive study on shoreline changes and a mechanism to address and control the excessive proliferation of ports. Importantly, the need for the formulation of a 'ports policy' with an environmental focus has now been accepted by the MoEF.

With these recommendations the revision of CRZ 1991 notification came in July 2009. In order to make this as a bottom-up approach, the MoEF issued a draft notification first in September, 2010 by inviting objections and suggestions from the public by declaring coastal stretches as coastal regulation zones and listing restrictions on industrial activities, operations and processes in the CRZ (MoEF 2010a, b). Finally, CRZ-2011 notification was issued on 6th January, 2011 after careful consideration of the objections and suggestions made by the public and in super session of the original notification issued on 19th February, 1991 (MoEF, 2011). Subsequently, the MoEF conducted series of consultative meetings and public hearing in important coastal cities and invited the participation of stakeholders. The salient feed- back received from various public hearings include the strict implementation of 1991 CRZ notification by changing it as an Act to prevent frequent amendments and also the participation of local community representatives in CRZ implementation initiatives. Also the issues like non representation of local community representatives in State Coastal Zone Management Authority (SCZMA) including the expert committee under M. S. Swaminathan etc. came out and deliberated in various consultative meetings. Finally CRZ 2011 has emerged as a new participatory regulatory measure with more scientific basis for implementation.

Sendai Framework:

The NDMP (National Disaster Management Plan) is consistent with the approaches promoted globally by the United Nations, in particular the Sendai Framework for Disaster Risk Reduction 2015-2030 (hereafter "Sendai Framework") adopted at the Third UN World Conference in Sendai, Japan, on March 18, 2015 (UNISDR 2015a) as the successor instrument to the Hyogo Framework for Action 2005-2015. It is a non-binding agreement, which the signatory nations, including India, will attempt to comply with on a voluntary basis. However, India will make all efforts to contribute to the realization of the global targets by improving the entire disaster management cycle in India by following the recommendations in the Sendai Framework and by adopting globally accepted best practices.

The Sendai Framework was the first international agreement adopted within the context of the post- 2015 development agenda. Two other major international agreements followed it in the same year: the Sustainable Development Goals 2015 – 2030 in September, and the UNCOP21 Climate Change agreement to combat human-induced climate change in December. DRR is a common theme in these three global agreements. The Paris Agreement on global climate change points to the importance of averting, minimizing, and addressing loss and damage associated with the adverse effects of climate change, including extreme weather events and slow onset events, and the role of sustainable development in reducing the risk of loss and damage. These three agreements recognize the desired outcomes in DRR as a product of complex and interconnected social and economic processes, which overlap across the agendas of the three agreements. Intrinsic to sustainable development is DRR and

the building of resilience to disasters. Further, effective disaster risk management contributes to sustainable development.

In the domain of disaster management, the Sendai Framework provides the way forward for the period ending in 2030. There are some major departures in the Sendai Framework:

- For the first time the goals are defined in terms of outcome-based targets instead of focusing on sets of activities and actions.
- It places governments at the center of disaster risk reduction with the framework emphasizing the need to strengthen the disaster risk governance.
- There is significant shift from earlier emphasis on disaster management to addressing disaster risk management itself by focusing on the underlying drivers of risk.
- It places almost equal importance on all kinds of disasters and not only on those arising from natural hazards.
- In addition to social vulnerability, it pays considerable attention to environmental aspects through a strong recognition that the implementation of integrated environmental and natural resource management approaches is needed for disaster reduction
- Disaster risk reduction, more than before, is seen as a policy concern that cuts across many sectors, including health and education

As per the Sendai Framework, in order to reduce disaster risk, there is a need to address existing challenges and prepare for future ones by focusing on monitoring, assessing, and understanding disaster risk and sharing such information. The Sendai Framework notes that it is "urgent and critical to anticipate, plan for and reduce disaster risk" to cope with disaster. It requires the strengthening of disaster risk governance and coordination across various institutions and sectors. It requires the full and meaningful participation of relevant stakeholders at different levels. It is necessary to invest in the economic, social, health, cultural and educational resilience at all levels. It requires investments in research and the use of technology to enhance multi-hazard Early Warning Systems (EWS), preparedness, response, recovery, rehabilitation, and reconstruction.

The four priorities for action under the Sendai Framework are:

1. Understanding disaster risk
2. Strengthening disaster risk governance to manage disaster risk
3. Investing in disaster risk reduction for resilience
4. Enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation and reconstruction

India is a signatory to the Sendai Framework for a 15-year, voluntary, non-binding agreement which recognizes that the State has the primary role to reduce disaster risk but that

responsibility should be shared with other stakeholders including local government, the private sector and other stakeholders. It aims for the "substantial reduction of disaster risk and losses in lives, livelihoods, and health and in the economic, physical, social, cultural, and environmental assets of persons, businesses, communities, and countries." India will make its contribution in achieving the seven global targets set by the Sendai Framework:

1. Substantially reduce global disaster mortality by 2030, aiming to lower the average per 100,000 global mortality rate in the decade 2020–2030 compared to the period 2005– 2015;
2. Substantially reduce the number of affected people globally by 2030, aiming to lower the average global figure per 100,000 in the decade 2020–2030 compared to the period 2005– 2015;
3. Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030;
4. Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030;
5. Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020;
6. Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of the present Framework by 2030;
7. Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to people by 2030.

Integrating Sendai Framework into NDMP:

The NDMP incorporates substantively the approach enunciated in the Sendai Framework and will help the country to meet the goals set in the framework. By 2030, the Sendai Framework aims to achieve substantial reduction of disaster risk and losses in lives, livelihoods, and health and in the economic, physical, social, cultural, and environmental assets of persons, businesses, communities, and countries. The NDMP has been aligned broadly with the goals and priorities set out in the Sendai Framework for DRR. The framework states that to realize this outcome, it is necessary to prevent new and reduce existing disaster risk through the implementation of integrated and inclusive measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience. These measures must cover various sectors such as economic, structural, legal, social, health, cultural, educational, environmental, technological, political, and institutional. The plan includes measures that will be implemented over the short, medium, and long-term more or less over the time horizon of the Sendai Framework ending in 2030.

India Government Departments Involved in Crisis Response:

The Ministry of Home Affairs:

The Ministry of Home Affairs is the nodal point in the Central Government for disaster response and has a Disaster Management Division.

National Disaster Management Authority (NDMA):

The NDMA is the central authority for disaster management in India. NDMA is directed by the Prime Minister and has the assignment for the development of policies, plans and procedures for disaster management (DM) and managing the implementation and for ensuring timely and effectual response to disasters.

National Disaster Response Force (NDRF):

For the purpose of responding to a disaster, both natural and man-made, the Act has mandated the establishment of a National Disaster Response Force (NDRF). The general over site, guidance and direction of this force are entrusted in the NDMA.

The NDRF has been constituted as per the Chapter-VIII of the DM Act 2005 as a specialist response force that can be deployed in a threatening disaster situation or disaster. As per the DM Act, the general superintendence, direction and control of the NDRF shall be vested and exercised by the NDMA. The command and supervision of the NDRF shall vest with the Director General appointed by the Government of India. The NDRF will position its battalions at different locations as required for effective response. NDRF units will maintain close liaison with the designated State Governments and will be available to them in the event of any serious threatening disaster situation. The NDRF is equipped and trained to respond to situations arising out of natural disasters and CBRN emergencies. The NDRF units will also impart basic training to all the stakeholders identified by the State Governments in their respective locations. Further, a National Academy will be set up to provide training for trainers in disaster management and to meet related National and International commitments. Experience in major disasters has clearly shown the need for pre-positioning of some response forces to augment the resources at the State level at crucial locations including some in high altitude regions.

Central Government

The Central Government will take all such actions, as it deems required, for disaster management and will harmonize the activities of all organizations. The Central Ministries and departments will take into regard the suggestions of the state government while determining the many pre-disaster requirements and for making a decision on the measures for prevention and mitigation of disasters.

The Central Government maintains the authority to issue guidelines to NEC, State Governments and SECs to enable or aid in disaster management. Organizations and administrators are obliged to fulfill requests. The Central Government will offer assistance to the State Governments as required or otherwise considered applicable. The Central government will take actions for the implementation of the Armed Forces for disaster management activities. The Central Government will also oversee synchronization with the UN agencies, international organizations and international governments in the field of disaster management. The Ministry of External Affairs in coordination with the Ministry of Home Affairs (MHA) will facilitate external coordination.

Central Ministries and Departments:

All central ministries and departments have a primary function in disaster management with regard to the issues they are responsible for. The nodal ministries and departments of the Government of India will attend to specific disasters as delegated to them.

National Crisis Management Committee (NCMC):

The NCMC is directed by the Cabinet Secretary and is comprised of senior officials of the Government of India. The NCMC directs major crises which have serious or domestic consequences. The NCMC is further supported by the Crisis Management Groups (CMG) of the Central nodal Ministries and aided by NEC when required. The Secretary, of the NDMA can be a member of the committee.

State Governments:

In India the States are responsible for the primary function of coordinating disaster management activities. Institutional systems are implemented at the center, state and district levels to aid States in the effective management of disasters. The Act decrees the state governments take the necessary actions for the formulation of disaster management plans, incorporation of actions for prevention of disasters or mitigation into development expansion plans, adequate provision of funds, establishment of early warning systems (EWS), and to aid the central government and various supporting agencies in diverse aspects of disaster risk reduction (DRR) activities and disaster management. All States are expected to establish a State Disaster Management authority (SDMA) which mirrors the functions of the NDMA at State level.

District Administration:

At the district level, District Disaster Management Authority (DDMAs) will function as the district planning, directing and executing authority for disaster management and will take all measures for the purposes of disaster management in the district in agreement with the

regulations mandated by the National Disaster Management Authority (NDMA) and State Disaster Management Authority (SDMA).

Armed Forces:

The Indian Armed Forces are mandated to assist the civil administration when the circumstances of the disaster are beyond the State's coping capacity. The armed forces are responsible for an important part of the national government's response capacity and are immediate responders in all disasters. The armed forces have traditionally performed a major role in emergency support functions including; communication, search and rescue operations, health and medical facilities, and transportation, especially in the immediate aftermath of a disaster. Airlift and movement of aid to adjacent nations fall within the capabilities and area of the armed forces. Additionally, the armed forces conduct training for trainers and disaster management managers, which include; helicopter insertion, high-altitude rescue, waterman ship and training of paramedics. In reality, the Armed Forces are the backbone of the Government's response during major disasters.

Central Paramilitary Forces (CPMFs):

The Central Paramilitary Forces (CPMFs), which are the Armed Police Forces of the Union, play a critical role in the direct response to disasters in India. The CPMFs implement disaster management capabilities to enable them to respond to disasters that take place in the regions where they are stationed.

State Police Forces and Fire Services:

The state police forces and the fire services are critical first responders to natural and manmade disasters. The state police forces are trained and the fire services have been upgraded to enable multi-hazard rescue capabilities.

Civil Defence and Home Guards:

The Civil Defence and Home Guard are deployed for community preparedness and public awareness during disasters. A mandate of the Civil Defence and the Home Guards defines their roles in the field of disaster management. Additionally, a culture of voluntary reporting to duty stations in the event of a disaster is nationally encouraged.

State Disaster Response Force (SDRF):

States are urged to develop response capabilities utilizing the state's pre-existing resources. States are required to equip and train at least one battalion. States shall have female members of their response battalion to ensure the needs of women and children are met. National Disaster Response Force (NDRF) battalions and their training institutes will aid the states in

meeting the requirements. The States are further urged to incorporate disaster management training in their respective Police Training Colleges and for gazette and non- gazette officers.

U.S. DOD DMHA recent engagements with India:

The U.S. and India have a range of common security interests that include humanitarian assistance, disaster relief, maritime security, counter terrorism, and having an active role building regional partner capacity and maritime domain awareness. This contributes to the overall security in the region.

Exercise Malabar 2018:

Naval engagements, such as the Malabar exercise, improve the cooperation of U.S. and

an Indian maritime force improves capacity. Exercise Malabar is a naval field training exercise aimed at improving maritime relationships and increasing understanding in multinational operations. Malabar 2018 was conducted off the coast of Guam from 7-16 June 2018. At sea portions of the exercise were designed to advance participating nations' military-to-military coordination and capacity. Search and rescue exercises, as well as other operations took place.

Rim of the Pacific (RIMPAC) Exercise:

Rim of the Pacific (RIMPAC) is the largest international maritime exercise. RIMPAC provides training that fosters and sustains cooperative relationships that are critical to ensuring the safety of sea lanes and security in the region. RIMPAC 2018 is an annual exercise in the series that began in 1971. This year's exercise includes forces from India, the U.S., Australia, Brazil, Brunei, Canada, Chile, Colombia, France, Germany, Indonesia, Israel, Japan, Malaysia, Mexico, Netherlands, New Zealand, Peru, the Republic of Korea, the Philippines, Singapore, Sri Lanka, Thailand, Tonga, the United Kingdom, and Vietnam. Participating nations and forces exercised in a wide range of capabilities and demonstrated the range of maritime forces. These capabilities included disaster relief, maritime security operations, sea control, and complex war fighting.

Executive Steering Group Meeting:

Indian navy and U.S. leadership met in Pearl Harbor, HI, in January 2018 to discuss engagements and maritime cooperation between nations in the upcoming year. This executive steering group meeting also serves as the first touch point for planning of the next Exercise Malabar.

Latest events by the Government:

Two day seminar:

The first of its kind, two day National Level Seminar "Maritime Disaster Management in India- Risk to Resilience" has been organised by the Indian Coast Guard at Vigyan Bhawan, New Delhi on 11 and 12 Jan 19 in collaboration with NIDM. The seminar received enthusiastic participation with over 70 delegates from varied agencies related to Disaster Management from all over the country. and different agencies participating at the Seminar. Disaster Management Experts from National Institute of Disaster Management, NDMA, Department of Animal Husbandry, Dairying and Fisheries, State Disaster Management Authorities from Odisha, Andhra Pradesh, Tamil Nadu and Kerala, ISRO, IMD, Headquarters Integrated Defence Staff and NDRF besides the Indian Coast Guard will share their experiences, views and measures to improve preparedness and response towards Maritime Disasters.

Addressing the Disaster experts, Additional Director General VSR Murthy, PTM, TM, Additional Director General Coast Guard highlighted the vulnerabilities of the Indian Coast. He pointed out that last year, the Indian Ocean Region witnessed around 14 depressions and seven cyclones greatest in number since the year 1992.He also brought out the pre-emptive efforts of the Indian Coast Guard and other agencies during the recurrent cyclones which prevented any major loss of lives at sea. He underlined that the risks involved in maritime disasters are manifold as compared to disasters over land and hence Planning, Preparedness and Coordination therefore assume greater importance in the maritime context. Taking a cue from Hon'ble Prime Minister's Ten Point Agenda, he added that no single agency or administration can fulfil all the roles in the Disaster Sequence, hence knowing each other strengths, leveraging technology, domain specific skills, integration with community and learning lessons from past disasterswill provide ways to improve capabilities and preparedness towards managing risks and challenges poised by such disasters.

Delivering the keynote address, Lt Gen NC Marwah, PVSM, AVSM (retd), member NDMA lauded ICG efforts during recent cyclones and the awareness drive by the Indian Coast Guard in the form of Community Integration Programmes for the Coastal Population. He also brought out the need for greater cohesion and optimising resources between armed forces, civil administration and community to improve response and preparedness during Disasters. Smt Rajni SekhriSibal, Additional Sec (Disaster Management), Home and Executive Director NIDM also addressed the participants during the seminar and stressed that despite varied backgrounds, the goal of all agencies was the same and hence calls for a greater coordination between State and Central agencies as well as Armed forces to build a Resilient Disaster Management Mechanism in the country.

One day workshop for stakeholders:

Indian Coast Guard together with the other Maritime Disaster stakeholders held important one-day Maritime disaster response workshop and paper exercise at its District Headquarters No.1 in Porbandar in June 2019. Coast Guard Said, "The one day workshop was attended by delegates from Maritime Disaster stakeholders including Navy, NDRF, state disaster management authorities, fisheries, police, AAI, State health Dept and port authorities apart from Indian Coast Guard officials."

The relevance of such exercise can be understood more as this whole exercise coincided with the formation of Cyclone Vayu in the Arabian Sea. The workshop came handy in, "The preparedness and response plan for impending cyclone was worked out by all agencies together which will be helpful for mitigation of impact of the Cyclone Vayu." said the Coast Guard.

The aim of the exercise was to revalidate the procedures and policies established for responding to Maritime Disaster Contingencies by all maritime stakeholders, added Coast Guard. It was also "to check the readiness and integration of the resource agencies, equipment, communication procedures and effectiveness on training of disaster management response."

The workshop highlighted the need of pre imperative measures and quick coordinated response. The inherent risks associated with maritime disaster and the capacity to proliferate in to other contingencies was also brought out requiring the need for planning and preparedness. It was precipitated that the impact of disasters can be reduced by evolving a Robust Disaster Response Construct, thorough Preparedness and an Efficient Disaster Risk Management to prevent avoidable loss of life and infrastructure. A greater need for integration, collaborative efforts and planning towards Maritime Disaster was released by all agencies.

Disaster Risk Management in Indian Ocean Region (IOR):

The Indian Ocean Region (IOR) is sometimes called the "World's Hazard Belt" as it is prone to disasters, both natural and man-made. Natural disasters under the group of Climatological (cyclones and droughts), Geological and Tectonic (earthquakes and tsunamis) and Hydrological (floods and tidal surges) origins are very common and reoccurring phenomena in the region. According to the UN ESCAP, around 50% of natural disasters occurring in this region are climatogenic and seismogenic in nature.

Manmade disasters arise from anthropogenic hazards, that is, hazards caused by human action or inaction; many mirror natural disasters, yet man has a direct hand in their occurrence, as may be seen in cases of oil spills, fires, leakage of poisonous and destructive substances, illegal dumping, and so on.

The year 2018 and 2019 saw tsunamis and earthquakes in Indonesia, severe droughts in Madagascar, floods and landslides in India, seasonal cyclones in the Islands of the Indian Ocean, and many more calamities. The 2008 Super Cyclone in Myanmar and the December 2004 Indian Ocean earthquake and tsunami will forever be etched in public memory. The loss of lives as well as the damage to property and the natural environment is incalculable. The domino effect on poverty, famine, societal imbalance and other resultant tragedies cannot be discounted.

Management of disaster risks is particularly urgent in the IOR because it is home to small island nation states and developing littoral countries with high population densities, which are hit much harder due to the lack of resources and assets to handle the calamity. Moreover, the region is also witnessing an increasing link of natural disasters to climate change with increasing sea levels and rising water temperatures. Disaster Risk Management (DRM) is therefore an area of collective interest to IORA Member States.

DRM for IORA, revolves around the development of knowledge and capacities by governments, communities and individuals to effectively anticipate, respond to and recover from hazards and emergency situations. The area of work in DRM therefore covers preparation, mitigation and recovery. Governments around the world have committed to take action along the guidelines of the Sendai Framework to reduce vulnerabilities to natural hazards, and IORA is greatly influenced by the same. It must be noted that although the IOR is prone to disasters, it also has the world best institutes to help manage disasters.

IORA recognizes DRM to be a multidisciplinary concept as it involves the participation of a multitude of stakeholders, including national governments, non-governmental organizations, regional and international partners, donors, civil society and the private sector. IORA is therefore in the process of encouraging partnerships between governments and institutions to strengthen this Priority Area through the development of joint training programmes, sharing of experiences and best practices, building capacity and enhancing the technical capabilities within the region. The aim is to facilitate and enhance regional cooperation on preparedness and response strategies to fragile and unpredictable situations.

Under the IORA Action Plan 2017-2021, the development of DRM in IORA has been given focused direction. The Core Group on DRM, chaired by India for a period of two years, is tasked with leading the formulation of a Work Plan for this Priority Area, with the aim to enhance cooperation and develop resiliency in the IOR. Furthermore, the Core Group (Indonesia, Mauritius, Mozambique and Sri Lanka) along with Member States, are currently in the process of finalising the regional Work Plan and the IORA Guidelines for Humanitarian Assistance and Disaster Relief (HADR).

In September 2019, IORA in collaboration with the IOC-UNESCO held the International Symposium on Tsunami Early Warning Systems - Lessons-learnt from the 2018 Tsunamis in

Indonesia, which provided a unique platform for IORA experts to formulate actionable and practical recommendations for inclusion to the draft regional DRM Work Plan.

Some marine disasters/accidents:

1. The Wilhelm Gustloff (1945): the deadliest shipwreck in history

   On January 30, 1945, some 9,000 people perished aboard this German ocean liner after it was torpedoed by a Soviet submarine and sank in the frigid waters of the Baltic Sea. The Gustloff, named for a Nazi leader in Switzerland assassinated in 1936, was constructed as a cruise ship for the Nazis' "Kraft durch Freude" ("Strength through Joy") program, which provided recreational activities for working-class Germans. Adolf Hitler launched the 684-foot-long, 25,000-ton vessel in 1937. However, its cruising career was brief; after World War II began in 1939, the German military converted the Gustloff into a hospital then later used it as a U-boat training school.

   In January 1945, as the Soviet army advanced on East Prussia, the Nazis launched Operation Hannibal, a mass naval evacuation of German military personnel and civilians from the region. On January 30, as part of Operation Hannibal, the Gustloff left the East Prussian port of Gotenhafen (which today is the Polish city of Gdynia) bound for Kiel, Germany. The Soviet submarine S-13 soon spotted the Gustloff and blasted it with three torpedoes. The German liner sank within 90 minutes, about 12 nautical miles off Stolpe Bank near present-day Poland. Historians now estimate that only about 1,000 of the approximately 10,000 people aboard the Gustloff survived, making it the deadliest maritime disaster in history.

2. Mont Blanc (1917): A massive explosion devastates a city

   On December 6, 1917, in Nova Scotia's busy Halifax Harbor, the Mont Blanc, a French ship loaded with explosives and headed for Europe, where World War I raged, collided with the Imo, which was traveling to New York to pick up relief supplies for war-ravaged Belgium. After the collision, fire broke out on the Mont Blanc, which soon ran aground on the Halifax waterfront, where a crowd had gathered to watch the burning ship. About 20 minutes after the collision, the fire ignited the 2,925 tons of explosives the Mont Blanc was transporting and sparked a massive blast. (The force of the blast was so great that physicist J. Robert Oppenheimer, referred to as "the father of the atomic bomb," later studied the event in order to estimate the potential damage of the nuclear weapons he was helping to develop).

   The blast killed scores of people instantly and devastated the surrounding area, toppling buildings, setting entire blocks ablaze and triggering a tsunami. Compounding the tragedy was the fact that a blizzard struck the region that night,

hampering rescue and relief efforts. More than 2,000 people died as a result of what became known as the Halifax Explosion—the largest man-made blast until the first atomic bomb was dropped on Japan in 1945– while more than 6,000 others were injured and some 9,000 people were left homeless.

3. The Sultana (1865): Catastrophe on the Mississippi River

   On April 27, 1865, some 1,700 people—many of them Union soldiers recently freed from Confederate prison camps—perished after this side-wheel steamboat exploded, burned and sank in the Mississippi River. Launched in 1863 in Cincinnati, the 260-feet-long, wooden-hulled Sultana was licensed to carry 376 passengers. During the Civil War, it made regular trips between New Orleans and St. Louis, often transporting troops and supplies for the federal government.

   On April 24, 1865, the Sultana stopped at Vicksburg, Mississippi, to pick up discharged Union soldiers, many of them weak and malnourished from their time in such notorious POW camps as Andersonville and Cahaba. The U.S. government paid steamboat companies to transport soldiers to their homes in the North: $5 for each enlisted man and $10 for each officer, and, as a result, some companies bribed military officials in order to take on as many soldiers as possible. The Sultana departed Vicksburg with an estimated 2,400 people on board—more than 2,000 soldiers, 100 civilians and 80 crew members—six times the vessel's legal capacity. At around 2 a.m. on April 27, just north of Memphis, three of the Sultana's four boilers suddenly exploded and the boat caught fire. Hundreds of passengers burned to death, while hundreds more were thrown into the surging Mississippi by the force of the blast or jumped into the water to escape the flames onboard–and ended up drowning.

   The sinking of the Sultana was the deadliest maritime disaster in U.S. history, but it was largely overlooked because it came so soon after the end of the American Civil War (Gen. Robert E. Lee surrendered his Confederate force to Gen. Ulysses Grant on April 9) and the assassination of President Lincoln (April 14).

4. The Arctic (1854): Women and children last

   The 284-foot-long, 2,856-ton Arctic, which made its maiden transatlantic voyage in 1850, was known for its speed and could cross the Atlantic in just nine days. On September 27, 1854, while sailing from Liverpool, England, to New York City, the Arctic collided with a smaller French steamship, the Vesta, in thick fog off Cape Race, Newfoundland. Initially, the French vessel appeared to have suffered greater damage, but the Arctic's captain soon realized his own ship was rapidly taking on seawater and he made the decision to abandon the Vesta and head for land in order to save his passengers. However, after leaving the Vesta, the damaged Arctic continued

to take on water, causing its furnaces to go out and its engines to stop working. The captain ordered that women and children should be put into lifeboats first, but instead a number of the crew and some male passengers made a dash for the boats, leaving hundreds of people to die when the Arctic sank.

In the end, of the estimated 400 people aboard the Arctic, only 87 survived the disaster, 22 of them passengers and the rest crew members; none were women or children. The Arctic's captain went down with the sinking ship but managed to stay alive by clinging to some wreckage before being rescued by another vessel. Meanwhile, the Vesta did not sink and instead made it to St. John's, Newfoundland, on September 30. The Arctic crew members who took the lifeboats and abandoned ship were criticized in the media for their behavior, which also violated laws forbidding sailors to put their own safety before that of passengers in emergencies. However, none of the men were prosecuted for their actions.

5. Dona Paz (1987): The deadliest peacetime shipwreck in history

   On December 20, 1987, this Philippine passenger ferry, en route from the Philippine island of Leyte to Manila, the capital city of the Philippines, collided with an oil tanker, caught fire and sank, killing as many as 4,000 people. The Dona Paz, built in 1963 in Japan, collided at night in the Tablas Strait with the Vector, a tanker carrying more than 8,000 barrels of petroleum products. The Vector's cargo burst into flames and fire quickly spread to the Dona Paz; both vessels eventually sank.

   Passenger ferries are common in the Philippines, an archipelago of some 7,100 islands with a weak record of nautical safety. At the time of the collision, the Dona Paz, later referred to as "Asia's Titanic," was overcrowded; although the exact number of people the vessel was carrying is unknown, the total might have been more than double its legal capacity. Additionally, the Vector was said to be poorly maintained and operating without a license. Only several dozen people survived the disaster.

6. Carnival Cruise Line's Triumph

   A generator fire on Carnival Cruise Lines's Triumph (now called Carnival Sunrise) left the ship powerless, and a late-night comedy punchline was born: "The Poop Cruise." Without working bathrooms, passengers were forced to drop their payloads into red "hazardous waste" bags and stuff them into garbage cans left in the hall. Passengers described carpets soaked with more than two inches of raw sewage. News reports described the scene as a "shanty town" and a "new circle of hell." One passenger reportedly called her husband and told him that their 12-year-old daughter had Skittles for breakfast. It took four days for the Triumph to be towed from the Gulf of Mexico to Mobile, Alabama, where it was possible to smell the ship from the dock.

Later, 31 passengers claimed long-lasting damage, including PTSD, and sued. After the verdict, 27 of them split $118,000, many earning less than $3,000 (minus legal fees) for their troubles.

7. Costa Concordia

   One of the biggest passenger ships ever wrecked, the Costa Concordia had 17 decks, six restaurants, a three-story theater, and enough room for 4,200 vacationers. On January 13, 2012, captain Francesco Schettino agreed to a request by the ship's chief maître d', Antonello Tievoli, and sailed closer to the island of Isola del Giglio than normal. Why? Tievoli, a native of Giglio, wanted to impress and "salute" local residents. Unfortunately, captain Schettino turned off the ship's alarm for the computer navigation system and later admitted he thought he knew the waters well enough to navigate by sight. However, the ship's first mate testified that the captain had left his glasses in his cabin and requested them. The Costa Concordia struck an underwater rock, capsized, and sank, killing 32 passengers. Schettino's worst maritime sin? He abandoned the ship with 300 passengers still onboard. A Coast Guard officer in contact with the ship at the time of the sinking claimed he told Schettino to get back onboard. After being convicted of manslaughter and pursuing several appeals, Schettino only started his 16-year prison sentence in May of 2017. The salvage effort (the ship was completely dismantled) was the largest effort of its kind.

8. SS Eastland

   Launched in 1903, the SS Eastland was a passenger ship based in Chicago and used for tours. Although the ship had noted listing (tilting) since its inception and some measures had been taken to rectify this, the SS Eastland was still suffering from being top heavy when boarding for a cruise in 1915. The ship was meant to sail from Chicago to Michigan City, Indiana, carrying workers from Western Electric Company's Hawthorne Works for a picnic. On July 24, 2,572 passengers boarded, with many congregating on the open upper decks. While still docked, the ship began to list to the port side, and reportedly, at some point more passengers rushed to the port side, causing the ship to completely roll onto its side. Despite the river's bottom being just 20 feet below, and the shore being about the same distance, a total of 844 passengers and crew members died, including 22 entire families.

9. Royal Pacific

   When the Royal Pacific was first launched as a passenger ferry in 1964, it could carry 250 passengers, 91 cars, and 16 trucks. Sold and converted into a cruise ship in the late 1980s, the boat's maiden voyage was a two-night "cruise to nowhere" that left from Singapore and sailed by Phuket, Malacca, and Penang before returning home.

At around 2 a.m., when most of the passengers were asleep, the crew heard a loud bang and the plates on the buffet table crashed to the ground. A Taiwanese trawler, Terfu 51, had accidentally rammed the ship, leaving a six-foot gash in the side. As the trawler pulled away, there was a deafening sound of metal scraping against metal. The PA system wasn't working properly on the boat, but the safety officer ran downstairs to survey the damage. When he returned, he told everyone to put on their life jackets. Reports vary about how many passengers were impacted — most tallies number 30 dead and 70 injured. Several passengers also complained that a mix of Greek-, English- and Mandarin-speaking crew members led to few people understanding what anyone was saying.

10. SS Morro Castle

The story of the SS Morro Castle is so dreadful, it's surprising no Hollywood producer has turned the tale into a horror movie. Director Fritz Lang actually collaborated on a script about the tragedy, and named it "Hell Afloat" (which is a pretty apt description), but it was never made. In between 1930 and 1934, the SS Morro Castle regularly shuttled 480-plus passengers between Havana and New York. While onboard, there was no Depression to worry about and no Prohibition, which meant plenty of booze-filled partying. However, the September 1934 return sail from Cuba to the Big Apple seemed to be cursed. On September 7, captain Robert Wilmott complained of stomach trouble after eating dinner and retired to his cabin, where he later died of an apparent heart attack. Chief officer William Warms took command and a few of hours later, around 3 a.m. on September 8, a fire started in one of the storage lockers. The crew's attempts to fight the fire were haphazard and inadequate, and soon the blaze couldn't be contained. Many crew members abandoned the ship, leaving confused passengers to fend for themselves in the dark, smoky hallways. Some jumped from the deck to their death in the water. Rescuers lined up on the Jersey Shore to meet the lifeboats carrying passengers. The next morning, the burning, black hull of the SS Morro Castle ran aground at Asbury Park, New Jersey. Of the 549 people aboard the cruise, 86 guests and 49 crew members died.

11. Royal Caribbean's Explorer of the Seas

A cruise can be an oasis of calm in rough waters, but it's also a petri dish of disease where viruses ricochet from passenger to passenger. In 2014, the Royal Caribbean's Explorer of the Seas cruise from New Jersey to the Caribbean earned the dubious honor of being the ship with more sick passengers than any other boat trip since the Centers for Disease Control and Prevention started keeping statistics more than 20 years ago. In total, an estimated 700 passengers and crew members were sick at some point. Most cruise ship illnesses are the result of norovirus that causes inflammation of the stomach and large intestines as well as regular trips to the "head." If you're

wondering how to stay healthy on a cruise with sick passengers, plenty of handwashing (and avoiding ill people) is key. Bugs pass quickly through contact with ship railings, bathroom doors, and buffet food.

12. MTS Oceanos

    Built by a French company and first launched in 1952, the MTS Oceanos was purchased by a Greek company in 1976. On August 3, 1991, Oceanos set sail for East London, South Africa and headed north for Durban, led by Captain Yiannis Avranas. The ship reportedly headed into 40-knot winds and 30-foot swells, and thus the typical sail-away outdoor deck party with British entertainers Moss and Tracy Hills was moved to an indoor lounge. The sea conditions worsened that night, leading to the ship rolling from side to side, and eventually an explosion was heard due to a lack of repairs for the waste disposal system. This all led to the ship losing power and water filling its generator room, so the generators were shutdown and the ship was led adrift. A distress call was sent and answered by numerous South African helicopters and a Dutch container ship. Shockingly, the captain and many crew members were among the first to be airlifted to shore, leaving the entertainment staff to coordinate the rescue efforts and help passengers to safety. All 571 passengers and the crew members were saved by the time the ship sank nose-first into the sea.

MODULE-IV

MARINE INSURANCE

Marine insurance is one of the most primitive forms of any insurance arrangements on earth. Greeks and Romans were: 'in the habit...of guarding themselves against some of the risks of maritime enterprise...whether in the shape of loans or mutual guarantee'.[1] Despite rising markets for marine insurance businesses such as the Scandinavian Market, the fact remains that the London Market is still the 'largest marine insurance market in the world'.[2] Therefore, this chapter will focus mainly on English laws and practices in relation to marine insurances, not least because the Marine Insurance Ordinance (Cap.329) ("MIO") is almost identical to the Marine Insurance Act 1906 of the United Kingdom ("MIA").[3] It must be reminded that, ultimately, a marine insurance is a contract. As set out in s.2(1) of the MIO: 'A contract of marine insurance is a contract whereby the insurer undertakes to indemnify the assured, in manner and to the extent thereby agreed, against marine losses, that is to say, the losses incident to marine adventure'. Bearing this in mind, this chapter, after introducing the MIO and other standard form contracts used in the industry, will proceed by examining the process of formation of a marine insurance contract, then consider the most common vitiating factors, namely a lack of insurable interest and a material non-disclosure or misrepresentation. It will then discuss the terms of marine insurance agreements, then the issue of 'causation' for there would be no compensation if the assured, for example a ship-owner or a cargo-owner, cannot prove that its ship or its cargo was lost due to a marine risk specified in the marine insurance contract. Thereafter, it will examine the ambits and peculiarities of typical marine risks and excluded perils. Lastly, this chapter will touch upon the types of losses in marine insurance and the measures of indemnity.

MARINE INSURANCE LAW AND MARINE INSURANCE STANDARD FORM CONTRACTS

As mentioned above, the MIO is an almost verbatim reproduction of the MIA. The MIA itself has had a long history. It was drafted by Sir McKenzie Chalmers. As stated right at the preamble, this piece of legislation is to: 'codify the Law relating to marine insurance'. Being a codified statute, it was a product from digesting of principles from cases decided over the last 200 years prior to its enactment.[4] This method of codification reflects a belief of the draftsman himself. 'When the principles of the law are well settled, and when the decided cases that accumulate are in the main mere illustrations of accepted general rules, then the law is ripe for codification'.[5] The draftsman also maintained the view that the purpose of code: 'is to set out...those principles of the law which have already stood the test of time'. [6]

[1] Frederick Martin, The History of Lloyd's and of Marine Insurance in Great Britain with an Appendix containing statistics relating to marine insurance (Macmillan and Co 1876)

[2] Codan Marine, 'The Markets' < http://www.codanmarine.com/codanmarine/Page18337.html> accessed 27 August 2013

[3] In this chapter, a statutory provision of the MIO will be referred to unless otherwise stated.

[4] Robert Merkin, Marine Insurance Legislation (4th edn, Lloyd's List Group 2010) xliv.

[5] MD Chalmers, 'Codification of Mercantile Law' (1903) 19 LQR 10, 11.

[6] Chalmers (n 5)

Indeed, the MIA itself has stood a test of time for it has never been amended throughout it's over one-hundred years of history. Nevertheless, the MIA is not a complete code on all aspects of marine insurance. Therefore, case law before the enactment of the MIA remains relevant.[7] As Rose explained,[8] this is in line with the equivalent s.91 of the MIO which states: 'The rules of the common law including the law merchant, save in so far as they are inconsistent with the express provisions of this Ordinance, shall continue to apply to contracts of marine insurance'. References to these common law rules should only be made for matters falling outside the language of the MIA. The method of interpreting such a codified statute is laid down in *Bank of England v Vagliano Brothers*,[9] in the context of the Bills of Exchange Act 1882, also drafted by Chalmers. There, Lord Herschell explained[10]:

"I think the proper course is in the first instance to examine the language of the statute and to ask what is its natural meaning, uninfluenced by any considerations derived from the previous state of the law...and then, assuming that it was probably intended to leave it unaltered, to see if the words of the enactment will bear an interpretation in conformity with this view."

As observed by Merkin, however, much of what is stated in the MIA is providing default positions which parties may depart from by agreements.[11] Indeed, there have been standard form contracts used in practice.

A form of policy known as the SG policy (ship & goods) indeed pre-dated the MIA. The trace of which is unknown but it was already condemned by the court in 1791 as outdated. Yet, it was used until the 1980s.[12] To date, the language of the SG policy remains and can be found in Schedule 1 of the MIA (and as well the MIO). This should be borne in mind in interpreting marine insurance contracts as stated in s.30(2) of the MIO: 'Subject to the provisions of this Ordinance, and unless the context of the policy otherwise requires, the terms and expressions mentioned in the Schedule shall be construed as having the scope and meaning in that schedule assigned to them'.

The SG policy form was replaced by a series of standard form contracts known generally as the 'Institute Clauses' which were drafted under the auspice of the then Institute of London Underwriters which in 1998 became the International Underwriting Association of London (IUA) following a merger with the London Insurance and Reinsurance Market Association (LIRMA).[13] These Institute Clauses are not stand-alone documents. They must be incorporated into the marine policy form such as the Lloyd's Marine Policy (MAR). In the

[7] FD Rose, Marine Insurance Law and Practice (LLP 2004) para 1.6
[8] *Ibid*
[9] The Governor and Company of The Bank of England v Vagliano Brothers [1891] A.C. 107
[10] *Ibid*., 144-145
[11] Merkin (n 4) xliv.
[12] Howard Bennett, The Law of Marine Insurance (2nd edn, Oxford University Press 2006) para 7.02
[13] Merkin (n 4) xliv.

context of the London Market, a policy is evidence of the marine insurance contract, not the contract in itself.[14]

This is to be explained below in relation to the formation of a marine insurance contract. The MIO specifies that a policy must state the name of the assured and its agent (i.e., a broker).[15] The policy must also contain the insurer's signature.[16] Also, the 'subject-matter insured' must be stated in the policy.[17] In the context of marine insurance, two of the most common subject-matter insured's are ships or goods.[18] This could be seen from the most commonly used standard terms in the industry such as the Institute Cargo Clauses,[19] the Institute Time Clauses (Hulls),[20] the Institute Voyage Clauses (Hulls)[21] and the International Hull Clauses.[22] One would observe that, for hull insurance, there are two sets of standard Institute Clauses – a time and a voyage. This reflects a practice that a marine insurance can be on either a time basis or a voyage basis. This is well-recognized in s.25 of the MIO that a marine policy can be either a 'time policy' or a 'voyage policy'.

This provision reads: "Where the contract is to insure the subject-matter "at and from", or from one place to another or others, the policy is called a "voyage policy", and where the contract is to insure the subject-matter for a definite period of time the policy is called a "time policy". A contract for both voyage and time may be included in the time policy." The latter part of this provision deserves attention. The learned editors of Arnould's Law of Marine Insurance and Average explained a contract for both voyage and time by giving an illustration of a hull insurance for a voyage to a specified port and then with an additional cover for 30 days upon arrival.[23] The fact whether a policy is a voyage or time has certain implications, for example in relation to an implied warranty of seaworthiness, in relation to the beginning and the end of the risk, and in relation to a rule on deviation.[24]

Apart from the said method of categorization, a marine policy can also be either a valued policy or an unvalued policy. A valued policy as defined in s.27(2) of the MIO is 'a policy which specifies the agreed value of the subject-matter insured'. An unvalued policy, on the other hand, according to s.28 of the MIO, is 'a policy which does not specify the value of the

[14] See s.22 of the MIO
[15] See s.23 of the MIO
[16] See s.24 of the MIO.
[17] See s.26 of the MIO
[18] Rose (n 7) para 2.4
[19] The Institute Cargo Clauses (A) (01/01/82) or (01/01/09); The Institute Cargo Clauses (B) (01/01/82) or (01/01/09); The Institute Cargo Clauses (C) (01/01/82) or (01/01/09). The Institute Cargo Clauses (A) contains the widest coverage so these are sometimes known as "all risks". See Rhidian Thomas, 'Insuring the Risk of Maritime Piracy' (2004) 10(4) Journal of International Maritime Law 355, 359
[20] The Institute Time Clauses (Hulls) (01/10/83); The Institute Time Clauses (Hulls) (01/11/95)
[21] The Institute Voyage Clauses (Hulls) (01/10/83); The Institute Voyage Clauses (Hulls) (01/11/95)
[22] The International Hull Clauses (01/11/02); The International Hull Clauses (01/11/03).
[23] Jonathan Gilman and Robert Merkin (eds), Arnould's Law of Marine Insurance and Average (17th edn, Sweet & Maxwell 2008) para 2-20
[24] See Merkin (n 4) 37

subject-matter insured, but subject to the limit of the sum insured, leaves the insurable value to be subsequently ascertained'. Whether a policy is a valued or an unvalued policy has implications on the measure of indemnity, bearing in mind a marine insurance contract is a contract to 'indemnify', which, to explain in layman language, is a contract to 'pay' the assured for loss covered by the insurance.[25]

Last but not least, it should be noted also that a policy on ships may be a floating policy. This is referred to in s.29(1) of the MIO: 'A floating policy is a policy which describes the insurance in general terms, and leaves the name of the ship or ships or other particulars to be defined by the subsequent declaration'. By this definition, this type of policy can be confused with an 'open cover' arrangement. The typical arrangement of the open cover is explained by Rose at para 6.70 as follows:

"The standard arrangement, however, is that for an agreed period – whether it be a definite period (often of twelve months) or an indefinite period subject to termination by either party – the assured will declare all shipments made within the terms of the cover (declarations "off cover") and the insurer will then issue policies for all those shipments (though his ability to do so is commonly limited to a specified amount per voyage)."

The difference, as explained by Bennett, is that for the floating policy there exists a 'specified maximum aggregate value'[26] and hence 'the assured would have to be continually alert to the cumulative value of declared risks for fear of exhausting cover and running uninsured risks'.[27] But, under the open cover arrangement, there is no maximum aggregate as such. Under the open cover, there is an imposed limit for each declared risk.[28] Different from the floating policy, the term 'open cover' could not be found in the statute.[29] Bennett therefore proceeded to discuss whether the open cover arrangement would fall within the ambit of s.29 dealing with the floating policy in the statute.[30] Both Bennett[31] and the learned editors of Arnould's Law of Marine Insurance and Average[32] opine that the open cover may be regarded as a form of the floating policy attracting the application of the statute.

FORMATION OFA MARINE INSURANCE CONTRACT

This part deals with formation of the marine insurance contract. This will be broken down into two sections: (i) namely the placing of risk inside the Lloyd's Market; and (ii) the placing of risk outside the Lloyd's Market. The reason for this separate consideration is that

[25] Rose (n 7) para 1.22
[26] Bennett (n 12) para 2.30.
[27] *Ibid*., para 2.31.
[28] *Ibid*
[29] *Ibid*.
[30] *Ibid*
[31] *Ibid*
[32] Gilman and Merkin (n 23) para 9-11.

the Lloyd's Market has adopted a rather unique procedure for risk placing. Having said this, the Lloyd's Market will also be briefly explained in the first section of this part.

(a) Placing of risk at Lloyd's Market

The Lloyd's Market had its name after Mr. Edward Lloyd who established his coffee house business on Tower Street in London. It was unknown when he first set up his coffee house but the earliest evidence could be traced back to the year 1688.[33] Merchants who assembled at the coffee house started covering each other's risks. Among these merchants, there were also retired ship's masters sitting across the table, those who had better sense of sea risks and could calculate 'insurance rates'.[34] Whilst the passing of the Bubble Act 1720 gave monopolistic status to two marine insurance companies – the Royal Exchange Assurance and the London Assurance – individual underwriters were not affected.[35] Marine insurance businesses carried out by these two companies, however, were not successful. From the start, these two marine insurance companies had financial difficulties. They had problems recruiting experienced underwriters for managerial positions. They concentrated more on fi re and life insurances.[36] On the other hand, individual underwriters had the benefit of professional networking, using 'Lloyd's coffee-house' as their prime business base.[37] The coffee house became a venue where shipping merchants as well as brokers and underwriters could obtain market intelligence.[38] In the year 1769, certain clients of the Lloyd's coffee house agreed to set up the 'New Lloyd's Coffee House', which 'represented a determined attempt by leading city men to put their business on a better regulated footing'.[39] A premise of the New Lloyd's Coffee House at Pope's Head Alley soon proved to be too small for merchants, brokers, and underwriters. To obtain new premises, seventy-nine merchants, underwriters, and brokers entered into an agreement which formed the foundation of the 'Society of Lloyd's' by agreeing to pay £100 into the Bank of England for this purpose. As a consequence, the New Lloyd's Coffee House turned out to be the property of the subscribers and from this point those who conducted the business at this New Lloyd's Coffee House 'were to be bound together in a loose but formal association, controlled by an elected committee'.[40] This characteristic of the 'Subscription Market' is retained until the modern day.

[33] Raymond Flower and Michael Wynn Jones, Lloyd's of London: An Illustrated History (Lloyd's of London Press Ltd, 1974) 20.
[34] Jeremy A. Herschaft, 'Not Your Average Coffee Shop: Lloyd's of London – A Twenty-First-Century Primer on the History, Structure, and Future of the Backbone of Marine Insurance' (2004-2005) 29 Tulane Maritime Law
[35] Bennett (n 12) para 1.16.
[36] Flower and Jones (n 33) 45.
[37] *Ibid*
[38] Herschaft (n 34) 171.
[39] Flower and Jones (n 33) 54.
[40] *Ibid*., 57

However, the ever-expanding influence of individual underwriters who gathered at the New Lloyd's Coffee House was not met with approval by all ship-owners.[41] Whilst Britain gained prosperity in shipping and trade, the fact that the two marine insurance companies were in London and individual underwriters gathered at New Lloyd's meant that shipowners in other ports found it to be inconvenient.[42] Some individual underwriters became inactive in winter worried of potential high marine risks during that period. Underwriters who were active during winter could thus charge higher premiums due to their monopolistic opportunity.[43] 'In view of the unsatisfactory position for shipowners – particularly those residing outside London – groups of shipowners at various ports associated together to insure their hull risks on a mutual basis...'[44] This found a basis for an early history of what to became known today as the mutual associations or the Protection and Indemnity (P & I) clubs.[45]

Meanwhile, in 1871, the New Lloyd's of London was incorporated by the statute under the name 'Lloyd's'. 'The Act empowered Lloyd's to own property, to pay and receive debts and to regulate its own affairs by by-law'.[46] Prior to that, the duopolistic positions granted by the Bubble Act 1720 had also been relaxed following the enactment of the Marine Insurance Act 1824.[47] The combined effects of these were that Lloyd's became more structured and could be able to offer more competitive premiums. On the other hand, many marine insurance companies were founded and became competitors of mutual associations.[48] 'The result was that the better class of vessel was insured at Lloyd's, and the Clubs were left with those risks that were unacceptable elsewhere'.[49] It was during the period of such declination of the mutual associations which sought to insure hulls that the idea of third party liabilities was developed. Whilst third party liabilities were refused by underwriters, the process of these mutual associations who previously accepted hull risks to adjust themselves to accept these third party liability risks were relatively simple.[50]

Despite over centuries old, the Lloyd's of London still retains its practice. In modern days, individual underwriters known as 'Names' make their financial investment in Lloyd's by joining in one of the syndicates.[51] A syndicate may be explained as an informal grouping of individual underwriters. Each syndicate's administration is looked after by a managing agent.[52] However, in present time, there are also corporate members of Lloyd's known as

[41] Bennett (n 12) para 1.22.
[42] William RA Birch Reynardson, 'The History and Development of P & I Insurance: The British Scene' (1969) 43 Tulane Law Review 457, 461-462.
[43] Reynardson (n 42).
[44] *Ibid*., 463.
[45] Bennett (n 12) paras 1.23 and 1.24.
[46] Gilman and Merkin (n 23) para 4-05.
[47] Bennett (n 12) para 1.16.
[48] Reynardson (n 42) 464
[49] *Ibid*
[50] *Ibid.*
[51] Bennett (n 12) para 1.18.
[52] Gilman and Merkin (n 23) para 4-07.

'Capital Providers'.[53] Lloyd's no longer admits individual members and those individuals who want to carry out their businesses at Lloyd's must do so via corporate members.[54] Therefore, Lloyd's still maintains its characteristic as a 'Subscription Market' even though it must be emphasised that the term 'Subscription Market' may connote a wider meaning to include insurance companies in the London Market who adopt the same risk placing practices as Lloyd's.[55]

In practice, placing the risk with a syndicate must be done through the managing agent.[56] Suppose that Mr. X, a ship-owner, wants to insure his ship in the Lloyd's Market, he has to contact the Lloyd's registered broker.[57] The Lloyd's broker will then prepare a document known as a 'slip', which can be explained as:[58]

"...an oblong piece of paper containing details of the intended insurance, in sufficiently precise form to enable anyone conversant with the business to draw up, without difficulty and without going beyond its four corners, the policy which it is proposed to effect. It gives the name of the vessel, or description of the subject matter to be insured, the voyage or period for which insurance is required, the valuation (if any) and amount to be insured, and the standard clauses to be incorporated, and sets out any special terms or warranties that may be required."

So, the slip is actually an offer from X which the Lloyd's broker then takes around the underwriting room at Lloyd's for underwriters to consider. Each underwriter will then 'accept' the offer by 'scratching' the slip, i.e. signing the slip and indicating the percentage of risk he is willing to accept and also putting the name of the syndicate.[59] The broker takes the slip around the market until the risk is completely (100%) accepted but in practice the broker can continue even after the risk is 100% accepted. He will then do arithmetical adjustment so that the total subscription is exactly 100%. This is called a 'signing down' process.[60] Once the broker obtained all subscription as per the slip, the broker will then take the policy (which wordings and terms should reflect those in the slip) along with the fully subscribed slip to the 'X changing Ins-Sure Services (XIS)' at Lloyd's (previously, the 'Lloyd's Policy Signing Office' (LPSO)) who will then issue the formal policy.[61]

From the process as described, a question which springs into mind is the legal status of the slip and the policy. In explaining the nature of the slip, Bennett refers to the explanation

[53] *Ibid*
[54] *Ibid*.
[55] Bennett (n 12) para 2.02
[56] Gilman and Merkin (n 23) para 4.07
[57] Robert Merkin and the others (eds), Colinvaux's Law of Insurance in Hong Kong (Thomson Reuters 2009) para 1.030
[58] Gilman and Merkin (n 23) para 2-05
[59] *Ibid*
[60] Howard N. Bennett, 'The role of slip in marine insurance law' [1994] LMCLQ 94
[61] Gilman and Merkin (n 23) para 2-06

given by Blackburn J. in *Ionides v Pacific Insurance Co.*[62] In this case, Blackburn J. elaborated on the slip as follows:[63]

"The slip is, in practice, and according to the understanding of those engaged in marine insurance, the complete and final contract between the parties, fixing the terms of the insurance and the premium, and neither party can, without the assent of the other, deviate from the terms thus agreed on without a breach of faith, for which he would suffer severely in his credit and future business."

So, the slip is taken to be a contract between the assured and each underwriter who subscribed to it by 'scratching' the slip.[64] So, what exactly is the policy? In this context, one should be reminded of the language of s.22 of the MIO:

"Subject to the provisions of any Ordinance, a contract of marine insurance is inadmissible in evidence unless it is embodied in a marine policy in accordance with this Ordinance. The policy may be executed and issued either at the time when the contract is concluded, or afterwards."

This provision itself has its origin in history and there has been a discussion by the English and the Scottish Law Commissions in their joint reform project on insurance law whether the requirement of formal policy and the equivalent s.22 of the MIA should be abolished.[65] The said history starting from the Stamp Act 1795 which imposed taxes upon policies of insurance requiring them, among other things, to be typed or written.[66] Such requirements were followed through subsequent revenue legislations enacted in the United Kingdom.[67] The practice of the marine insurance contract concluded in the slip with the policy issued subsequently has raised complicated questions of the relationship between the slip and the policy. Such complication can be observed from conflicting case laws. However, the learned editors of Arnould's Law of Marine Insurance and Average relied heavily on the passage of Rix LJ in HIH Casualty and *General Insurance Ltd v New Hampshire Insurance Co & Or*.[68] The case itself is not a marine insurance case. Instead, it is a case arising from complex fi lm finance insurances. In other words, insurances were procured against the loss of revenue from the fi lm production.[69] A slip was issued in the form of a 'slip policy' and subsequently

[62] Bennett (n 60) 99 citing Ionides and Chapeaurouge v The Pacifi c Fire and Marine Insurance Company (1871) LR 6 QB 674.
[63] *Ibid*., 684-685.
[64] Gilman and Merkin (n 23) para 2-08
[65] See The English and The Scottish Law Commissions, 'The Requirement for a Formal Marine Policy: Should Section 22 Be Repealed?' (Issues Paper 9, October 2010) <http://lawcommission.justice.gov.uk/docs/ICL9_Requirement_for_Formal_Marine_Policy.pdf> accessed 24 January 2014.
[66] Bennett (n 60) 95.
[67] See *Ibid*., 95-97.
[68] [2001] EWCA Civ 735; [2001] CLC 1480 cited in Gilman and Merkin (n 23) para 2-14.
[69] *Ibid*., [2].

a 'policy' was issued. So, one of the issues considered before the Court of Appeal is as to the status of the policy. In other words, 'does it entirely supersede the insurance slip, or is it to be read together with the insurance slip'?[70] Reviewing relevant authorities, Rix LJ did not find earlier cases of *Youell v Bland Welch*[71]and *Punjab Bank v De Boinville*[72]*which* seemed to suggest that the policy, once issued, supersedes the slip in its entirety, to be conclusive. He explained that in both cases 'it was common ground that the policies in question were intended to supersede the slips'.[73] He then proceeded to opine:[74]

"In the light of the uncertain status of the slip until relatively speaking modern time, I would for myself with genuine respect consider it dangerous to build...on the single case of *Ionides v Pacific Fire & Marine*...that a slip could never be used to assist in the construction of a policy. I would, however, agree that in the absence of a plea of rectification a slip could not be used to alter or contradict the construction of a policy which had superseded a slip."

From the above quoted passage, it appears that Rix LJ supported the position that the slip could be used as a construing aid for the policy. However, the slip may have a more significant role when one of the parties plead rectification. Therefore, rectification of a marine insurance policy is to be mentioned briefly at this stage.

Bennett explained that rectification as 'the equitable remedy by which a court can remedy mistakes in the recording of the parties' agreement'.[75] As for the conditions which must be fulfilled before rectification can be invoked, he cited the passage of Slade LJ, albeit in a different context, in *The Nai Genova*.[76] In that case, however, Slade LJ purported to summarise rules on rectification from an authoritative treatise, Snell's Principles of Equity.[77] In the more recent edition of Snell's Equity,[78] the learned editors emphasised that the role of rectification is to correct mistakes in the document. 'What is rectified is not a mistake in the transaction itself, but a mistake in the way in which the transaction has been expressed in writing'.[79] Rectification falls within the courts' discretion and the court can even rectify the document in the absence of the plea.[80] Rectification must be resorted to only after it is ascertained that such mistake cannot be fixed by the usual method of contractual

[70] *Ibid*., [17]
[71] Youell v Bland Welch & Co. Ltd and Others [1992] 2 Lloyd's Rep. 127.
[72] Punjab National Bank v De Boinville and Others [1992] 1 Lloyd's Rep. 7
[73] HIH v New Hampshire (n 68) [81].
[74] *Ibid*., [92].
[75] Bennett (n 12) para 8.77.
[76] *Ibid*., para 8.78 citing Agip S.p.A v Navigazione Alta Italia S.p.A (The "Nai Genova" and "Nai Superba") [1984] 1 Lloyd's Rep. 353.
[77] The Nai Genova [1984] 1 Lloyd's Rep. 353, at 359 citing P.V Baker and P.St. J. Langan (eds), Snell's Principles of Equity (28th edn, Sweet & Maxwell 1982).
[78] John McGhee QC and the others (eds), Snell's Equity (32nd edn, Thomson Reuters 2010).
[79] *Ibid*., para 16-001.
[80] *Ibid*., paras 16-002-16.003

interpretation.[81] However, interpretation may not fit the purpose if the mistake is not apparent. Or, 'if reliance is placed upon the subjective intentions of the parties, rectification would be a more appropriate remedy than interpretation'.[82] Different from interpretation, rectification has the effect of changing terms of the contract.[83] The term 'mistake' as referred to in this context can be either a unilateral or a common mistake.[84] In the event of common mistake, a plea for rectification will succeed only if following factors can be established:[85]

"First, that there was some prior agreement between the parties; secondly, that this was still effective when the instrument was executed; thirdly, that by mistake the instrument fails to carry out that agreement; and fourthly, that if rectified as claimed, the instrument would carry out that agreement." Rectification in the event of unilateral mistake is more restricted, however. This is only possible if: 'one party to a transaction knows that the instrument contains a mistake in his favour, but does nothing to correct it and seeks to take advantage of the other's mistake.[86]

In the context of marine insurance, Bennett referred as an example the case of *Wilson, Holtage & Co, Ltd v The Lancashire & Cheshire Insurance Corporation, Ltd*.[87] where the plea of rectification from the slip was said to be successful.[88] The case involved insurance for cargoes carried on board the ship Titan from Singapore to Liverpool against losses due to leakage. The policy described the cargo as 'palm kernel oil' while the actual cargo shipped was 'palm oil'.[89] One of the defences which the underwriters raised was that goods were not correctly described.[90]Baihache J. was ready to rectify the policy.[91] In his language, 'I must have regard to the original contract [the slip] which...is the real contract [the underwriters] made, and in the original contract the goods are described as palm oil, and I disregard the mistake made afterwards'.[92] Whilst the burden of proof in the plea for rectification is still on the usual civil standard of the balance of probability, there is heavy evidential burden to convince the court that there was a mistake.[93]

(b) Placing of risk outside the Lloyd's Market:

Outside the context of the Subscription Market, the placing of risk follows the usual contract law principles. It is usually the case that the 'offer' comes from the prospective assured who

[81] *Ibid*., para 16-008.
[82] *Ibid*.
[83] *Ibid*. para 16-011
[84] *Ibid*., para 16-012
[85] *Ibid*., para 16-013.
[86] *Ibid*., para 16-019.
[87] (1922) 13 Ll L Rep 486
[88] Bennett (n 12) para 8.86.
[89] Wilson, Holtage & Co (n 87) 486.
[90] *Ibid*., 487.
[91] *Ibid*., 488.
[92] *Ibid*., 487
[93] McGhee QC and the others (eds) (n 78) para 16-022.

'gives to the insurers particulars of the risk which he wishes them to undertake'.[94] This may be done through the broker. The insurer then accepts or comes up with a 'counter offer'.[95] Such a counter offer may be in the form of a condition imposed.[96] An example was given by Clarke and the others to a life insurance case of *Canning v Farquhar*.[97] In this case, the proposal was forwarded to the insurance company for the life insurance of Mr. Canning. This prompted the letter from the insurance company purporting to accept the risk. However, there was a sentence in the letter: 'No assurance can take place until the first premium is paid'.[98] Just less than a month afterwards, the premium was tendered simultaneously with the information given to the insurance company that shortly before, Mr. Canning had sustained severe injuries following his falling from the cliff.[99] The insurance company refused to accept the premium.[100] Lindley L.J. clearly classified the insurance company's purported acceptance as a 'counter offer'.[101] He considered the point would be difficult had there been no change in the risk as the counter offer would be a continuing one in nature which the assured accepted when the first premium was tendered. However, in this case, there was a change in the nature of the risk as Mr. Canning fell down the cliff. So, 'there was no contract before the tender; and the risk being changed the company's offer could not fairly be regarded as a continuing offer which Canning was entitled to accept. His tender was a new offer for the new risk which the company was at liberty to decline'.[102]

In either method of risk placing, inside or outside the Lloyd's Market, a consideration is in the form of 'premium'.[103] As far as the premium is concerned in the context of marine insurance, one should be reminded of the language of s.53 of the MIO when the broker is engaged to place the risk:

"(1) Unless otherwise agreed, where a marine policy is effected on behalf of the assured by a broker, a broker is directly responsible to the insurer for the premium, and the insurer is directly responsible to the assured for the amount which may be payable in respect of losses, or in respect of returnable premium.

(2) Unless otherwise agreed, the broker has, as against the assured, a lien upon the policy for the amount of the premium and his charges in respect of effecting the policy; and, where he has dealt with the person who employs him as a principal, he has also a lien on the policy in respect of any balance on any insurance account which may be due to him from such person,

[94] Merkin and others (n 57) para 1.020.
[95] *Ibid*., para 1.022
[96] *Ibid*.
[97] (1886) 26 QBD 727 cited in Malcolm Clarke and the others, The Law of Insurance Contracts (6th edn, Informa 2009) para 11-2E
[98] *Ibid*., 728.
[99] *Ibid*.
[100] *Ibid*.
[101] *Ibid*., 733
[102] *Ibid*
[103] Merkin and the others (n 57) para 8.001.

unless when the debt was incurred he had reason to believe that such person was only an agent."

This section proved controversial and the English and the Scottish Law Commissions are considering alterations to this provision.[104] Criticisms are well-addressed, for example, by Gloster.[105] She explained that s.53 of the MIO reflected the practice at Lloyd's whereby 'an assured required additional time to pay the premium but the Lloyd's marine underwriters were only prepared to extend credit to the Lloyd's broker with whom they were dealing'.[106] This practice formed the basis of what she called a 'fiction' as she continued to explain:[107]

"[T]he broker was deemed to have paid the premiums to the underwriter, who then immediately advanced the premiums back to the broker by way of loan. So, even if the policy contained an express clause requiring the assured to pay the underwriter, the liability remained that of the broker, not that of the assured. The effect is that, as between the underwriter and the assured, the premium has been paid so that the insurer cannot sue the insured. Thus, the risk of the broker's insolvency is placed on the underwriter not the insured..."

Insensible as it may sound, as Gloster noted, this fiction was referred to with approval in some cases. In *Power v Butcher*,[108] a case by the plaintiff, an assignee of the bankrupt broker, against the defendants, ship-owners, for the premiums due to the underwriters,[109] there Bayley J. explained the practice in the following terms:[110]

"Now, according to the ordinary course of trade between the assured, the broker, and the underwriter, the assured do not, in the first instance, pay the premium to the broker, nor does the latter pay it to the underwriter. But as between the assured and the underwriter the premiums are considered as paid. The underwriter, to whom, in most instances, the assureds are unknown, looks to the broker for payment, and he to the assured. The latter pays the premium to the broker only, and he is the middle-man between the assured and the underwriter. But he is not solely agent; he is a principal to receive the money from the assured, and to pay it to the underwriters....The assured have had the benefit of the policies;

[104] See The English and The Scottish Law Commissions, 'Insurance Contract Law: Post Contract Duties and Other Issues' (The Law Commission Consultation Paper No. 201 and The Scottish Law Commission Discussion Paper No. 152, December 2011) <http://lawcommission.justice.gov.uk/docs/cp201_ICL_post_contract_duties.pdf> accessed 16 April 2014, see in particular paras 18.1-18.19.
[105] Dame Elizabeth Gloster, 'Who pays the piper – who calls the tune? Recent issues arising in the context of s.53 of the Marine Insurance Act 1906' [2007] LMCLQ 302
[106] *Ibid*., 307
[107] *Ibid*.
[108] (1829) 10 B & C 329, 109 ER 472.
[109] *Ibid*., 329-335; 472-474
[110] *Ibid*., 339-340; 476

and if the underwriters were liable upon the risk, they were warranted in calling upon the broker to pay the premiums..."

However, the practice was explained in slightly different way by Parke J. in the same case:[111]

"By the course of dealing, the broker has an account with the underwriter; in that account the broker gives the underwriter credit for the premium when the policy is effected, and he, as the agent of both the assured and the underwriter, is considered as having paid the premium to the underwriter, and the latter as having lent it to the broker again, and so becoming his creditor. The broker is then considered as having paid the premium for the assured. The fact of giving credit in account by the broker to the underwriter, and the underwriter by the terms of the policy having acknowledged the receipt of the premium, are equivalent to actual payment."

The passage of Parke J was quoted by the Court of Appeal *in Universo Company of Milan v Merchant Marine Insurance Company, Ltd.*[112] The Court of Appeal was willing to find the same custom existed in the context of non-marine insurance. The case involved a re-insurance and the crux of the argument, which was denied by the Court of Appeal, was the contract contained a clause to the effect that the reassured promised to pay the premiums to the reinsurer and hence this promise effectively excluded the custom.[113] Nevertheless, the Court of Appeal found the promise in the contract meant that the reassured promised to pay the premium to the reinsurer 'in the way in which according to the universal custom such payments are made...'[114]

A better explanation of this s.53 was given by Merkin,[115] as noted also by Gloster,[116] is to view the broker in paying the premium 'as acting as a principal in his own right or under some form of dual agency, and not merely as an agent for the assured'.[117] Gloster noted that this explanation received judicial support in *Chapman v Kadirga Denizeilik ve Ticaret*.[118] Arguments in this case involved whether certain clauses in the policy fell within the opening word of the equivalent s.53(1) of the MIA and hence ousted the operation of this provision and the custom behind. Sir Brian Neill, after referring to the explanation of Merkin cited above, elaborated further that clear language in the policy is needed for s.53(1) to be

[111] *Ibid*., 346-347; 479.
[112] 1897] 2 QB 93, see in particular 95-96 (per Lord Esher M.R.), 98-99 (per A.L. Smith LJ), 99-100 (Chitty L.J.)
[113] *Ibid*., 98
[114] *Ibid*., 99.
[115] [1897] 2 QB 93 (n 112).
[116] Gloster (n 105) 308.
[117] Robert M. Merkin, 'The Duties of Marine Insurance Brokers' in D. Rhidian Thomas (ed.), The Modern Law of Marine Insurance (LLP 1996) 275, 283.
[118] JA Chapman & Co Ltd (In Liquidation) v Kadirga Denizcilik Ve Tiracet; JA Chapman & Co Ltd (In Liquidation) v Chios Breeze Marine Company; JA Chapman & Company Ltd (In Liquidation) v Kadirga Denizcilik ve Ticaret AS [1998] Lloyd's Rep IR 377 cited in Gloster (n 105) 308

inapplicable and that the policy must be construed as a whole because 'the relationship between parties in the ordinary case where the rule operates without question is between parties with independent rights and obligations...'[119] The explanation of Sir Brian Neill was referred to with approval in the more recent Court of Appeal case of *Heath Lambert Ltd v Sociedad de Corretaje de Seguros*[120]where in that case a Venezuelan ship-owning company placed insurance of its fleet with a local insurer through the local broker. It was either this local broker or the local insurer itself who approached the London broker, Heath Lambert, to place a back-to-back reinsurance with various syndicates at Lloyd's of London.[121] Heath Lambert paid the premiums and tried to recover that from either the Venezuelan insurer or broker in question.[122] It is to be noted that the re-insurance contract as placed by Heath Lambert contained a clause: 'Warranted premium payable on cash basis to London Underwriters within 90 days of attachment'.[123] Lord Justice Clarke emphasised: 'care should be taken before having regard to fiction...'[124] If the fiction were adopted, the premium payment warranty clause would be nugatory which would not be the case. Therefore, as between Heath Lambert, the primary insurer, and the primary broker, their obligations should be determined as a matter of construction.[125] He referred to two significant points in the contract that 'ousted' the fiction. First, the use of the word 'payable' suggests when the premium should be paid. Second, the use of the word 'in cash' suggested the agreement different from the usual course of dealing between the broker and the underwriter that the payment between them would be on the basis of the account between them.[126]

While the broker has a duty to pay the premium, in turn, he receives remuneration for his service from the underwriter.[127] This is a sensitive point that can lead to a blatant conflict of interests in practice. This is against the usual logic for, if the broker is taken to be an agent of the assured for placing the risk, logic dictates that he should have been paid by his principal.[128] In fact, '[c]omission is obtained from insurers by deduction of commission from the premium'.[129] This has been a widely accepted practice. In Hong Kong, the judicial position is clear as Mr. Justice Reyes (as he then was) put in *Hobbins v Royal Skandia Life Assurance Ltd*:[130]

"[T]here is "lawful authority" (consisting of a long line of judicial pronouncements stretching from the 19th century to the present) for the commercial practice that an insurance broker

[119] *Ibid*., 386 and 387-388.
[120] [2004] EWCA Civ 792; [2005] 1 Lloyd's Rep 597
[121]. *Ibid*., [2]-[3].
[122] *Ibid*., [6]
[123] *Ibid*., [4].
[124] *Ibid*., [23]
[125] *Ibid*., [25].
[126] *Ibid*., [28]
[127] Merkin (n 117) 280
[128] Merkin (n 117) 280
[129] *Ibid*
[130] [2012] 1 HKLRD 977, [79]

acts as an agent of the insured and not of the insurance company. As a result of that line of judicial pronouncements, it has been long settled in common law that commission paid to an insurance broker by an insurer does not constitute an illegal secret profit unless it is in excess of what is normally paid within the insurance market."

The context in which Mr. Justice Reyes came to consider the legality of commission paid by the insurer to the broker was in relation to the purchase of an insurance product. In many occasions, the broker made clear to the assured that he would not have to pay for its services since the insurers would pay it.[131] The assured maintained however that he had never been informed of the exact amount of commissions the broker received from the insurer. This constituted a breach of the fiduciary duties and also the agreement made by the assured engaging this broker along with the insurance product the assured purchased were all in breach of the Prevention of Bribery Ordinance (Cap. 201), especially s.9(2).[132] Mr. Justice Reyes held, following his passage quoted above, that the broker in receiving commission was not in breach of the Prevention of Bribery Ordinance. Nor did he decide that the broker was in breach of fiduciary duties. He left this point undecided but nevertheless proceeded to opine obiter that: '[t]he common law has long accepted the practice of an insurance broker receiving commission from an insurer, provided...those commissions do not exceed the usual market rate'.[133] It is in relation to the point on the brokers' fiduciary duties that deserve to be examined here in some length.

Fiduciary duties may be explained simply as 'the obligation of loyalty'.[134] One of the most explicit facets of the fiduciary duties is a duty 'not to make a secret profit'.[135] It is therefore hard to see how in general the fact that the broker does not have to disclose the commissions he received from the underwriter fits into this aspect of the fiduciary duties. As observed by Henley: '[t]his lack of necessity to disclose the commission is curious because the insurer may have increased his rate of premium to reflect the broker's higher rate of commission...'[136] Henley also noted two practices existing in the market. One practice, which has since been condemned by Lloyd's, is so-called 'grossing up' which is explained as:[137]

"[A] practice whereby the gross premium (i.e. including brokerage) which the broker notifies to the insured as being payable exceeds the gross premium in fact agreed with and payable to

[131] *Ibid*., [2]-[3]
[132] *Ibid*., [5] and [77]. Section 9(2) of the Prevention of Bribery Ordinance (Cap.201) provides: 'Any person who, without lawful authority or reasonable excuse, offers any advantage to nay agent as an inducement to or reward for or otherwise on account of the agent's: (a) doing or forbearing to do, or having done or forborne to do, any act in relation to his principal's affairs or business; or, (b) showing or forbearing to show, or having shown or forborne to show, favour or disfavour to any person in relation to his principal's affairs or business, shall be guilty of an offence'.
[133] *Ibid*., [102]
[134] F.M.B. Reynolds (ed.), Bowstead and Reynolds on Agency (18th edn, Sweet & Maxwell 2006) para 6-032
[135] *Ibid*., 6-041
[136] Christopher Henley, The Law of Insurance Broking (2nd edn, Sweet & Maxwell 2004) para 2-051.
[137] *Ibid*., 2-063

the insurer. Effectively the broker adds a sum on top and retains it for his own benefit, crucially without knowledge and therefore consent of the insured."

Another less blatant, and indeed obscure, practice is 'net rating' which is explained as:[138]

"This occurs when the underwriter agrees the net premium he requires, which is specified in the slip, and leaves it to the broker to fix his own brokerage...there appear to be two main complaints against net rating. The first is that the accounting to the client is in some way misleading, perhaps because the amount agreed as the contractual rate for the premium is not properly disclosed to the principal by the broker. The second is that the premium charged to the principal may contain an element of brokerage which can be categorised as a secret profit payable to the broker."

Moreover, what constitutes a 'commission' the disclosure of which is unnecessary is unclear. There is case law which seems to suggest that a 'discount for prompt payment' does not have to be disclosed.[139] The rule relating to disclosure of commission received explicit judicial approval by the English court as early as 1874 in *Great Western Insurance Company v Cunliffe*.[140] The case involved a marine insurance company in New York appointed an agent in London. The agent was also to effect the re-insurance contracts as instructed by the principal.[141] As noted by Mellish LJ, the principal had never asked the agent as to the remuneration for effecting re-insurances.[142] He continued to explain:[143]

"Then it is quite obvious that [the principal] must have known, and they do not deny that they did know, that [the agent] were to be remunerated by receiving a certain allowance or discount from the underwriters with whom they made the bargains. It was easy to ascertain by inquiry what was the usual and ordinary charge which agents...are entitled to make. If a person employs another, who he knows carries on a large business, to do certain work for him, as his agent with other persons, and does not choose to ask him what his charge will be, and in fact knows that he is to be remunerated, not by him, but by the other persons – which is very common in mercantile business – and does not choose to take the trouble of inquiring what the amount is, he must allow the ordinary amount which agents are in the habit of charging." However, an above-quoted passage should be read along with a peculiar feature in this case, namely the principal found out that the agent received commissions from underwriters and yet continued businesses with that agent for a further two years without any objection.[144] Therefore, to the extent that the case is accepted to establish the general principle that brokers do not have to disclose commissions received from underwriters is

[138] *Ibid*., 2-064
[139] *Ibid*., 2-051
[140] (1874) LR 9 Ch Ap 525
[141] *Ibid*., 525-526 and 539.
[142] *Ibid*., 539
[143] *Ibid*., 539-540
[144] *Ibid*., 540.

somewhat dubious. The case was followed in *Baring v. Stanton*.[145] The case involved London merchants who insured ships for an American shipowner. By the arrangement between these London merchants and the insurance companies, the merchants were to retain five per cent as commission and ten per cent for 'ready money' (prompt payment of premiums).[146] Mellish LJ who came to decide this latter case found it to be indistinguishable from the Cunliffe case. Again, he appeared to base his decision on the fact that there was a course of dealing between this American ship-owner and the London merchants.[147] Clarke explained the practice may be justified on the basis of 'informed consent' but he added this 'requires an actual awareness in the customer of a kind that is not always obvious in practice'.[148] Perhaps, the explanation on the basis of the 'informed consent' would be in line with the factual situations in the Cunliffe and Baring cases. Nevertheless, Lowry and the others also observed that to constitute an informed consent there must be 'knowledge of material facts'.[149] They referred to the case of *NZ Netherlands Society v Kuys*.[150] The case was not an insurance case. The case involved a society and an individual who used to be the secretary of the society over the publication of newspaper.[151] Lord Wilberforce dealt with the point on disclosure shortly that: '...as a matter of law...if an arrangement is to stand, whereby a particular transaction, which would otherwise come within a person's fiduciary duty, is to be exempted from it, there must be full and frank disclosure of all material facts'.[152] Therefore, it is doubtful why the relationship between the broker as the agent and the assured as a principal has to depart from this general principle.

MARINE RISKS

This part will deal with common marine risks. These are: (a) perils of the seas; (b) fire; (c) theft; (d) jettison; and (e) piracy.[153]

(a) Perils of the Seas

What constitutes the 'perils of the seas' has been defined in Rule 7 of the 'Rules for Construction of Policy' attached to the Schedule of the MIO. Rule 7 explains that this term 'refers to fortuitous accidents or casualties of the seas. It does not include the ordinary actions of the winds and waves'. This is the same concept as the 'perils of the seas' in the law on carriage of goods by sea. Three cases are crucial to the understanding of this,[154] namely:

[145] (1876) 3 Ch D 502
[146] *Ibid*.
[147] *Ibid*., 506-507
[148] Clarke and the others (n 97) para 9-4B2
[149] John Lowry and the others, Insurance Law: Doctrines and Principles (3rd edn, Hard Publishing 2011) 81
[150] New Zealand Netherlands Society "Oranje" Incorporated v Laurentius Cornelis Kuys and Another [1973] WLR 1126
[151] *Ibid*., 1128
[152] *Ibid*., 1132.
[153] Susan Hodges, Cases and Materials on Marine Insurance Law (Cavendish Publishing 1999) 363
[154] See Gilman and Merkin (n 23) para 23-11

The Inchmaree,[155] The Xantho,[156] *Hamilton, Fraser & Co v Pandorf & Co*.[157] In addition to these, there are also significant cases of *The Popi M*[158] and The Marel[159] dealing with the burden of proof. In The Xantho, the claim was made by the owners of cargo on board for loss or damage following the collision with another vessel.[160] The question whether the situation fell within the exception in the bills of lading for perils of the seas (or more precise the term used in the bill of lading was "dangers and accidents of the sea").[161] Lord Herschell explained the term as follows:[162]

"I think it clear that the term "perils of the seas" does not cover every accident or casualty which may happen to the subject-matter of the insurance on the sea. It must be a peril "of" the sea. Again, it is well settled that it is not every loss or damage of which the sea is the immediate cause that is covered by these words. They do not protect, for example, against that natural and inevitable action of the winds and waves, which results in what may be described as wear and tear. There must be some casualty, something which could not be foreseen as one of the necessary incidents of the adventure. The purpose of the policy is to secure an indemnity against accidents which may happen, not against events which must happen."

Bearing this definition in mind, in *the Pandorf case*, the pipe on the ship was bitten by the rats and hence the sea water came in and caused damage to the cargo on board.[163] The question once again was whether the situation fell within the exception in the bill of lading. The House of Lords found it was. Lord Watson explained:[164]

"When a cargo of rice is directly injured by rats, or by the crew of the vessel, the sea has no share in producing the damage, which in that case, is wholly due to a risk not peculiar to the sea, but incidental to the keeping of that class of goods, whether on shore or on board of a voyaging ship. But in the case where rats make a hole, or where one of the crew leaves a port-hole open, through which the sea enters and injures the cargo, the sea is the immediate cause of mischief, and it would afford no answer to the claim of the insured to say that, had ordinary precaution been taken to keep down vermin, or had careful hands been employed, the sea would not have been admitted and there would have no subsequent damage."

[155] The Thames and Mersey Marine Insurance Company Ltd v Hamilton, Fraser & Co (The "Inchmaree") (1887) 12 App Cas. 484.
[156] Thomas Wilson, Sons & Co v The Owners of the Cargo per the "Xantho" (1887) 12 App Cas 503.
[157] (1887) 12 App Cas 518.
[158] Rhesa Shipping Co SA v Herbert David Edmunds; Rhesa Shipping Co SA v Fenton Insurance Co Ltd (The "Popi M") [1985] 2 Lloyd's Rep 1
[159] Lamb Head Shipping Co Ltd v Jennings (The "Marel") [1994] 1 Lloyd's Rep 624
[160] The Xantho (n 468) 504.
[161] *Ibid*., 508.
[162] *Ibid*., 509.
[163] Pandorf (n 469) 518
[164] Pandorf (n 469), 525

This has to be contrasted with the situation in The Inchmaree where the pump could not be opened leading to the consequence that a part of the pump exploded as the sea water forced itself in.[165] The House of Lords did not find the loss to fall within the 'perils of the seas' or similar terms.

The question of burden and standard of proof of the perils of the seas came to be discussed by the House of Lords in *The Popi M* where in that case the vessel sank in fine weather.[166] Despite there being no factual evidence in support, Bingham J felt compelled to find that the vessel sank due to the collision with a submarine.[167] In the House of Lords, Lord Brandon of Oakbrook emphasised that 'the Judge is not bound always to make a finding one way or the other with regard to the facts averred by the parties. He has opened to him the third alternative of saying that the party on whom the burden of proof lies…has failed to discharge that burden'. He explained that there was no need for Bingham J. to find the cause of the loss when none of the cause canvassed by the parties appeared probable. In the event of doubt as to the cause, it is always available to the judge to hold that the shipowners 'have failed to discharge the burden of proof which was on them'. This was followed in *The Marel.*

In The Marel, the vessel sank due to a sudden flooding while she had been found to be in fi ne and seaworthy condition.[168] Dillon LJ rejected the submission that there existed a presumption that the vessel must be lost due to the 'perils of the seas' when she had been found to be seaworthy before she set sail. Instead, he ascribed it to the standard of proof.

In *The Marel*, many suggested causes of the sinking were found improbable and Dillon LJ found that the burden of proof remains on the plaintiffs. He endorsed the reasoning of Lord Brandon of Oakbrook in *The Popi M* where he explained the common sense dictates the finding on the balance of probabilities.[169]

(b) <u>Fire :</u>

What constitutes this risk is not defined in the statute. Therefore, gleaning through case law assists in understanding this risk.[170] Two cases were considered 'fire' in the context of the then s.502(1) of the Merchant Shipping Act 1894 which provided essentially that the owner of the British ship shall not be liable for any loss or damage arising from fi re if there is no fault or privity on his part. In The Diamond, [171]Bargrave Deane J found the loss or damage arising from fire to encompass loss or damage due to smoke from the fire as well as loss or damage due to water used in extinguishing the fire.[172] In *Tempus Shipping Co v Louis*

[165] The Inchmaree (n 467) 490
[166] The Popi M (n 470) 3
[167] *Ibid*., 5
[168] The Marel (n 471) 628
[169] *Ibid*
[170] Hodges (n 465) 392.
[171] [1906] P 282
[172] *Ibid*., 287

Dreyfus & Co,[173]Wright J found the term 'fire' to include fi re occurring from spontaneous combustion. However, fire does not include: '[m]ere heating, which has not arrived at the stage of incandescence or ignition…'[174] In The Alexion Hope, [175]Staughton J found fire to include also deliberate fire. However, in this context, the fi re deliberately caused by the assured is excluded.[176]

(c) Theft:

"Theft" or "thieves" is defined in Rule 9 of the Rules for Construction of Policy attached to the MIO. It 'does not cover clandestine theft or a theft committed by any one of the ship's company, whether crew or passengers'. The fact that clandestine theft is excluded means the theft must be violent.[177] The significant authority as far as this risk is concerned is *La Fabrique de Produits Chimiques v Large*.[178] The case was about cargo insurance on a warehouse to warehouse basis. The thieves broke into the warehouse which was left unattended at night by breaking the padlocks and stealing some cargoes.[179] While no violence was caused to any person, Bailhache J was of the view that there was use of force or violence in this case. This should be contrasted with the situation in *The Andreas Lemos*. [180]In this case, the vessel was insured for both marine risk (hull & machinery insurance) and war risk. The war risk was covered by the war risk association, the defendant in this case. The war risk insurance covered, among other things, risks excluded from marine risk cover by the existence of the "F.C & S clause".[181] Both risks of piracy and theft were among exclusions listed in the clause. One of the questions for Staughton J (as he then was) was whether the factual circumstances of the case fell under the risk of theft.[182] The facts were thus: while the vessel was in Chittagong Roads, men with knives boarded her and took some of the vessel's equipment. They were spotted by a crewman on watch while they were throwing equipment into the sea. The men took fright and jumped into the sea when they saw crewmen coming with knives and pistols.[183] Staughton J viewed the situation to amount only to the

[173] Tempus Shipping Company Ltd v Louis Dreyfus and Company Ltd [1930] 1 KB 699
[174] at 708
[175] Schiffshypothekenbank Zu Luebeck AG v Norman Philip Compton (The "Alexion Hope") [1987] 1 Lloyd's Rep 60
[176] *Ibid*., 67. The deliberate fi re caused by the assured is excluded pursuant to s.55(2)(a) of the MIO which provides: 'an insurer is not liable for any loss attributable to the willful misconduct of the assured, but, unless the policy otherwise provides, he is liable for any loss proximately caused by a peril insured against, even though the loss would not have happened but for the misconduct or negligence of the master or crew'
[177]Hodges (n 465) 405.
[178] La Fabrique de Produits Chimiques Societe Anonymes v Large [1922] 1 KB 203.
[179] *Ibid*., 205
[180] Athens Maritime Enterprises Corporation v Hellenic Mutual War Risks Association (Bermuda) Ltd (The "Andreas Lemos") [1982] 2 Lloyd's Rep 483
[181] *Ibid*., 486. 'FC & S' stands for 'Free of Capture and Seizure'.
[182] *Ibid.*
[183] The Andreas Lemos (n 502), 485-486.

'clandestine theft'. The reason was because in his finding: 'force or a threat of force was used by the men to make good their escape'.[184]

The next relevant case, albeit not a marine insurance case, is *Dino Services v Prudential*.[185] The case involved a combined business insurance which also covers theft or theft involving: 'entry to or exit from the premises by forcible and violent means'. The assured in this case locked up his company's premises and then put the keys in the glove box in his car. He parked his car adjacent to the public house and then went back home. When he returned the next day, the car was gone. The thief used the key in his car to enter his premises and stole some items. Tracing previous authorities, Kerr LJ explained by using a key to open the lock or by turning a knob would suffice to find there was a 'forcible' entry. For the term 'violent', he explained: 'it is intended to convey that the use of some force to effect entry…is accentuated or accompanied by some physical act which can properly be described as violent in its nature or character'.[186] For, breaking the window constitutes such violence. However, violence does not necessarily connote illegality.[187]

(d) <u>Jettison</u>:

This risk can be dealt with briefly as its focus in marine insurance law has been substantially decreased. It means 'a cargo has been thrown overboard by way of sacrifice in time of peril to the vessel or other cargo'.[188] First, the loss by jettison is normally claimable in general average.[189] Secondly, jettison must be done with a reason. 513 So, if jettison is needed due to the bad sea condition, the claim may be made on the basis of the perils of the seas. Likewise, if goods are thrown over-board to prevent the spreading of the fire, the loss may fall under fire.[190] So, the risk of jettison will not be discussed here further.

(e) <u>Piracy:</u>

For detailed discussions of this risk, readers may refer to the work of the author elsewhere.[191] The risk of piracy is defined in Rule 8 of the Rules for Construction that this term 'includes passengers who mutiny and rioters who attack the ship from the shore'. This is unlikely to fit in well within the modern context where attacks from pirates are unlikely to be from the

[184] *Ibid*., 491.
[185] Dino Services Ltd v Prudential Assurance Co Ltd [1989] 1 Lloyd's Rep 379
[186] *Ibid*., 382
[187] *Ibid*. Kerr LJ gave an example of he had to break his own door because he forgot the key. That would be violent but that was not illegal.
[188] Baris Soyer, 'Marine Insurance' in Robert Merkin (ed.), Insurance Law – An Introduction (Informa 2007) 227
[189] *Ibid*., see Rule 1 of the York-Antwerp Rules 2014
[190] *Ibid*.
[191] Poomintr Sooksripaisarnkit, 'The Global Insurance Industry' in Charles H. Norchi and Gwenaële ProutièreMaulion (eds), Piracy in Comparative Perspective: Problems, Strategies, Law (A. Pedone & Hart 2012), 275.

'shore'.[192] Also, how far from the shore can a ship be attacked?[193] It must also be noted that the definition of the 'piracy' in Rule 8 is not the same as that in the context of the United Nations Convention on the Law of the Sea (UNCLOS) 1994.[194] This question has not been answered by authorities. In dealing with the piracy risk, two cases are referred to by the learned editors of Arnould's Law of Marine Insurance and Average. [195]

The first case is *Republic of Bolivia v Indemnity Mutual Marine Assurance, Limited*. [196]In this case, a vessel was taken by a group of men who attempted to establish the 'Free Republic of El Acre' in a once disputed area between Brazil and Bolivia.[197] All of the judges in the Court of Appeal endorsed the speech of Pickford J. at first instance where there the pirate was described as 'a man who is plundering indiscriminately for his own ends, and not a man who is simply operating against the property of a particular State for the public end'.[198] Therefore, it is the motive for the 'private ends' which distinguishes the piracy risk from the risk of terrorism.[199]

The next case is *The Andreas Lemos*, the facts of which was mentioned above. In addition to the argument on the risk of theft, the argument on the risk of piracy was also raised. In reliance on public international law, the counsel for the underwriters argued that the situation did not constitute piracy as it happened on territorial waters.[200] Reviewing various authorities, Staughton J. concluded there is no basis to restrict the risk of piracy to events happening outside territorial waters. 'In the context of an insurance policy, if a ship is, in the ordinary meaning of the phrase, "at sea"…or if the attack upon her can be described as "a maritime offence"…then for the business purposes of a policy of insurance she is…in a place where piracy can be committed'.[201] Nor did he find that the risk of piracy has to be confined within territorial waters. 'It is not easy to envisage a ship being attacked by rioters from the shore when she is outside territorial waters; but it could happen, I suppose, when she is "at sea"'.[202]

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[192] Poomintr Sooksripaisarnkit (n 515), 278
[193] *Ibid*., 280
[194] In Article 101 of the UNCLOS: 'Piracy consists of any of the following acts: (a) any illegal acts of violence or detention, or any act of depredation, committed for private ends by the crew or the passengers of a private ship or a private aircraft, and directed (i) on the high seas, against another ship or aircraft, or against persons or property on board such ship or aircraft; (ii) against a ship, aircraft, persons or property in a place outside the jurisdiction of any State; (b) any act of voluntary participation in the operation of a ship or of an aircraft with knowledge of facts making it a pirate ship or aircraft; (c) any act of inciting or of intentionally facilitating an act described in subparagraph (a) or (b)'.
[195] Gilman and Merkin (n 23) 23-31-23-32.
[196] [1909] 1 KB 785.
[197] *Ibid*., 787
[198] *Ibid*., 791
[199] Sooksripaisarnkit (n 515) 283.
[200] The Andreas Lemos (n 502) 487
[201] *Ibid*., 490
[202] *Ibid.*

EXCLUDED RISKS

Apart from any exclusions agreed between the parties or stipulated in the standard form contracts, risks which are excluded in marine insurance are mentioned in s.55(2) of the MIO:

In particular –

a) the insurer is not liable for any loss attributable to the wilful misconduct of the assured, but unless the policy otherwise provides, he is liable for any loss proximately caused by a peril insured against, even though the loss would not have happened but for the misconduct or negligence of the master or crew;
b) Unless the policy otherwise provides, the insurer on ship or goods is not liable for any loss proximately caused by delay, although the delay be caused by the peril insured against; and
c) Unless the policy otherwise provides, the insurer is not liable for ordinary wear and tear, ordinary leakage and breakage, inherent vice or nature of the subject-matter insured, or for any loss proximately caused by rats or vermin, or for any injury to machinery not proximately caused by maritime perils.

i. **Willful misconduct:** In *Papamiditriou v Henderson*, the case involved a war risk insurance of a ship that was chartered to carry goods of the Government of Spain. She was instructed to sail to Oran. The relevant information at the time was that the problem may arise off Cap Bon, near to Oran. The master was instructed by the owners to return. However, insurgent warships soon seized her. It was alleged by the underwriters that there was wilful misconduct on the part of the owners in allowing the vessel to proceed to Oran while they should have known that the risk of capture by the insurgent warships was particularly high.

The argument was rejected and it was held that "Of course, if it was a case in which the shipowner got warning that a blockade had been established at a particular port or that a ship was lying waiting at a particular point, and the shipowner deliberately sent his ship forward to that point to run the blockade, it may be that there would be, in certain cases, an inference to be drawn that he was not endeavouring to carry out the voyage, but what he was endeavouring to do was to get his ship captured, and that, of course, would be willful misconduct…I certainly would be very sorry to lay down any such doctrine, that a shipowner who had dispatched his ship on what was to him a perfectly lawful voyage, should be held guilty of willful misconduct because he had continued on that voyage and was doing his best to fulfill it, more especially when one finds that when he was asked to order the ship to return, he did order his ship to return…"

ii. **Delay:** In discussing this exclusion, cases including *Taylor v Dunbar* and *Pink v Fleming* were mentioned by Bennett. *Taylor v Dunbar* involved insurance of dead pigs and beef from Hamburg to London via two ships. Both ships encountered strong gales and heavy weather en route that caused delay. Goods were found putrid. The court found the damage to goods

was caused by delay. Relying on this decision, in *Pink v Fleming* where lemons and oranges were found in damaged condition following the collision of the ship which necessitated repairs of the ship, discharging, and re-loading the goods, the Court.

iii. Ordinary wear and tear: This simply means deterioration or decrease in value after the subject-matter has been used for a period of time. This is found more in the context of hull & machinery insurance. '[I]t would apply to "a case where a ship's plating simply wastes away through rust, or a ship sinks through general debility; or a case where a part of machinery simply wears out in use and breaks causing damage", as where a link in a dredger's chain snaps simply because it is worn'

iv. Inherent Vice: This exclusion has been discussed by the United Kingdom Supreme Court in a fairly recent decision in *The Cendor MOPU. In Soya GmBH v White, Lord Diplock*[203] explained the term 'inherent vice' as follows:

"It means the risk of deterioration of the goods shipped as a result of their natural behaviour in the ordinary course of the contemplated voyage without the intervention of any fortuitous external accident or casualty."

MARINE CLAIMS

Two aspects are considered here: (a) fraudulent claims; (b) damages for late payment

of insurance claims.

(a) Fraudulent claims

The assured may submit a fraudulent claim and this is unfortunately not uncommon. The fraudulent claim may appear in one of these five forms:

1) Where the assured procures or causes the loss deliberately and knowingly (or with reckless indifference to the truth) presents a claim for an indemnity in respect of that loss;
2) Where the assured suffers no loss, but manufactures or invents a loss for presentation to the insurer;
3) Where the assured suffers a genuine loss but presents the claim in such a way as knowingly (or with reckless indifference to the truth) to disguise the fact that the insurer has or might have a defence to the claim;
4) Where the assured suffers a genuine loss, which is indemnifiable under the insurance contract, but the assured knowingly (or with reckless indifference to the truth) exaggerates the claim to a not insignificant extent; and

[203] Global Process Systems Inc v Syarikat Takaful Malaysia Berhad (The "Cendor MOPU") [2011] UKSC 5, [2011]
1 Lloyd's Rep 560.

5) Where the assured suffers a genuine loss, which is indemnifiable under the insurance contract, but the assured deploys a fraudulent device with the intention of (not insignificantly) improving his prospects vis-à-vis the insurer.

In *The Star Sea*[204], the alleged breach of post-contractual duty of utmost good faith was in relation to information transpired during the exchange of witness statements. In light of the finding of the House of Lords that the post-contractual duty of utmost good faith ceases once the writ is issued any further analysis in relation to s.17 was purely obiter.

The *Gottlieb* case[205] involved four claims during one policy year in a building insurance. It was found by the judge at first instance that the assured acted fraudulently in respect of two out of these four claims. These alleged fraudulent conducts were in relation to a claim for temporary accommodation supplied by the builder and the forged electrician bill. However, there were interim payments made by the underwriters in respect of these two claims prior to the fraud. The judge at first instance held that the assured had to return all sums paid by the underwriters in respect of these two claims. The assured challenged this in the appeal that the judge 'should have held that a fraudulent claim has no effect on interim payments made…' Mance LJ came to state the law as follows:

"…the proper scope of the common law rule relating to fraudulent insurance claims is to forfeit the whole of the claim to which the fraud relates, with the effect that the consideration of any interim payments made on that claim fails and they are recoverable."

Damages for late payment of insurance claims

This can be dealt with shortly with *The Italia Express.*[206] In *The Italia Express*, the ferry was sunk due to explosives stuck to the hull. The underwriters alleged willful misconduct on the part of the assured and that allegation was only withdrawn after the 37th day of the trial. The ship-owners came to claim from the underwriters for damages for loss of supposed incomes along with anticipated increase in value of the replacement ship and they also claimed for 'damages for hardship, inconvenience, and mental distress'. Hirst J held that the ship-owners could only claim up to the value stated in the valued policy. He held the claims advanced by the ship-owners to have the nature of 'damages for late payment of damages', and this is contrary to the rule laid down by the House of Lords in The Lips. He appeared to be of the view that the underwriters' duty under the contract of insurance is to hold the assureds harmless and that duty is breached once there is a loss of the subject matter insured.

[204] Manifest Shipping Co Ltd v Uni-Polaris Insurance Co Ltd and La Reunion Europeene (The "Star Sea") [2001] UKHL/1; [2001] 1 Lloyd's Rep 389
[205] [2005] EWCA Civ 112, [2005] Lloyd's Rep IR 369
[206] Apostolos Konstantine Ventouris v Trevor Rex Mountain (The "Italia Express" (No.2)) [1992] 2 Lloyd's Rep 281.

LOSSES IN MARINE INSURANCE LAW

There are two types of losses recognised in marine insurance law – partial loss and total loss. Total loss can also be divided into two types – actual total loss and constructive total loss. These are reflected in s.56 of the MIO:

1) A loss may be either total or partial. Any loss other than a total loss, as hereinafter defined is a partial loss.
2) A total loss may be either an actual total loss, or a constructive total loss.
3) Unless a different intention appears from the terms of the policy, an insurance against total loss includes a constructive, as well as an actual, total loss.
4) Where the assured brings an action for a total loss and the evidence proves only a partial loss, he may, unless the policy otherwise provides, recover for a partial loss.
5) Where goods reach their destination in specie, but by reason of obliteration of marks, or otherwise, they are incapable of identification, the loss, if any, is partial, and not total.

(a) Actual Total Loss

Pursuant to s.57 of the MIO:

(1) Where the subject-matter insured is destroyed, or so damaged as to cease to be a thing of the kind insured, or where the assured is irretrievably deprived thereof, there is an actual total loss.

(2) In the case of an actual total loss no notice of abandonment need be given. It can be seen from this section that there are three circumstances which can render the actual total loss of the subject-matter insured.

i. The subject-matter is damaged as to cease to be a thing of the kind insured

This can be contrasted with the more recent case of *Fraser Shipping v Colton*. In this case, the plaintiffs bought the ship and sold it again for demolition with the delivery place ultimately agreed to be at Huang Pu. The tug was engaged to tow the vessel. At Huang Pu anchorage, due to the typhoon, the tug and the tow parted. Despite the ship being found broken into two parts, and despite the argument that the nature of

this subject matter was changed from a 'ship' to a 'wreck', Lord Justice Potter did not find that the subject-matter ceased to be the thing insured. In his reasoning, '…the vessel was a dead ship under tow and heading for break-up…Albeit it was grounded and incapable of proceeding without salvage and a degree of repair, its essential components were not so damaged or dissipated that its role and function as a dead ship susceptible of being towed away for scrap had been totally destroyed'. However, the plaintiffs also based their claim for

actual total loss upon the ground that they were 'irretrievably deprived' of the vessel to which we now turn.

Where the assured is irretrievably deprived of the subject-matter insured

Potter LJ in *Fraser Shipping v Colton*[207] stated the test as follows:

"As to the defi nition of actual total loss, whether the plaintiffs were "irretrievably deprived" of the vessel prima facie depends upon whether, by reason of the vessel's situation, it was wholly out of the power of the plaintiffs or the underwriters to procure on its arrival. It seems to be that this, in turn, depends upon whether the vessel could have been physically salved or not."

He found upon the facts that the salvage of the vessel was feasible. As to the fact that the costs of salvage may prove to exceed the value of the vessel, he held this to be relevant to the constructive total loss, not the actual total loss.

(b) Constructive Total Loss

The recognition of constructive total loss makes the marine insurance contract unique from other types of insurance contract. The MIO defines the constructive total loss in s.60.

(1) Subject to any express provision in the policy, there is a constructive total loss where the subject-matter insured is reasonably abandoned on account of its actual total loss appearing to be unavoidable, or because it could not be preserved from actual total loss without an expenditure which would exceed its value when the expenditure had been incurred.

(2) In particular there is a constructive total loss –

(i) Where the assured is deprived of the possession of his ship or goods by a peril insured against, and (a) it is unlikely that he can recover the ship or goods, as the case may be, or

(b) The cost of recovering the ship or goods, as the case may be, would exceed their value when recovered; or

(ii) In the case of damage to a ship, where she is so damaged by a peril insured against that the cost of repairing the damage would exceed the value of the ship when repaired…

(iii) In the case of damage to goods, where the cost of repairing the damage and forwarding the goods to their destination would exceed their value on arrival.

Despite the words 'in particular' at the beginning of s.60(2), this is not taken as an illustration of s.60(1) as Lord Wright explained in the *Robertson v Petros M Nomiskos, Ltd*, '[t]he two

[207] [1997] 1 Lloyd's Rep. 586

sub-sections contain two separate definitions, applicable to different conditions of circumstances'. Hodges explained constructive total loss by splitting it into four categories and the same structure is adopted here. These four categories are: (1) Reasonable abandonment of the subject-matter insured; (2) Deprivation of possession of ships or goods; (3) Damage to Ships; and (4) Damage to goods

Reasonable abandonment of the subject-matter insured

The term 'abandonment' appears in different places of the MIO in different context. Within the context of s.60(1), this term was discussed in *Court Line Ltd v King.* Scott LJ explained-

"When the ship is spoken off as "abandoned on account of its actual total loss appearing to be unavoidable", the word is used in nearly the same sense as when according to the law of salvage the ship is left by master and crew in such a way as to make it a "derelict"…But to constitute the ship a "derelict", it must have been left (a) with that intention…(b) with no intention of returning to her; and (c) with no hope of recovering her. Obviously that sense of the word is frequently inappropriate to the second case to which the first sub-section applies, namely, because it could not be preserved from total loss (that is an economic test) "without an expenditure which would exceed its value when the expenditure had been incurred"…

Du Parq LJ in the same case put it slightly different:

"The word "abandoned" in s.60 cannot…be given one sense in relation to the first, and another in relation to the second limb of sub-s.(1)…the word "abandon" must refer to something done by the shipowner or his agent with his authority, and I would add that the master may often be an agent of necessity. I understand "abandon" to mean "give up for lost", and when I say give up for lost I mean that the owners are renouncing all their rights in the ship except the right to recover insurance. This meaning fits both limbs of the sub-section. Of course, the master may, in this sense, abandon the ship on behalf of the owners, but in order to prove that he has done so, it is not enough to show that he and the crew left the ship temporarily to her fate, or that, having left her, he had grave doubt whether she would be recovered or ultimately saved. It must, I think, be made clear that he so acted as to show an intention to renounce all the owners' (his principals') rights in the ship, their right to property as well as to possession."

(ii) ***Deprivation of possession of ships or goods***

The issue of the deprivation of possession of ships was considered in an arbitration award given by Staughton J in *The Bamburi*.614 Staughton J reiterated that s.60(2) is not a mere illustration of s.60(1) and hence even the situation did not fall within the ambit of s.60(1), it may still fall within s.60(2). He also found implicit in s.60(2)(i)(a) that ships and goods are unlikely to be recovered 'within a reasonable time'. He discussed at length the meaning of 'possession' in this context and ultimately he equated this term with 'free use and disposal'.

The facts of the case arose against the background of the war between Iran and Iraq while the *Bamburi* was discharging at a port in Iraq. The Master attempted many times to obtain permissions to leave the port but his requests were refused. Due to the war, the Master decided 'to evacuate and repatriate the crew' while he, the chief officer, and the chief engineer stayed behind and visited the vessel from time to time until they departed nearly a month later, i.e., around early October 1980. The chief engineer returned to the ship again in December 1980 while the chief officer returned in January 1981 and the rest of the crew returned by May 1981. Still, the vessel could not get out of the port. 'There [was] no Iraqi presence on board any of the vessels, either physically or in the sense that there is any interference by the Iraqi Officials in the day-to-day life on board the ships'. Referring to two official documents the contents of which could not be disclosed, Staughton J was of the view that in the event it was unlikely for the owners to be able to recover the ship within a reasonable time. Whether the recovery of the ships or goods is unlikely depends on the 'viewpoint of a reasonable man, and not that of the assured.

(iii) ***Damage to ships***

The modern case in point is *Kastor Navigation Co. Ltd v AGF MAT.*[208]

In the *Kastor Navigation* case, the vessel *Kastor Too* had been valued for US$ 3 million. While on her voyage, a fi re broke out from the engine room. With unsuccessful attempts to extinguish the fi re, crews abandoned the vessel. The vessel sank within fifteen hours from the initial notice of the fire. The claim founded on actual total loss. The claimants put forward an alternative ground of constructive total loss, maintaining that 'prior to her sinking the vessel was so damaged by fire that the cost of requiring the repairing of the damage would have exceeded the insured value'.

Reviewing factual circumstances along with evidences, Tomlinson J not convinced that the fire could cause substantial influx of seawater to the extent that the vessel could have been sunk within fifteen hours. Instead, he found the cause of sinking was 'a large unexplained ingress of water'. He found that even though the fi re may affect the piping or water system in the vessel, that would not cause sufficient quantity of water such that the water caused by the impact of the fi re can be regarded as one of the proximate causes of the loss.

(iv) ***Damage to goods***

This part can be dealt with very briefly. Both Bennett and Hodges refer to a pre-1906authority which seemed to suggest that only the forwarding costs in excess of the original freight is to be taken into account. Bennett is inclined to the opinion that the wording of the statute seems to encompass the entire forwarding costs. Hodges only highlighted the ambiguity but left the question unanswered. Once there has been a constructive total loss of

[208] [2004] EWCA Civ. 277, [2004] 2 Lloyd's Rep 119.

the subject-matter insured, to be able to make a claim for the constructive total loss, the assured has to submit a 'notice of abandonment'.

(c) Partial Loss

Partial loss is a kind of loss which does not fall within either actual or constructive total loss. 'As a residual category, the concept of a partial loss does not present many problems'.658 It is provided in s.79(2) that:

"Subject to the foregoing provisions, where the insurer pays for a partial loss, he acquires no title to the subject-matter insured, or such part of it as may remain, but he is thereupon subrogated to all the rights and remedies of the assured in and in respect of the subject-matter insured as from the time of the casualty causing the loss, in so far as the assured has been indemnified, according to this Ordinance, by such payment for the loss."

However, the problem arises where there were successive losses. The MIO has a specific provision deals with such circumstances in s.77:

"(1) Unless the policy otherwise provides, and subject to the provisions of this Ordinance, the insurer is liable for successive losses, even though the total amount of such losses may exceed the sum insured.

(2) Where, under the same policy, a partial loss, which has not been repaired or otherwise made good, is followed by a total loss, the assured can only recover in respect of the total loss:

Provided that, nothing in this section shall affect the liability of the insurer under the suing and labouring clause."

The problem lies in s.77(2) of the MIO: The effect of this sub-section is that 'where the total loss is caused by a covered peril under the same policy that covers the initial partial loss, the assured is entitled to indemnification for the partial loss only'. However, it leaves out the circumstance whereby the total loss does not come within the ambit of the policy which covers the partial loss. This aspect is left to the common law. Bennett maintained two authorities are relevant: *Livie v Janson*[209] and *British and Foreign Insurance Co v Wilson Shipping Co.*[210]

Livie v Janson involved the transportation of goods from New York to London. The hull insurance contained the warranty 'free from American condemnation'. The ship slipped out of New York. On the way, she was hit by ice until she reached the shore and got stuck with her bottom damaged due to rocks. The American authorities located her and she and her

[209] (1810) 12 East 648, 104 ER 253
[210] [1921] 1 AC 188

cargo ‘were finally condemned for the breach of embargo’. The court concluded that the assured had no right to claim in respect of damages caused by ice and rocks.

The House of Lords in the *British and Insurance* case followed this where, in that case, the ship on three occasions was damaged by the risks covered in the insurance policy. The permanent repair to the last damage had not yet been conducted when she got stuck by torpedo and became a total loss.667 In the passage of Lord Birkenhead LC:

“The true rule is capable of statement in the following proposition. When a vessel, insured against perils of the sea, is damaged by one of the risks covered by the policy and before that damage is repaired she is lost, during the currency of the policy, by a risk which is not covered by the policy, then the insurer is not liable for such unrepaired damage. The rule so stated embodies the principle upon which underwriters and merchants have based their practice in such matters for upwards for a century, and, even if this House were of opinion that the rule did not correctly state the law, it would be a matter for grave consideration whether such a rule, which has been observed for so long, which has been expressly or impliedly incorporated in so many contracts, and which has profoundly influenced the course of dealing between merchants, should be reversed at this period of its history.”

MARINE INSURANCE IN INDIA

Historical Development:

Marine Insurance is not of recent origin. Its existence can be traced back to several centuries. Questions concerning it have naturally been coming up for a number of years and the law concerning it had taken a definite shape much prior to 1906 when the English Marine Insurance Act was passed with a view to codify that law. Contrary to popular belief, Lloyds’ of London was not the first group of people to offer insurance for maritime commerce. The first form of marine insurance dates back to the year 3000 BC when Chinese merchants dispersed their shipments amongst several vessels so as to abridge the possibility of damage to the products.

The earliest account of insurance came in the form of ‘bottomry’, a monetary payment that protects traders from debt if merchandise is lost or damaged. Another form of early insurance was the ‘general average’. During cargo shipments in 916 BC, a merchant would accompany his cargo to see that it was not jettisoned, or voluntarily thrown overboard by the crewmen in times of a storm or sinkage. To guard against this mutual interest of safety and quarreling amongst merchants, the Rhodians initiated the ‘general average’, which ideally meant that a person would be compensated through pro rata contributions of other merchants if their goods were jettisoned during shipment.

From the 11th century to 18th century, a few additional breakthroughs occurred in marine insurance. In 1132, the Danish began to reimburse those who experienced loss at sea. In

1255, 'insurance premiums' were used for the first time as the Merchant State of Venice pooled these premiums to indemnify loss due to piratry, spoilage, or pillage. The first marine insurance policy was introduced in 1384 in an attempt to cover bales of fabric traveling to Savona from Pisa, Italy. Within the next century, merchants from Lombard began the first insurance practice in London. Finally, in 1688, Lloyd's of London, named after Edward Lloyd, began the risky business of insurance underwriting. From a Coffee house in London, it has now grown to become the largest marine insurance underwriters in the world. [211]

The law relating to marine insurance was codified in England by the Marine Insurance Act of 1906, and this Act came into force on January 1, 1907. This was proposed and initiated in an attempt to clarify and set forth the regulations and policy variables associated with marine insurance agreements. This enactment purported to codify only those principles of the law which related exclusively to marine insurance and expressly enacted that the rules of the common law, including the law merchant, save in so far as they were inconsistent with the express provisions of the Act, were to continue to apply to contracts of marine insurance.

Development of Indian law

Since independence Indian shipping had undergone a considerable expansion, and it became mandatory for an Indian legislation consistent with Indian conditions, for the smooth development of Indian marine insurance. Prior to legislation, questions turning on this branch of law had to be decided by the general law of contract and the English decisions based on the common law rules of contract. The Indian enactment is a substantial reproduction of its English counterpart, following its plan closely and deviating from it at some places, only unnecessarily.

The preamble to the Indian Act states that it is "an Act to codify the law relating to marine insurance." The canon of construction generally applicable to a codifying statute is well known: the language of the statute must be given its natural meaning, regard being had to the previous state of the law only in cases of doubt or ambiguity.[212]

But, as in the case of its English counterpart, the Indian Act embodies only some and not all of the legal principles and rules of marine insurance, and its language is so extremely concise and general that its full import and meaning can scarcely be understood without referring to the existing law which it was intended to express or to the decided cases from which that law was evolved.[213] In India the law of marine insurance has been put in a statutory form since 1963.

[211] http://www.acs.ucalgary.ca/MGMT/inrm/industry/marine.htm.
[212] Bank of England v. Vagliano Brothers, (1891) A.C. 107, 144 H.L. (per Lord Herschell)
[213] Cf. Rickards v. Porestal, (1942) A.C. 50, 79 H.L. (per Lord Wright)

CONTRACT OF MARINE INSURANCE

Most of the law of marine insurance is in essence pure interpretation of the contract contained in the common form of marine policy.[214] The basic principle of a contract of insurance is that the indemnity recoverable from the insurer is the pecuniary loss suffered by the assured under the contract. Thus, as per the enactment, a contract of marine insurance is a contract whereby the insurer undertakes to indemnify the assured, in manner and to the extent thereby agreed, against marine losses, that is to say, the losses incident to marine adventure.[215]

A contract of marine insurance may, by its express terms, or by usage of trade, be extended so as to protect the assured against losses on inland waters or any land risk that may be incidental to any sea voyage.

Where a ship in course of building, or the launch of a ship, or any adventure analogous to a marine adventure, is covered by a policy in the form of a marine policy, the provisions of this Act, in so far as applicable, shall apply thereto; but, except as by this section provided, nothing in this Act shall alter or affect any rule of law applicable to any contract of insurance other than a contract of marine insurance as defined, by the Act. [216]

The formal instrument embodying the contract of marine insurance is called " the policy"; and " the slip" or "covering note", is the informal memorandum that is drawn up when the contract is entered into. The subject- matter insured and the consideration for the insurance are respectively known as "the interest insured" and "the premium". The person who is indemnified is "the assured" and the other party is styled "the insurer" or "the underwriter" so called because he subscribes or underwrites the policy.

"Loss" includes damage or detriment as well as actual loss of property arising from maritime perils.

"Maritime perils" means the perils consequent on, or incidental to, the navigation of the sea, that is to say, perils of the sea, fire, war perils, pirates, rovers, thieves, captures, seizures, restraints, and detainments of princes and peoples, jettisons, barratry, and any other perils, either of the like kind or which may be designated by the policy.[217]

The phrase "Perils of the sea" refers to dangers that are particularly incident to the sea or navigation thereof.[218] It refers only to fortuitous accidents or casualties of the sea or caused

[214] Kulukundis v. Norwich Union Fire Insurance Society, (1937) 1 K.B. 1, 34 C.A. (per Scott L.J
[215] Indian Marine Insurance Act, 1963, Section 3 (Section 1, English Act of 1906)
[216] Indian Marine Insurance Act, 1963, Section 4 (Section 2, English Act of 1906)
[217] Indian Marine Insurance Act, 1963, Section 2(e) (Section 3(2), English Act of 1906); Thames v. Hamilton, (1887) 12 App. Cas. 484, 498 H.L. (per Lord Herschell)
[218] Thus, rain is not a peril of the sea, but ice obstructions and shoals form some of the vicissitudes of navigating the seas: Canada v. Union Marine, (1941) A.C. 55, 64 P.C. (per Lord Wright).

by the sea. It was not necessary that there must have been strong winds and/or waves at the time of the accident to constitute "peril of the seas".[219] There must be some casualty, something that could not be foreseen, as one of the necessary accidents of adventure.[220]

A "marine adventure"[221] includes any adventure where- a. Any insurable property (that is to say, any ship, goods[222] or other movables[223]is exposed to maritime perils; b. The earning or acquisition of any freight, passage money, commission, profit, or other pecuniary benefit, or the security for any advances, loan, or disbursements, is endangered by the exposure of insurable property to maritime perils; c. Any liability to a third party may be incurred by the owner of, or other person interested in or responsible for, insurable property, by reason of maritime perils.

The very foundation, in my opinion, of every rule which has been applied to insurance law is this, namely, that the contract of insurance contained in a marine or fire policy is a contract of indemnity, and of indemnity only, and that this contract means that the assured, in case of a loss against which the policy has been made, shall be fully indemnified, but shall never be more than fully indemnified. That is the fundamental principle of insurance, and if ever a proposition is brought forward which is at variance with it, that is to say, which either will prevent the assured from obtaining a full indemnity, or which will give to the assured more than a full indemnity, that proposition must certainly be wrong.[224] In principle marine insurance is a contract of indemnity, however, in practice it by no means results always in a complete indemnity.[225]

In *Richards v. Forest Land, Timber and Railways Co. Ltd.,*[226] it was observed, " The Act is merely dealing with a particular branch of the law of contracts- namely, those of marine insurance. Subject to various imperative provisions or prohibitions and general rules of the common law, the parties are free to make their own contracts and to exclude or vary the statutory terms. The object both of the legislature and of the courts has been to give effect to the idea of indemnity, which is the basic principle of insurance, and to apply it to the diverse complications of fact and law in respect of which it has to operate. In this way, the law merchant has solved or sought to solve, the manifold problems which have been presented by insurances of maritime adventures."

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[219] The Xantho, (1887) 12 App. Cas. 503, 508-91; Hamilton v. Pandorf (1887) 12 App. Cas. 518, 523 H.L. (per Lord Herschell).
[220] Stewart v. New Zealand, (1912) 16 C.W.N. 991, 996 (per Chaudhuri J.)
[221] Indian Marine Insurance Act, 1963, Section 2(d) (= Section 3(2), English Act of 1906).
[222] Goods" means goods in the nature of merchandise, but does not include personal effects or provisions or stores for use on board a ship; Rule 17 of the Schedule to Indian Marine Insurance Act, 1963.
[223] Movable" means any movable tangible property, other than a ship or goods, and includes money, valuable securities and other documents; Indian Marine Insurance Act, 1963, Section 2(f).
[224] Castellain v Preston (1883) 11 QBD 380, CA, (per Brett LJ)
[225] British & Foreign Marine Insurance Co., (1921) 1 A.C. 188, 214 H.L. (per Lord Sumner); Maurice v. Goldsbrough, (1939) A.C. 452, 466-7 P.C. (per Lord Wright)
[226] [1941] 3 All ER 62, HL, (per Lord Wright)

Thus, whilst the overriding principle of insurance is that of indemnification for losses sustained, the courts accept the fact that, because there must be an element of freedom for the parties to the insurance to contract on whatever terms they deem fit, in many instances, the indemnity is unlikely to be perfect.[227] This is largely attributable to the fact that both the common law and the enactment [228]endorse the fact that the value fixed by the police is conclusive of the insurable value of the subject matter insured. This allows the parties the freedom to set the value of the subject matter insured at whatever figure they so wish. Provided that any over valuation is not so excessive as to offend the cardinal principle of the duty to observe utmost good faith, the law of non-disclosure of a material fact, and of misrepresentation and the rule against wager, the courts are obliged to uphold the value fixed in the policy as conclusive. [229]

The most general rule of construction of a marine policy is that it is to be construed according to its sense and meaning, as collected in the first place from the terms used in it; and these terms are to be understood in their plain, ordinary and popular sense, unless they have by the known usage of trade acquired a peculiar meaning distinct from the popular sense of the same words, or unless the context evidently points out that they must in the particular instance, and in order to effectuate the immediate intention of the parties, be understood in some other special and peculiar sense.[230]

If there is any discrepancy between the printed clause in a marine policy and the stamped or written clause, the latter, on ordinary principles of construction, will prevail, since the stamped or written words are the immediate language and terms selected by the parties themselves for the expression of their meaning, whereas the printed words are a general formula adapted equally to their case and that of all other contracting parties upon similar occasions and subjects.[231]

REQUIREMENTS OF TAKING AN INSURANCE POLICY

Apart from the foremost requirement of entering into a contract of insurance it is essential that the contract contains an insurable interest in the subject matter, which has a value and is not a contract by way of wagering.[232] Also the policy must be in compliance with the

[227] A policy of assurance is not a perfect contract of indemnity. It must be taken with this qualification, that the parties may agree beforehand in estimating the value of the subject assured, by way of liquidated damages, as indeed they may in any other contract to indemnify: Irving v. Manning, (1847) 1 HLC 287, (per Patteson, J.)
[228] Indian Marine Insurance Act, 1963, Section 29(3) (= Section 27(3), English Act of 1906)
[229] Hodges, Susan, CASES AND MATERIALS ON MARINE INSURANCE LAW, Cavendish Publishing Limited, p. 2.
[230] Robertson v. French, (1803) 4 East 130, 135 (per Lord Ellenborough C.J.); Hart v. Standard Marine Insurance Co., (1889) 22 Q.B.D. 499, 501 (per Brown L.J.); Birrel v. Dryer, (1884) 9 App. Cas. 345, 353 H.L. (per Lord Watson)
[231] Robertson v. French, (1803) 4 East 130, 135 (per Lord Ellenborough C.J.); Canadian v. Canadian, (1947) A.C. 46, 57 P.C. (per Lord Wright); Renton v. Palmyra Trading Corporation, (1957) A.C. 149, 168 H.L. (per Lord Mortos).
[232] Indian Marine Insurance Act, 1963, Section 6 (= Section 4, English Act of 1906).

provisions mentioned under sections 24 to 34 of the Indian Act [233]and the Rules mentioned in the Schedule.

INSURABLE INTEREST:

Marine Insurance Act, declares void all marine insurance polices where insurable interest does not apply at time of loss. In the Act, Insurable interest is defined as-

Subject to the provisions of this Act, every person has an insurable interest who is interested in a marine adventure. In particular a person is interested in a marine adventure where he stands in any legal or equitable relation to the adventure or to any insurable property at risk therein, in consequence of which he may benefit by the safety or due arrival of insurable property, or may be prejudiced by its loss, or damage thereto, or by the detention thereof, or may incur liability in respect thereof.[234]

The essence of "interest", is that

a) There should be a physical object exposed to sea perils, and
b) The assured should stand in some relationship, recognized by law, to that object, in consequence of which he either benefits by its preservation, or is prejudiced by its loss, or mishap thereto.[235]

Attachment of Interest:

Section 8 of the Indian Act of 1963[236], states in the following words when "interest" must attach: -

1) The assured must be interested in the subject-matter insured at the time of the loss though he need not be interested when the insurance is effected: Provided that where the subject-matter is insured "lost or not lost", the assured may recover although he may not have acquired his interest until after the loss, unless at the time of effecting the contract of insurance the assured was aware of the loss, and the insurer was not.
2) Where the assured has no interest at the time of the loss, he cannot acquire interest by any act or election after he is aware of the loss. The main problem with insurable interest concerns the time at which the interest must attach; as a general rule (given under section 8, above), the assured must, at the time of loss, have an insurable interest in the subject matter insured. In contracts of international sale of goods, it is not always easy to ascertain at any given time whether the property has in fact passed from seller to buyer.

[233] Section 22 to 32, English Act of 1906
[234] Indian Marine Insurance Act, 1963, Section7 (= Section 5, English Act of 1906).
[235] Chalmers on Marine Insurance Act, 1906, 5th Ed., p. 12.
[236] Lucena v. Crauford, (1806) 2 Bos. & P. (N. R.) 269, 321 H.L. (per Lord Eldon); Macaura v. Northern Assurance, (1925) A.C. 619, 627 H.L. (per Lord Buckmaster)

The existence of "interest" is a condition to effective insurance. It is often a difficult question to determine the exact moment when under a contract of sale, the risk passes from seller to buyer. Prima facie, the risk passes when the property passes; but under the terms of the contract they may pass at different times. When the buyer insures goods, the question is whether, on the true construction of the contract, the risk has passed to him at the time the loss occurs.

Thus, the law recognizes certain exceptions to the general rule that the assured must have an insurable interest at the time of the loss. First, if the policy offers cover on a 'lost or not lost' basis, then the assured is, according to the proviso to section 8(1)[237] permitted to recover under the policy even though the loss was sustained before the insurance was affected. This exception operates to protect an assured who might have purchased goods without knowing whether or not they have already been lost at sea. Secondly, an assignee of a policy can acquire an interest in the subject matter insured even though the policy was assigned to him only after the loss, provided of course, that the assignor himself had, at the time of assignment, an interest to assign.[238]

Moreover, a defeasible or contingent interest (section 9 of the 1963 Act), partial interest (section 10), Bottomry[239]ection 12), masters and seamen's wages[240] (section 13), Advance freight[241] (section 14) and charges of interest[242] are all cases of insurable interest. With reference to assignment of interest, Section 17 of the Indian Act[243] provides: -

"Where the assured assigns or otherwise parts with his interest in the subject matter insured, he does not thereby transfer to the assignee his rights under the contract of insurance, unless there be an express or implied agreement with the assignee to that effect. But the provisions of this section do not affect a transmission of interest by operation of law."

Where a cargo of tallow was insured "warehouse to warehouse" by purchasers and the cargo was delivered short for transit and the missing quantity was never in transit and never became the property of the purchasers, they were held to have no insurable interest and the underwriters were held not liable for the missing quantity.[244]

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[237] Proviso to Section 6(1) of the English Act

[238] Hodges, Susan, CASES AND MATERIALS ON MARINE INSURANCE LAW, Cavendish Publishing Limited, p. 39.

[239] The lender of money on bottomry or respondentia has an insurable interest in respect of the loan

[240] The master or any member of the crew of a ship has an insurable interest in respect of his wages.

[241] In the case of advance freight, the person advancing the freight has an insurable interest, in so far as such freight is not repayable in case of loss.

[242] The assured has an insurable interest in the charges of any insurance that he may affect.

[243] Section 15 of the English Act

[244] Halsbury's Laws of England, 3rd Ed., Vol. 22, p. 100 f.n. (f); Plata v. Lancashire Hamburg-Amerika Linier, (1957) 2 Lloyds Rep. 347.

VALUATION OF INSURANCE

The insurable value of the subject matter insured is relevant in determining the measure of indemnity in the case of an unvalued policy, and in the case of a valued policy when the valuation is not conclusive or has to be apportioned.[245] A clear delimitation of insurable value is necessary

a) To fix the measure of indemnity in the case of an unvalued policy,
b) To fix the measure of indemnity in the few cases in which a valued policy can be opened up, and
c) To furnish an approximate standard for fixing the value in a valued policy.

According to modern practice, unvalued policies are very rare, being practically confined to goods and in a few instances to freights payable on arrival. Other interests are almost invariably insured by valued policies. As regards goods, a voyage policy on goods is an insurance of the adventure, as well as insurance on the goods themselves.[246]

OTHER POLICY REQUIREMENTS:

A marine policy is only a promise of indemnity giving a right of action for unliquidated damages in case of non-payment. However, a contract of marine insurance must be embodied in a policy. Section 24 of the Indian Act [247]enacts as follows: A contract of marine insurance is inadmissible in evidence unless it is embodied in a marine policy in accordance with this Act. The policy may be executed and issued either at the time when the contract is concluded, or afterwards. By the Indian Stamp Act, 1899, Section 7(1), no contract for sea-insurance shall be valid unless the same is expressed in a sea policy. Accordingly, where the appellant had sued the respondent for damages for breach of a contract to issue policies of marine insurance upon goods to be shipped by it, it was held that the contract alleged was a contract of sea insurance and, not being expressed in a policy, was unenforceable.[248] A marine policy, must also specify certain essential matters, and section 25 of the Indian Act[249] enumerates them as follows:

1) The name of the assured, or of some person who affects the insurance on his behalf:
2) The subject matter insured and the risk insured against;
3) The voyage, or period of time, or both, as the case may be, covered by the insurance;
4) The sum or sums insured;
5) The name or names of the insurers.

[245] Halsbury's Laws of England, 3rd Ed., Vol. 22, p. 127
[246] British & Foreign Marine Insurance Co. v. Sanday, (1916) 1 A.C. 650, 672 H.L. (per Lord Wrenbury)
[247] Section 22, English Act of 1906
[248] Surajmull Nagoremull v. Triton Insurance Co. Ltd., (1924) L.R. 52 I.A. 126, 129 (per Lord Sumner).
[249] Section 23, English Act of 1906

A marine policy must be signed by or on behalf of the insurer (Section 26 0f the Indian Act), and such policy may either be a "voyage" policy or a "time" policy or a combination of both.[250] As regards the designation of subject matter, Section 28 of the Indian Act[251]provides:

The subject-matter insured must be designated in a marine policy with reasonable certainty. The nature and extent of the interest of the assured in the subject-matter insured need not be specified in the policy. Where the policy designates the subject-matter insured in general terms, it shall be construed to apply to the interest intended by the assured to be covered.

In the application of this section regard shall be had to any usage regulating the designation of the subject-matter insured. Marine policies may either be valued or unvalued/ open, but must not be "doubly insured", that is to say that there must not be two or more policies effected by or on behalf of the assured on the same adventure, and the sum insured in such a case should not exceed the indemnity allowed by this Act.

This is applicable in case of two or more insurance policies on the same subject- matter and by the same person. It does not apply when different persons insure the same subject- matter in respect of different rights. [252] Over insurance includes 'ppi policies'.[253] This is because, if both a marine policy and a ppi policy are effected upon maritime property and, in the event of a loss, the insurer chooses to 'honour' the ppi policy, the indemnity, when added up under both policies, would amount to over insurance.[254]

Where the assured is over- insured by double insurance,

a) The assured, unless the policy otherwise provides, may claim payment from the insurers in such order as he may think fit, provided that he is not entitled to receive any sum in excess of the indemnity allowed by this Act;
b) Where the policy under which the assured claims is a valued policy, the assured must give credit as against the valuation for any sum received by him under any other policy without regard to the actual value of the subject-matter insured;

[250] Where the contract is to insure the subject-matter "at and from", or from one place to another or others, the policy is called a "voyage policy", and where the contract is to insure the subject-matter for a definite period of time the policy is called a "time policy": Indian Marine Insurance Act, 1963, Section 27 (Section 25, English Act of 1906).
[251] Section 26, English Act of 1906
[252] The reason for that is obvious enough. Where different persons insure the same property in respect of their rights they may be divided into two classes. It may be that the interest of the two between them makes up the whole property: North British and Mercantile Insurance Co. v. London, Liverpool, and Globe Insurance Co., (1877) 5 Ch D 569, CA (per Mellish LJ).
[253] A 'ppi' policy (policy proof of interest), is deemed to be a gaming or wagering contract by the Act, and hence void.
[254] Thames and Mersey Marine Insurance Co. Ltd. v. 'Gunford' Ship Co. Ltd. [1911] A.C. 529, H.L.

c) Where the policy under which the assured claims is an unvalued policy he must give credit, as against the full insurable value, for any sum received by him under any other policy;
d) Where the assured receives any sum in excess of the indemnity allowed by this Act, he is deemed to hold such sum in trust for the insurers, according to their right of contribution among themselves.[255]

A policy may be limited to covering only total losses. Alternately, the policy may indicate that it includes all types of partial loss, called "average", or it may distinguish between different types of averages, covering "general average", which is average caused deliberately to save all the interests in the voyage from total loss, but excluding particular average, which is average caused accidentally by the "perils of the seas".

The word "average", whose origin is discussed towards the beginning of this paper, may be taken to mean material damage or pecuniary loss sustained in the course of a marine adventure, and the character of the loss may either be particular or general. General Average is a partial loss, voluntarily and reasonably incurred in time of peril for the safety of the joint adventure; which is contributed to by the owners of all property saved, e.g., ship, freight and cargo. It is the result of a voluntary act, and the loss is subject to contribution by the owners of all the property saved by the general average act. These interests are usually the ship, the freight in the course of being earned, and the cargo respectively. The liability to contribute to general average arises primarily out of the carriage of goods by sea, and is, in England, a common law liability to which the owners of the property are subject, whether they are insured or not. Further, the policy may be in the form of the Rules mentioned in the Schedule to the Act.

DUTIES OF THE PARTIES

A contract of marine insurance is uberrimae fidie or, as enumerated in Section 19 of the Indian Marine Insurance Act, ' a contract based upon the utmost good faith.'[256] The notion of utmost good faith, the cardinal principle governing the marine insurance contract, is a well-established doctrine derived from the celebrated case of Cater v. Boehm[257], decided long before the inception of the Act. With the codification of the law, the principle found expression in Sections 19-22: In section 19 is presented the general duty to observe the utmost good faith, with the following sections introducing particular aspects of the doctrine, namely, the duty of the assured (section 20) and the broker (section 21) to disclosed material circumstances, and to provide making representations (section 22).[258]

[255] Indian Marine Insurance Act, 1963, Section34 (2) (= Section 32 (2), English Act of 1906).
[256] LIC v. Ajit Gangadhar Shanbhay, AIR 1997 Kant. 157
[257] (1766) 3 Burr 1905
[258] Hodges, Susan, CASES AND MATERIALS ON MARINE INSURANCE LAW, Cavendish Publishing Limited, p. 213.

Thus, the obligations to disclose and to abstain from misrepresentations constitute the most significant manifestations of the duty to observe utmost good faith. The only remedy available to the innocent party in case of any such breach is avoidance *ab initio*, that is, avoidance from the very beginning, even though the breach may have occurred during the course of the contract.

Reciprocal duty: Section 19, by the use of the word 'either', has made it amply clear that the duty to observe utmost good faith operates on a bilateral basis. There is no doubt that the obligation to disclose material facts is a mutual one imposing reciprocal duties on insurer and insured. In case of marine insurance contracts, section 17 (of the English Act) in effect so provides. [259] Moreover, the duty of good faith is an independent and an overriding duty, with the ensuing sections on disclosure and representations providing mere illustrations of that duty. Also, section 19 has been construed as having imposed on the parties a continuing duty to observe utmost good faith.[260]

Scope of insurer's duty of disclosure: The duty falling upon the insurer must at least extend to disclosing all facts known which are material either to the nature of the risk sought to be covered or the recoverability of a claim under the policy which a prudent insured would take into account in deciding whether or not to place the risk for which he sees cover with that insurer.[261] The extent of the insurer's duty of disclosure in that sense is pre- contractual.

Scope of assured's post- contractual duty of disclosure: Even though there have been suggestions that like the ensuing sections, the assured's liability under section 19 would also not be beyond the formation of the contract. But, according to Hist J in the 'Litsion Pride case', [262]an assured is undoubtedly under a continuing duty to disclose relevant information even after the conclusion of the contract. This case also drew out two limbs of the duty, namely the duty to disclose relevant information, and the duty not to make fraudulent claims.[263]

Assured's pre- contractual duty of disclosure: Section 20 has imposed a strict and absolute obligation upon the assured to disclose to the insurer every material circumstance[264]

[259] Banque Financiere de la cite SA v. Westgate Insurance Co. Ltd., [1987] 1 Lloyd's Rep 69; Good faith forbids either party, by concealing what he privately knows, to draw the other into a bargain: Cater v. Boehm, (1766) 3 Burr 1905 (per Lord Mansfield).

[260] Container Transport International Inc and Reliance Group Inc v. Oceanus Mutual Underwriting Association (Bermuda) Ltd. [1984] 1 Lloyd's Rep 476, C.A

[261] Banque Financiere de la cite SA v. Westgate Insurance Co. Ltd., [1987] 1 Lloyd's Rep 69.

[262] Black King Shipping Corporation v. Massie, 'Litsion Pride', [1985] 1 Lloyd's Rep 437

[263] A fraudulent claim is one that is 'willfully false in any substantial respect': Goulstone v. Royal Insurance Company (1858) 1 F&F 276, 279.

[264] Every circumstance is material which would influence the judgement of a prudent owner in fixing the premiums, or determining whether he will take the risk: Pan Atlantic Insurance Co. Ltd. V. Pine Top Insurance co. Ltd., [1994] 2 Lloyd's Rep 427, HL.

'before the contract is concluded'.[265]This means that it is for the assured to take the initiative to reveal to his insurer all material circumstances, and not for the insurer to inquire. Under this section, mere non-disclosure is sufficient to constitute breach, and the presence of mens rea is inconsequential.

Another duty imposed on the assured under section 22 is that every material representation made by him must be true, otherwise the insurer may avoid the contract.

RIGHTS OF INSURER ON PAYMENT

The Marine Insurance Act provides for three rights to an insurer, namely, the right of subrogation, the right of contribution and the right of under insurance. The right of subrogation[266]is a necessary incident of a contract of indemnity, and, speaking broadly, the insurer in the absence of special contract, must exercise all remedies arising from subrogation in the name of the assured. [267]An underwriter is entitled only to the rights of the assured in respect of the subject matter insured, in so far as he has indemnified the assured.[268] As a contribution among insurers, Section 80 of the Act enacts: -

1) Where the assured is over-insured by double insurance, each insurer is bound, as between himself and the other insurers, to contribute rateably to the loss in proportion to the amount for which he is liable under his contract.
2) If any insurer pays more than his proportion of the loss, he is entitled to maintain an action for contribution against the other insurers, and is entitled to the like remedies as a surety who has paid more than his proportion of the debt.

As per Halsbury's Laws of England, a condition must be satisfied before a contribution can be said to arise. The condition is that: " Each policy must be in force at the time of the loss. There is no contribution if one of the policies has already become void or the risk under it has

[265] Duty under section 20 comes to an end on the termination of the contract. However, duty under section 19 exists even after its termination.

[266] Subrogation is a process in insurance law whereby an insurer, having indemnified an assured, has transferred to himself all the rights and remedies of the assured with respect to the subject matter as from time of the casualty. However, those rights and remedies brought about by way of subrogation, may only be acted upon in the name of the assured who has been indemnified: Esso Petroleum Co. Ltd. V. Hall Russell and Co. [1988] 3 WLR 730, HL (per Lord Jauncey).

[267] Simpson v. Thomson, (1877) 3 App. Cas. 279, 293 (per Lord Blackburn); "The general rule of law is that where there is a contract of indemnity, and a loss happens, anything which reduces or diminishes that loss reduces or diminishes the amount which the indemnifier is bound to pay; and if the indemnifier has already paid it, then, if anything which diminishes the loss comes into the hands of the person to whom he has paid it, it becomes an equity that the person who has already paid the full indemnity is entitled to be recouped by having that amount back: Burnard v. Rodocanachi (1882) 7 App. Cas. 333, HL (per lord Blackburn).

[268] A.G. v. Glen Line, (1930) 37 Ll. L.R. 55 H.L.; Yorkshire Insurance Co. v. Nishet Shipping Co., (1962) 2 Q.B. 330

not yet attached; the insurer from whom contribution is claimed can repudiate liability under his policy on the ground that the assured has broken a condition."[269]

Under section 81 of the Act, the insurer is not liable to the assured for any sum in excess of the amount actually insured, and thus in a case of under insurance it is the assured who himself will be the insurer for the balance amount.

TYPES OF MARINE INSURANCE & POLICIES

Insurance

Hull Insurance**:** Hull Insurance policy pertains to the ship being in the hand of its builders. It is a most highly favorable policy as it gives assurance in every aspect excluding defects and destruction by war. The Hull insurance has a clause favorable against;

i. Fire and collision
ii. Loss due to machinery, accidents in loading and unloading cargos
iii. Consequence due to negligent navigation and
iv. Defects in vessels and accidents causing problems in defects.

Cargo Insurance: Cargo insurance covers only the particular cargo and goods in the particular voyage. The cargo and the goods within which is transported from one destination to another through all such medium such as air, water, road or registered post can be proclaimed in the case of a loss against cargo insurance.

Freight Insurance: Freight insurance provides protection to policyholder against freight money loss, which is caused due to unavoidable peril. In most of the case the goods owners can proclaim freight only on safe delivery of goods to the destination place, in such a case, if the ship got lost or the cargo within is damaged or stolen, the owner will incur freight loss. In order to protect from such a kind of loss freight insurance is proclaimed.

Liability Insurance: Liability insurance is one in which the insurer accepts to assure against the loss which the insured may suffer from liability to a third party caused by the collision of the ship and other similar hazards.

Marine Policies:

I. **Voyage Policy:** It is a policy in which the subject matter is insured for a particular voyage irrespective of the time involved in it (Dr. Thiyagu, 2014).Here the risk attaches only when the ship starts on the voyage.

II. **Time policy**: In this, the subject-matter is insured for a definite period of time, the policy covers all the risk from perils of the sea for a subject for the definite period of time.

[269] Eagle Star Insurance Co. v. Provincial Insurance plc, [1993] 2 Lloyd's Rep 143, PC.

III. **Mixed policy:** It is the combination of voyage and time policies. It covers particular voyage over a specified period of time.

IV. **Valued policy**: It is a policy in which the value of the subject matter is insured. Here the insurer and the insured will agree upon the value to be ensured based the risk and cost of the property.

V. **Open or un-valued policy**: It is the policy in which the value of the subject-matter insured is not specified. Subject to the value of the limit of the sum of the assured, it leaves the value of the loss to be subsequently ascertained.

VI. Floating policy: The policy only mentions the amount for which the insurance is taken out and leaves the other details to be defined in the subsequent declaration.

VII. Builders risk policy: This policy cover or one year or more than one year, its policy covers the risk of damage to the vessels from the time of construction to commence to until the trail is completed.

VIII. **Port risk policy:** The policy covers all the risk of vessels while it is standing at the port.

The purpose of marine insurance has been to enable the ship owner and the buyer and seller of goods to operate their respective business while relieving themselves, at least partly, of the burdensome financial consequences of their property's being lost or damaged as a result of the various risks of the high seas. Thus, in other words, marine insurance adds the necessary element of financial security so that the risk of an accident occurring during the transport is not an inhibiting factor in the conduct of international trade. The importance of marine insurance, both to assureds, in terms of the security it provides and its cost element in the overall economics of running a ship or transporting goods, and to countries, particularly developing countries, in its impact on their balance of payments position, cannot be overemphasized.

It is well known that in India, until the coming into operation of the Indian Act of 1963, the courts used to follow the principles of English law and decisions based on such principles as well as the provisions of the English Act, viz. the Marine Insurance Act, 1906. The Indian law is a direct take- off from its English counterpart, and so, whenever it is not self-evident, case law spanning over two centuries is to be looked into to arrive at the true position. Moreover, the Marine Insurance Act itself being a codification of previous case law, an appreciation of past authorities is not only an essential requirement to the understanding of the legal concepts generally, but also of paramount importance when wishing to gain an insight into the very constitution of the sections within the Act.

MODULE-V

Maritime Boundary Disputes

INTRODUCTION

Maritime boundary dispute is an alarming issue all over the world. The countries are now becoming very much concerned about their marine resources because the world economy has turned into ocean-based resources termed as Blue Economy. So, every coastal state is aware of their maritime boundary for exploring and exploiting both its mineral and its food resources. According to the Law of the Sea Convention, the length of territorial sea is 12 nautical miles, contiguous zone is 24 nautical miles, and exclusive economic zone (EEZ) is 200 nautical miles from the baseline (UNCLOS 1982, Art. 3, 33, and 57). But practices show that larger limit of the different maritime zones is existing among the states. Every state claims jurisdiction to its own interest. As a result, maritime disputes are emerging among different coastal states.

When the dispute gets serious, they try to settle it according to different methods of the settlement, but in most of the cases, the parties of the dispute fail to reach an agreement on settlement. Many bilateral or multilateral talks are held among them which delay the settlement. United Nations Convention on the Law of the Sea refers the peaceful method of the settlement of maritime dispute but states must be in consensus at first to accept the jurisdiction of this Convention. Otherwise, they will not be entitled to get any advantages of the Convention. Therefore, the purpose of this paper is to deal with the protracted maritime boundary dispute and maritime laws in terms of finding out appropriate means and measures as well as drawing attention to address some concepts which as act as guidelines for the countries that are in dispute due to share coastlines.

MARITIME BOUNDARY

Generally, a maritime boundary is a theoretical division of the Earth's water surface areas using physiographic or geopolitical criteria. Thus, it usually bounds areas of exclusive national rights over marine resources, encompassing maritime features, limits, and zones. According to United Nations Convention on the Law of the Sea, maritime boundary represents the borders of a maritime nation which serve to identify the edge of international waters. Normally, a maritime boundary is demarcated at a particular distance from a jurisdiction's coastline.

Maritime boundaries exist in the context of territorial waters, contiguous zones, and EEZ; they do not cover lake or river boundaries that are considered in respect of land boundaries. Some maritime boundaries have remained indeterminate despite efforts to clarify them. This is explained by an array of factors, some of which involve regional problems. The delineation of maritime boundaries has strategic, economic, and environmental implications.

MARITIME BOUNDARY DISPUTE

Maritime boundary dispute is a dispute relating to demarcation of the different maritime zones between or among states. It is a common scenario all over the world. Of the World's 512 potential maritime boundaries, fewer than half have been agreed, creating uncertainty and room for disputes for the remainder (Newman, N.). In addition, maritime boundary disputes regularly occur over commercial, economic, and security interests and are a common but underrated investment risk in the energy sector (Newman, N.). Every coastal state is becoming very much concerned about the marine resources because the world economy is turning into the ocean-based resources which are being termed as Blue Economy.

So, all the states claimed their different maritime zones according to their own interest. Maritime boundary dispute is occurs mostly due to the overlapping claims between adjacent or opposite states for 12 nautical miles territorial seas, 200 nautical miles EEZs, and continental shelves which may extend beyond 200 nautical miles and due to the contesting claim of sovereignty over the same island or the same area of mainland, e.g., Bakassi peninsula in ICJ Cameroon v. Nigeria (ICJ 1994).

The maritime boundary disputes between Bangladesh, India, and Myanmar in the Bay of Bengal were long-standing disputes which have already been settled by the International Tribunal for the Law of the Sea (ITLOS) and Arbitral Tribunal peacefully under the Law of the Sea (LOS) Convention (ITLOS 2012; PCA 2014). The dispute between Bangladesh and Myanmar occurred due to the overlapping claim over their EEZ and continental shelf, and the dispute between Bangladesh and India occurred due to the overlapping claim over their EEZ and continental shelf and the contesting or controversial claim over South Talpatti/New Moore Island.

INDIA'S MARITIME BOUNDARY DISPUTES WITH ITS NEIGHBOURS

It often comes as a surprise to many that India has maritime boundaries with a larger number of states than those with which it shares land borders. Whereas India's maritime boundaries necessitate delimitation with seven states on adjacent and opposite coasts—Pakistan, Maldives, Sri Lanka, Indonesia, Thailand, Myanmar, and Bangladesh—its land borders are shared with six states (Pakistan, China, Nepal, Bhutan, Bangladesh, and Myanmar). The Indian coast line (including island territories) of 7,516.5 kms is the 15th longest in the world, with Canada (90,889 kms) and Indonesia (54,705 kms) possessing the first and second longest coasts. Due to considerable political and diplomatic efforts since the 1970s, virtually all of India's maritime boundaries have been demarcated. The exceptions primarily remain those with Pakistan.

This module will cover various aspects of the maritime implications on India's foreign policy and how the two interact and affect each other. India has had maritime boundary disputes

with a number of countries and has successfully resolved some of them but the overall view in our neighbors remains one of mistrust of India's growing military and economic power.

The 3rd UN convention on the laws of the Seas 1974 has laid down principles of demarcating sea boundaries of the maritime nations in specific terms but the task of resolving these issues takes a lot of effort on the part of the foreign ministries of various countries in our neighborhood. These issues become more contentious as they relate to specific economic activities the countries with maritime geography can undertake and which can be very beneficial and profitable for them.

Years of mistrust and apathy to develop more closely on the part of the countries of this region have been the result of the historical circumstances that have plagued the region for so long. It has to be accepted that politics has failed to resolve most of the contentious issues among these countries for example between India and Pakistan. Economics which is closely linked to maritime activities has a strong chance of reversing this trend if opportunities of cooperation and mutual coexistence are used effectively. This can lead to the development of a healthy regional cooperation and mutual trust giving boost to SAARC like organizations which has remained weak and ineffective whereas others like ASEAN have contributed so much to the development of their respective geographical areas. India‟s vast superiority in terms of scientific and technological resources can help her neighbouring countries in their development thereby dispelling many of the doubts and mistrust they have reared against her real intentions I themselves for so long.

Any analysis of such issues cannot obviously begin with any other country than Pakistan, with which India has had a very troubled past resulting in two major wars.

Maritime dispute between India and Pakistan

The Indo-Pak relations have been far from normal since partition. Kashmir has been the focal point of tension between the two countries. So much energy has been centered on this dispute that many other issues which could be resolved more easily have been relegated to the background. In fact resolution of such matters could prepare a solid basis on which other issues could be dealt with. One of such contentious issues is the Sir Creek issue. Even after so many years of independence, the two countries are yet to reach an agreement regarding the demarcation of the maritime boundaries.

It may sound ironical but the Maritime boundary dispute between India and Pakistan is primarily centred on Sir Creek, which is 96-KM of a water body, emptying out in to the Arabian Sea from the Rann of Kutch. The dispute is based on this swamp involving about 100-150 Sq. KMs which remains flooded through half of the year. Many experts opine that this is arguably the easiest dispute which could be resolved by the two countries if there is right political will displayed by the politicians of the two countries. What is probably

hindering any progress on this issue is the Pakistani insistence on linking it with issues like Kashmir.

It is far more significant to determine the maritime boundary between India and Pakistan which remains undefined after 67 years of independence. The last point on the boundary of where the Creek at low tide hits the sea will be the beginning point of the maritime boundary and its orientation northwards or southwards could add or subtract several thousand square kilometres of the oceanic shelf, which is rumoured to be rich in oil and natural gas. The area is rich in fish resources. Every year hundreds of fishermen from both sides are detained by the forces of the two countries for poaching on what they claim is their territory which unnecessarily adds to the woes of these fishermen and their families. Due to intense rivalry between the two countries, the plight of these fishermen remains unknown for many years. They are treated as Prisoners of War and lack access to basic human rights in the absence of proper legal assistance.

The primary reason for the two countries not being able to sort out such issues Is the result of Pakistan‟s insistence to link every other issue with the resolution of the Kashmir problem.

The resolution of the cir Creek boundary issue has the potential to ameliorate the lives of the common man on both sides of the border. The issue is not only political and economic, but has other sides as well.

The Fisher folk of India and Pakistan are victims of defined and undefined borders in the sea as hundreds of them are arrested by the security agencies of the two countries for inadvertently crossing sea boundaries which are not well defined and an important contributing factor is the increasing conflicts over renewable resources. These coastal conflicts need to be understood from various overlapping but distinct perspectives. Low-intensity conflicts over environmental concerns are as serious as conventional war and simultaneously question the cartographic and border anxieties of the two countries.

“We‟re Prisoners of War”, Chacko said. “Our dreams have been doctored. We belong nowhere. We sail unanchored on troubled seas. We may never be allowed ashore. Our sorrows will never be sad enough. Our joys never happy enough. Our dreams never big enough. Our lives never important enough. To matter.” —The God of Small Things, Arundhati Roy.

While most of the studies about India Pakistan tensions have been centred around big and visible areas of conflitcs like Kashmir, Kargil, nuclear politics, various Indo-Pak wars and Hindu-Muslim tensions, there has been scant mention of the less spectacular and everyday conflicts taking place across the two countries. These conflicts are equally damaging affecting the lives of millions of people in the region and could be neglected at its own peril.

The question of peace and security must also be considered in the context of people, environment and resources. Conflict is directly connected in more than one ways to environmental degradation and struggle over natural resources. In the recent years, many social scientists have argued that renewable resource scarcity like land de- gradation, deforestation and fisheries depletion) is increasingly a factor that contributes to political conflict.

The governments of India and Pakistan have attempted to remould the recalcitrant clay of plural cultures and civilisations into lean, uniform, hypermasculine, and disciplined countries, where borders particularly have become sacrosanct. While in the case of land, they have been successful mostly in drawing clear- cut lines, there is great anxiety about the seas, where any line of demarcation is blurred. The close geographical location of the two countries, whereby they share the resources of the seas, has led to fisher people crossing sea borders since long, but they are increasingly perceived as causing grave instability to territorial boundaries, spilling into everyday tensions and conflicts. The fishermen of the two countries have been drawn into the ambit of intense rivalry and antagonism and are repeatedly paying a heavy price for it.

They are the victims of the intense nationalistic jingoism displayed by the two nations through which they have evolved a clearcut distinctions between insider and outsider, safety and danger, domestic and foreign, self and other. The concept of sea borders is difficult for the fishermen to comprehend as their livelyhoods have been intricately connected with sea for centuries. Yet they are often arrested and kept in jail for many years and are treated as prisoners of war in contravention to the provisions of international law. They are the poor lot often unable to afford legal assistance. They are thus denied basic human rights and languish in jails in the absence of proper basic amenities for years together.

Despite the process of globalisation which has brought nations closer to one another, and which seems to suggest that national boundaries have become irrelevant, it is ironical that nations have increasingly placed restrictions on the movement of and exchange between people of different nations. Passport and visa restrictions have only grown over the years and the problem is particularly 125eigh in the case of countries like India and Pakistan which have enjoyed a common past for centuries. Thus artificial division of nations and creations of new states have made matters complicated for the people of such countries.

Geographical and ecological factors have long played an important role in defining the natural boundaries of nations. For India mountains and sea have acted as natural borders for centuries. However, The seas surrounding India have been regarded especially vulnerable producing unstable borders and increased uncertainties. Border which delimit state boundaries which transform into national identity, are particularly fuzzy in the seas posing a threat to everything connected with the national identity.

According to K.M. Panikar, “It is necessary to emphasize that from that historic day when Vasco Da Gama with his fleet of warships arrived at Calicut, India has been under the relentless pressure of sea power, steady and unseen over long periods, but effectively controlling one’s economic life and political life. In fact, since 1498, India has been blockaded.” He further states, “The only practical remedy to this permanent geographical weakness of India is the strength of her own internal political and economic structure by a strong central government having full control of the resources of the nation.” At another place he states, “To other countries the Indian Ocean is only one of the important oceanic areas, to India it is a vital sea. Her lifelines are concentrated in that area, her freedom is dependent on the freedom of that coastal surface. No industrial development, no commercial growth, no stable political structure is possible for her unless her shores are protected.”

Various steps have thus been taken by India to organise a blue-water navy capable of securing India‟s long coastline and to define sea borders as accurately as possible. India and Pakistan share their maritime borders apart from that on land. India has a long coastline of about 7517 Kms With Gujarat alone having about 1663 KMS of it which is about 1/3 of the total coastline. Pakistan has a part of its coastline adjacent to that of Gujarat.

As has been mentioned above, the coastal dispute between the two countries is centred around the Cir Creek, a fluctuating tidal channel or an estuary, which is sixty-mileslong, situated in the marshes of the Rann of Kutch. The Rann lies on the border between the Indian state of Gujarat and the Pakistani province of Sindh The dispute over Sir Creek can be traced back to the preindependence period, to around 1908, when an argument ensued between the rulers of Kutch and Sind over a pile of firewood lying on the banks of a creek dividing the two principalities.

The dispute was taken up by the government of Bombay state, which had jurisdiction over the state of Sindh. It, resolved the dispute in 1914 supported by Map Number B44 and subsequently B74. Nothing significant happened in the next 40-50 years, and the dispute came alive again only in the 1960s. After armed clashes between India and Pakistan in 1965, Pakistan government claimed that the half of the Rann along the 24th parallel belonged to it. India countered that the boundary ran roughly along the northern edge of the Rann. The matter was referred for arbitration to an international tribunal, known as the Indo-Pakistani Western Boundary Case Tribunal. It announced its award on 19/02/1968, upheld 90% of India’s claim to the entire Rann and conceded small portions to Pakistan.

The Sir Creek dispute originated after the Kutch tribunal award, wherein Both the parties had agreed to limit their larger dispute over the Rann to the boundary in the north. Well to the south lay an agreed boundary that began at the head of Sir Creek and ran a short distance eastward roughly along the 24th parallel. However, India’s contention was that this line moved up sharply at a right angle to meet the northern boundary of the Rann. Pakistan sought to extend the line further eastward and claim half of the Rann along the 24th parallel. The

sole issue, therefore, was whether the short agreed boundary from the head of Sir Creek went all the way east or rose at a right angle at its western end to reach the northern limit of the Rann. The tribunal accepted India's case that it did turn north and that almost the entire Rann was Indian. The dispute hinges on the demarcation of the boundary from "the mouth of Sir Creek to the top of Sir Creek" and from "the top of the Sir Creek eastwards to a point (on land) designated as the Western Terminus." The boundary thereafter has been fixed.

Unfortunately, the two states did not bring forth the issue of the westernmost part of the boundary of the Rann of Kutch, and the issue of the demarcation of the boundary between the top of Sir Creek to its mouth at the Arabian Sea. This lack of foresight gave rise to the Sir Creek dispute. Perhaps, at that point of time, neither nation thought that delimiting the river boundary was important.

The reason why the dispute has become important in recent times is because the river boundary delimitation will affect the determination of the maritime boundary, the EEZ (Exclusive Economic Zone), and the Continental Shelf. Studies have shown that this region is rich in petroleum, oil, and gas, minerals and plant life and therefore has potential for commercial exploitation. As of now, India asserts that the boundary lies in the middle of the Creek. Pakistan claims that the line lies on the Creek's eastern bank and, therefore, the entire Creek belongs to Pakistan.

Several rounds of diplomatic talks have taken place between the two nations, but no concrete solution has been reached. While Pakistan is willing to submit the dispute to a third party for settlement, India proposes an ad-hoc settlement where both countries should bilaterally delimit their maritime boundaries by commencing delimitation from the frontier of their respective EEZs and then moving inwards to a mutually acceptable point as per the provisions of the Technical Aspects of the Law of the Sea. Pakistan has not accepted this proposal, and the situation has remained in a gridlock ever since.

India wanted the Thalweg principle to be the basis of the settlement according to which the boundary should be defined where a river or a channel is at its deepest. Pakistan's contention is that the Thalweg principle cannot be applied in this case since the channel is non-navigable during most of the times in a year.

Pakistan's claim to the Sir Creek is based on the demarcation present in the 1914 resolution and the accompanying map which shows a green line present on the eastern boundary of the Sir Creek. Till the time of India‟s independence this position was not contested by either of the two states. Thus according to the principle of utipossidetis, Sir Creek belongs to Pakistan. Pakistan's position is further reinforced by the fact that all maps of the area indicate a green line on the eastern bank of Sir Creek.

According to a former Pakistani foreign secretary, "The adjudicators in 1968 did not discuss the Sir Creek because in the pre-partition documents the creek was clearly indicated as in

Sind which is now in Pakistan." India refutes this claim vehemently. She has criticized Pakistan's claim by stating that the map published for the resolution in 1914 was a mere annexure and had no binding value. She has also stated that the 1914 resolution was implemented only in 1924 when pillars were already erected to demarcate the Sind-Kutch boundary. Although, no pillars were erected in the Creek itself, India maintained that The Thalweg principle must determine the boundary in Sir Creek between India and Pakistan.

The tribunal noted, "In view of the aforesaid agreement, the question concerning the Sir Creek part of the boundary is left out of consideration." It is this very Sir Creek part of the boundary that has become a bone of contention India and Pakistan have held a number of meetings to discuss the issue but no solution has been found so far. Incidents like the Cargil war, December2001 attack on Indian Parliament, 26/11 terrorist attack on Mumbai have also hampered any sustained discussions on various issues as Pakistan has been associated with almost all the terrorist activities in India.

It is very important for the two countries to resolve and demarcate their maritime boundries because under the UNCLOS if the dispute is not resolved within the time limit, some third party can theoretically step in to make its claim. Secondly, the resolution of the maritime dispute can create a healthy environment of mutual trust and cooperation which can lead to more meaningful engagement between the two countries.

As far as maritime strategy is concerned, as has been amply proven by the Indo-Pak war of 1971,Pakistan has to rely on the strategy of sea denial because of the large maritime boundary of India and also the superior size of her navy. Pakistan is situated on the route which is the main sea lane of communication for India‟s trade with the gulf countries, on which India mainly depends for her energy needs. Thus, in the event of war, Pakistan will definitely try to block the oil supplies to India by attacking Indian ships. Around the time of the 1971 war, much of India‟s trade was carried out on board the foreign vessels which denied Pakistan the opportunity to attack Indian energy supplies.

However, the Pakistani Navy has also grown much stronger since, with the acquisition of a number of advanced submarines and armament from the western suppliers and with the responsibility of maintaining two naval fronts no longer at its hand, Pakistan can very successfully indulge in the sea denial strategy against India. This puts enormous pressure on India which has to maintain a strong naval force to face the challenges posed by Pakistan in coordination with China.

India has had a close relationship with Iran which will allow India to bypass limitations on India‟s central Asia access through land. After the conclusion of the Iran Nuclear Deal in July 2015 one of the beneficiaries would be India. With American sanctions easing, India is racing to build the Chabahar port in Iran that will get around the fact that its land access to energy-rich former Soviet republics in Central Asia has been blocked by China and Pakistan.

Closer Iran-India ties would allow New Delhi‟s leaders to secure cheaper energy imports to bolster economic growth and reduce the influence of both China and Pakistan in the region.

The six nations that make up Central Asia hold at least 11 per cent of the world‟s proven natural gas reserves, as well as substantial deposits of oil and coal, according to data compiled by BP. “Iran can offer us an alternative route to Central Asia,” Indian Foreign Secretary S Jaishankar said in Singapore during his visit in July 2015. “The resolution of the nuclear dispute and lifting of sanctions will allow our agenda of energy and connectivity cooperation to unfold seriously.”

India and Sri Lanka

Oceans occupy larger part of the earth. They have long been associated with the sustenance of human life. Since ancient times people have endeavored to explore other countries by crossing the oceans. As a result of these explorations, diplomatic and mercantile relations were formed between countries. There was a vigorous affair like this between India and Sri Lanka from very early times. According to 2500 years of well documented ancient history of Sri Lanka, India comprehended dominant role as a regional vigorous neighbor. As a result of it there was tenable adherence between the two states in political, economic, social and cultural spheres. In Sri Lankan foreign policy India gets incomparable importance in present as well as in past. Former Sri Lankan President Mahinda Rajapaksa describes the relationship thus “India is our relation and all others are our friends”. Therefore in foreign policy India cannot be signified in poor manner.

India Sri Lanka relations suffered a lot during the LTTE era because of a number of problems connected with the terrorist activities of the organization. Thanks to the determined efforts of the Lankan government LTTE was finished leading to the dawn of a new peaceful era on the island. This is also good news for India as it has no longer to deal with the refugee problems on her shores. The domestic politics of the Tamil Nadu state has also more than often dominated the political thinking in New Delhi and the tensions were most visible during the era of coalition politics The maritime issues between India and Sri Lanka are not as serious as those between India and Pakistan.The maritime boundary between the two is more or less settled. It is the issue relating to fishing rights of the fishermen of the two countries which primarily causes friction in the relations between India and Sri Lanka.

Another thorn in the relations between the two countries is the growing Sri Lankan proximity to china both economically and militarily thus leading to tensions between India and Sri Lanka. This trend was most prominent during the rule of the former President MahindaRajapaksa‟s regime, However, with the change in the guard in the island country, things have started turning around and there is hope of great improvement in mutual relations of the two countries. The maritime boundary between the two countries was settled by the

agreements of 1974 and 1976. The 1974 agreement seeded the control of the Kachchatheevu island to Sri Lanka thereby India recognizing Sri Lankan sovereignty over the same.

India and Sri Lanka concluded a maritime boundary agreement which became effective from 8 July 1974. The agreement of 1974 was followed by an exchange of letters between the then Indian Foreign Secretary Kewal Singh and his Sri Lankan counterpart, WT Jayasinghe, and a supplementary agreement was signed in 1976. The maritime boundary between the two countries was delineated in the Gulf of Mannar from the south-western edge of the Bay of Bengal to a point further down in a south-western axis up to the point where the boundaries of India, Sri Lanka and Maldives met in the Indian Ocean. As per these international instruments, both countries enjoy sovereign rights over the waters, the islands, continental shelf and sub-soil of the maritime area on their respective side of the delineated boundary. Indian fishermen and pilgrims have also been permitted access to Kachhativu island which falls on the Sri Lankan side of the maritime boundary. The 1974 and 1976 agreements have not put an explicit embargo on fishing by Indian fishermen beyond the Indian maritime zone, though the sovereign rights of Sri Lanka in its part of the zone are unquestionable.

The strength of the Indian fishing trawlers is about 1900 which is more than double of that of the Sri Lankan boats and are much superior to them as well. Most of these Indian fishermen fish in the Palk Bay in the Indian maritime zone and some inadvertently cross over to the Sri Lankan side which causes serious friction with the Sri Lankan Navy as well as with the Lankan fishermen. This problem was most acute during the LTTE era when Indian boats were accused of helping the LTTE with weapons and supplies. During this period many Indian fishermen were brutally attacked, captured and killed by the SLN.

The Indians mostly fish at night for shrimp, with the trawlers originating from Rameshwaram, Mandapam, Kottaipattinam, Jagadipattinam, Kodikkarai and Nagapattinamin coastal Tamilnadu. Moreover, their use of gill nets and synthetic nets has caused severe damage to the ordinary nets of Sri Lankan fishermen. The Indians have not been fishing at long distances deep in the Indian Ocean away from the contentious Sri Lankan maritime zone because they do not possess multi-day fishing crafts.

Sri Lankan Tamil fishermen from the country‟s northern province could not freely fish during the last three years of the Fourth Ealam War (2006-09) because the Sri Lankan Navy had imposed security restrictions, particularly on night fishing. It was during this period that the area of activities of the Indian fishermen is alleged to have increased. The capacity of Indian trawlers, use of synthetic nets and the extended area of their operations seem to have adversely affected the livelihood of nearly 30,000 fishermen families of Mannar, Kilinochchi, Mullaitivu and Jaffna districts of Sri Lanka‟s northern province. While approximately 50,000 fishermen households primarily depend on the existing pattern of fishing for their daily earnings the dependence of Sri Lankan fishermen on fishing in their maritime zone area is

significantly more acute because, the present overall economic conditions in that country`s northern province, is still quite adverse.

Similarly, Sri Lankan fishermen also venture out into Indian seas and also meet the same fate as their Indian counterpart, though Indian Navy has been less severe in terms of use of violent methods against the Sri Lankans. Thus this issue needs urgent attention. A resolution mutually acceptable to the fishermen of the two countries will benefit enormously the poor coastal population of India and Sri Lanka, the two countries which have had a history of close relations of more than 2500 years. In this context former President of India Shri APJ Abdul Kalaam once suggested that the Indian and Sri Lankan fishermen should be allowed to fish in the Palk Bay on alternate days thereby reducing chances of conflict.

Sri Lanka and India share a maritime border extending to more than 400 km. In the Palk Bay region, in which the island of Kachativu is located and which lies between the coastal regions of Nagapattinam, Thanjavur, Pudukottai and Ramanathapuram districts and Sri Lanka, firing, killing, detention and imprisonment of fishermen are a regular feature. In 1996, I.K. Gujral as External Affairs Minister informed Parliament that 11 fishermen had been killed in 20 incidents of shooting by the Sri Lankan Navy on their fishing vessels. The Sri Lankan Navy admitted to its involvement only in three of the reported incidents.

The Tamil Nadu Government, in its report on the situation up to 1991, said: "Since 1983, till the end of August 1991, there have been 236 incidents of attacks by the Sri Lankan Navy on Tamil Nadu fishermen. Three hundred and three boats have been attacked and 486 fishermen have been affected.

Sri Lanka's geographical location makes it a very important country in the Indian Ocean Region. It is situated in the center of Indian Ocean with potential for commercial utilization of its location on the important trade route. In order to meet this end, Sri Lanka has entered into deep economic, strategic and military engagement and cooperation with many countries, China in particular, with which India has had a troubled past. It's quite a herculean task for Sri Lanka to strike a right balance in her relationships with India on one hand and China on the other.

Sri Lanka was one of the first few countries to recognize China and very soon the two countries embarked upon closer ties in economic, military and strategic spheres. "We love this country", declared the Chinese Foreign Minister on a state visit to Sri Lanka in 1971. China was ready to give its fullest cooperation to speed up the socialist march of Ceylon. Since the first Rubber-Rice pact was signed in 1952, China-Sri Lankan relations have been a source of unity and continue on an upward trajectory today. Sometimes, it seems Sri Lanka is sandwiched between its relations with the two major powers of Asia i.e. India and China.

India has enjoyed anything but cordial relation with China. After the annexation of Tibet in 1950, China became India's immediate 134eighbour and the relations between the two have

been in rough weather despite the fact that India was also one of the few countries to grant early recognition to her and Indian leaders specially Nehru tried his best to maintain harmonious and good neighborly relations with her. But despite India's peaceful posturing, there was a short but fierce war between the two countries in 1962 resulting in heavy defeat for Indian forces. With the latest trend of Chinese aggressive foreign policy and frequent skirmishes in Ladakh and Arunachal, India has been quite weary of Chinese intentions vis-à-vis India. India has been conscious of the Chinese designs of encircling India by building a string of pearls around her and this strategy seems to be extending to the maritime sphere. It is here that Sri Lankan relations with China come into conflict with the perceived Indian interests and anxieties.

As China's economic power has grown, it has used investing over cease as a tactics to extend its influence and bolster its national interests across the world. Its financial foreign policy rests on two strategies: "accumulating foreign currency reserves and sending money abroad in the form of FDI, aid, assistance, and loans" wrote US economic adviser Ken Miller in Foreign Affairs. Sri Lanka is a model of the latter part of this strategy. The statistics alone indicate amazing rise of China's financial stake in Sri Lanka. The finalization of China Sri Lanka Free Trade Agreement in 2014, which is to be signed in June 2015, is symbolic of the tight-knit relationship between the two countries.

Bilateral trade exceeded $3 billion for 2013 and China is Sri Lanka's second largest source of imports behind India. On the planned FTA dialogue, President Rajapaksa had said, "Our cooperation covers many sectors including industry, energy, technology, infrastructure and tourism." He said the FTA will boost the trade and investment ties as well as Sri Lanka's export to China, creating new momentum for the island nation's development. Chinese President Xi Jinping's visit to the island in September, the first by a Chinese head of state in 28 years, helped expand cooperation and cement the ties in trade and economy between the two countries.

During President Rajapaksa's state visit to China in May 2013, the two leaders agreed to elevate the bilateral relations to a "strategic cooperation partnership" by substantially expanding the mandate for engagement. Sri Lanka has a growing trade deficit with China that stood at approximately $2.4 billion in 2012. China is the destination for less than 2 percent of total Sri Lankan exports. However, concerns over trade deficits for South Asian nations like Sri Lanka are "outweighed by overall economic benefits and political support," wrote India's former Special Envoy to Southeast Asian countries on UN Security Council Reforms, Professor S D. Muni.

China is Sri Lanka‟s biggest source of foreign direct investment (FDI) as well as providing development loans for projects such as the $500 million new Colombo Port Terminal, Hambantota Port, Sri Lanka‟s first four-lane expressway, and a new National Theatre, among others. These lucrative benefits for Sri Lanka have played a pivotal role in building

the current relationship. The recent commitment from Sri Lanka to join the Maritime Silk Road (MSR) indicates the proximity of the two states‟ strategic aspirations and is a reflection of the assimilation of national interests.

The Indian Ocean ports of Gwadar in Pakistan, Hambantota in Sri Lanka and Chittagong in Bangladesh have all benefited from Chinese investment and account for 30 percent of global trade, according to Indian Ocean Rim Association. The MSR is a vital strategic project for China in the Indian Ocean, and will increase China‟s presence in South Asian shipping routes. Sri Lanka can be seen as a gateway port up the western coast of India and further west to Iran, a vital exporter of oil to China. The brand new port of Hambantota, 85 percent of it paid for with a Chinese loan, is located on the south of the island, historically not a traditional shipping route. However, it is the perfect location to meet the strategic objectives of the MSR.

Hambantota is the main town of the Hambantota district of the southern province of Sri Lanka. This underdeveloped region was hit hard during the 2004 Indian Ocean Tsunami. It is currently undergoing a number of major developmental projects including the construction of a sea port and an international airport. These projects and others such as construction of the Hambantota Cricket Stadium are set to be a part of Sri Lankan government's plans to transform Hambantota into the second major urban hub away from Colombo.

China with its vast dollar reserves was able to step in and help Sri Lanka 136eighb its mission. But as long as this was strictly a non-military affair, it could not matter much. However, there have been reports appearing in media about possible build-up of a Chinese naval base in Hambantota. According to a Nov, 19 2014 report, PLA Navy of China is planning to build 18 bases in various regions over next 10 years including one in Sri Lankan Hambantota. The Namibian newspaper quoting Chinese media reports said Hambantota Port is among the three naval bases that will be established in the northern Indian Ocean. However Sri Lanka‟s defence ministry refuted reports that claimed China is planning to establish a naval base in Sri Lanka.

Then came the docking of Chinese naval submarines in the span of two months without any prior information. First it took place in Sept 2014 coinciding with Indian President Shri Pranab Mukherjee's visit to Vietnam. Acording to the Times of India report dated Nov 3 2014, the Chinese nuclear powered submarine Changzheng 2 along with warship Chang Xing Dao, again docked at the Colombo Port despite India's prior warning to Sri Lanka that the presence of Chinese submarines in Sri Lanka would be unacceptable to India.

The Chinese fleet of submarines, both diesel and nuclear-powered (of which three can fire ballistic missiles), represent some of Beijing's most offensive military capabilities and have been the focus of international media when one of them propelled through Indian Ocean waters for the first time in early 2014, making its way to the Persian Gulf. In a recent report,

Wall Street Journal described the Chinese submarine fleet as Beijing's most significant military challenge in the region. And for them to surface at Lankan ports brings alive some of New Delhi's worst fears of China's expanding presence in India's neighborhood.

Sri Lanka's assurance — even from the highest level — that China has no military presence in the island nation does not inspire confidence, if we consider the following:

- Coinciding with the election of Mahinda Rajapaksa as president in 2005, assistance from China has grown manifold and in infrastructure.
- Of the totals assistance of $5.056 billion extended to Lanka by China from 1971 to 2012, around 94% or $4.761 billion came between 2005 and 2012. In the past two years (2012-2014), China has committed another $2.18 billion, mostly as loans with a high rate of interest.
- With its "no strings" overseas-aid policy, China has replaced Japan as the No. 1 donor to Sri Lanka.

India believes that the Chinese have been favoured despite the commercial and economic viability of their projects being suspect. Traffic generated at Hambantota port and Matara international airport, both built by China, are said to be far below expectations. India was angered because Sri Lankan permission to dock another Chinese sub came at a time when India had already conveyed its strong displeasure to Former defence Secretary Gotabaya Rajapaksa, brother of former President Mahinda Rajapaksa, about the Colombo docking on Sept 15. This Colombo stop for the sub in September came while President Pranab Mukherjee was touring Vietnam and when Indian and Chinese troops were locked in a face-off at Chumar in southeaster Ladakh. China later said the sub had docked in Colombo on its way to the Gulf of Aden.

This seriously raises questions about Sri Lanka's real intentions regarding India's strategic concerns in the Indian Ocean Region. According to strategic expert Brahma Chellaney "India's weakened regional clout has emboldened Sri Lanka's hostile action to grant access to Chinese subs. But it is a grave miscalculation". With the slowing down of the Chinese economy, China has increasingly been adopting aggressive nationalistic posture and has sought to expand its claim into different international territories. In such a scenario, the Indian Ocean region will witness increasing Chinese presence in the coming years. Sri Lanka along with other South Asian countries other than India, very well fits the Chinese scheme of expanding its naval presence in the region. Sri Lanka would do well to strike a balance in its traditional and historical relations with India and the economic powerhouse of Asia namely China.

After the change of regime in Sri Lanka the new dispensation led by President Maithripala Sirisena has sought to improve relations with India. The signing of the nuclear cooperation agreement between India and Sri Lanka during the Sri Lankan President's visit to India in

Jan 2015 is a major step in this direction. India has played the card well to win away Sri Lanka from the Chinese fold. But Sri Lanka cannot be expected to make a drastic brake from its foreign policy that has been continuing for a long time now. However, it would do well to pay attention to India's security concerns in the region and not to jeopardize its relations with its immediate 139eighbour India.

On the other hand, the Indian Government should also not allow the domestic political compulsions to creep into its foreign policy objectives. The coalition compulsions of the then UPA Government, which depended on the support of the DMK of Tamil Nadu, voted in favour of a US sponsored resolution in the UNHRC on March 22, 2012, censuring Sri Lanka for the shortcomings in investigations by Sri Lankan Government for possible violation of International Law and human rights during the final phase of the war with LTTE and a deficit of credible post-conflict reconciliation initiatives. China displayed its friendship by voting against the resolution, Which the Sri Lankan Government was very sensitive about and wanted it defeated.

By a calculus that was made with considerable frequency in the Indian media, the UNHRC vote was an own goal by India, needlessly antagonizing Sri Lanka and pushing it even more closely into the arms of China. Such situations do not augur well for India Sri Lanka relations.

India and the Maldives

The Republic of Maldives is an island nation in the Arabian sea situated south of the Minicoy island of Lakshadweep and Chagos Archipelago. The double chains of islands stand in the Laccadive Sea with the capital Male situated 600 km/370 mi south-west of India and 750 km/470 mi south-west of Sri Lanka.

It‟s the smallest nation of Asia in terms of area and population. With an average ground level elevation of 1.5 metres (4 FT 11 in) above sea level, it is the planet‟s lowest country. It is also the country with the lowest natural highest point in the world, at 2.4 metres (7 FT 10 in). [17] Future inundation of the Maldives due to rising sea levels is of great concern to its people, motivating the government to pledge becoming a carbon-neutral country by 2019.

The early settlers belonged to South India and people from Sri Lanka. Trade relations also existed between the countries. India enjoyed trouble-free relations with Maldives since its independence till dictaterGayum‟s rule lasted. Since his overthrow, Maldives has been in the throes of political uncertainty. India has signed trilateral maritime security agreement with Sri Lanka and Maldives with a purpose of securing the SLOCs and to pool a data resource by building a partnership in the Arabian Sea part of the Indian Ocean region. Such a partnership can be very useful in tackling the menace of piracy, drug trafficking and terrorism on the high seas. To this end, a trilateral maritime agreement was signed between India, Sri Lanka and the Maldives in Sri Lankan capital Colombo on 9th July 2013.

India has been aiming to step up cooperation on security issues in general and on maritime security in particular with her island neighbours in the IOR and this agreement was part of this strategy. "On the one hand the agenda was to create a closer functional operative on maritime security and to assist in capacity build-up; at the unstated level it also sought to partially allay concerns about the growing strategic influence of the Chinese and Pakistanis on these islands."

The notion of cooperative security is very important that is based largely on regional systems and lays emphasis on cooperative approaches and the usage of modern technology. "This is significant in the vast oceanic spaces that are relatively unpoliced, giving rise to serious maritime challenges in the IOR. However, this approach calls for reorganization and prioritization of national objectives and harmonization of policies across territorial boundaries. Cooperation among regional organizations is therefore a force multiplier and is often most desirable."

India-Bangladesh Maritime boundary Settlement

Bangladesh won her independence from Pakistan in Dec 1971 after months of bloody struggle mainly due to the military support provided by India. However, the good neighbourly relations between the two countries came under strain soon after with the overthrow of the civilian regime by the Bangladesh Military. For over 40 years the nations have been engaged in a number of bitter disputes, one of them being related with the delimitation of maritime boundary between the two countries.

The first cession of the sea boundary discussions between India and Bangladesh took place in 1974. These discussion were held at the level of foreign secretaries of the two countries. No progress could be made due to disagreement regarding methods of delimitation. Therefore the talks were upgraded to the level of foreign ministers of India and Bangladesh but remained inconclusive. "It was reported that at the Commonwealth Summit in Jamaica in May 1975, Bangladesh President Sheikh Mujibur Rahman proposed arbitration to resolve the issue to Prime Minister Indira Gandhi but India rejected it.

Although the sea boundary talks were renewed in 1978, 1982, 2008 (under the caretaker government), and in March 2009 under the Hasina government, it could not be resolved because of the differences over boundary delimitations. When the Hasina government found that the talks had stalled, it had no option but to look out for the involvement of a third party to resolve the dispute. Finally the Hasina government decided to lodge the dispute with the Court of Arbitration under Article 287 (the dispute machinery clause) of UNCLOS. India had ratified the UN Convention in 1995 and Bangladesh in 2001, and are both therefore bound by the provisions of the UNCLOS."

Thus, Bangladesh took the dispute to the UN Permanent Court of Arbitration (PCA) at Hague on 8th October, 2009. Submission of documents and oral hearings of the two

countries was concluded in Dec. 2013 and the judgment was officially conveyed to the parties on 7th July, 2014. The judgment was final with no provisioning for appeal. It was a big victory for Bangladesh as according to the judgment, about 76% of the disputed sea territory translating into 19467 SQ. km was awarded to her, leaving 6135 SQ. km to India out of a total of 25602 SQ. km. Out of the 5 arbitrators only Indian arbitrator delivered a dissenting judgment. "India reportedly accepted the judgment by saying that the resolution of the boundary would lead to further good neighborly relations between the two nations and enhanced cooperation."

The judgment also allows a 200-mile Exclusive Economic Zone, continental Shelf beyond the EEZ and open access to sea, thus preventing it from turning into a 'sea-locked' country. This resolution meant a lot to Bangladesh because the 25602 SQ. km of disputed sea area in the Bay of Bengal constituted only a small fraction of the long Indian coastline whereas it is 100% for Bangladesh, its entire coastal territory and access to open sea. Now, Bangladesh's maritime boundary has been extended by 118,813 sq. comprising 12 nm of territorial sea and an EEZ extending up to 200 nm into the high seas. In addition, the ruling acknowledged Bangladesh's sovereign rights of undersea resources in the continental shelf extending as far as 345 nm in the high seas, taking Chittagong coast as the base line.

This resolution of the conflict is very significant given the geostrategic importance of greater Indian Ocean Region in general and of the South Asian region in particular. Apart from creating a goodwill between the two neighbors, the agreement would promote multilateral economic and strategic partnerships among the countries of the region. It would also have a positive impact on emerging multilateral forums like BIMSTEC. The resolution of the maritime dispute has also been a big factor for the two neighbors in reaching a historical land boundary settlement and also agreement regarding sharing of the Teesta river water. Indian Prime Minister ShriNarendraModi travelled to Bangladesh for this very treaty in June, 2015. The good neighbourly relations between India and Bangladesh are also expected to stem the tide of anti-India agenda of the radical Islamists in that country thereby reducing the scope of terrorism related activities from the Bangladeshi soil. The PCA award assumes strategic significance against the backdrop of China‟s close ties with Bangladesh and the Asian giant‟s growing interests and activities in the Bay region for which India is worried. Now the settlement of maritime disputes between India and Bangladesh may have a restraining influence on the expansionist designs of China.

The award has great economic significance for a small country like Bangladesh. The dispute has restrained many companies from undertaking hydrocarbon related activities in the Bay thereby denting these economic prospects. The area is rich in these resources and will result in great economic gains for the countries of the region. Bangladeshi government can now invite foreign companies to explore and tap huge reserves of natural gas in its maritime boundary. It has about 28 oil and gas blocks compared to India's 6. Indian companies like ONGC stand a good chance to win lucrative contracts in Bangladesh.

India is also happy with the ruling as it led to a diplomatic breakthrough with the cherished 143eighbour. Among other gains, the award recognized India's right over New Moore Islands and about 6000 SQ km of territory accrued to India. India discovered natural gas reserves in the year 2006 in the creek situated 50 KM south of the mouth of Hariabhanga river within the contested zone. The lingering maritime dispute stood in the way of exploration of hydrocarbons in the Bay region. Several petroleum companies had been reluctant to undertake exploration in the disputed area and a few of them even withdrew after making initial investments. Such as in December, 2013, Australian firm Santos withdrew from two sea-blocks citing security and maritime dispute with Bangladesh.

Now India's policy makers could chalk out a long-term strategy for the economic development of the Bay region. To realise its goals, New Delhi may forge bilateral or multilateral partnerships under the framework of sub-regional grouping like BIMSTEC. "The verdict is also good news for millions of fishermen in both the countries. The amicable settlement has opened up vast sea areas which were not available to them in the last four decades. Moreover, both the countries could enhance cooperation in the conservation of the rich biodiversity of the Sunderbans.

By clearly delineating the maritime boundary between the two nations, the verdict could help boosting coastal and maritime security in the region. Before the award, both India and Bangladesh could not undertake cooperative measures due to the vexed problem. The verdict has now cleared the hurdles of strengthening security in the maritime front. Furthermore, precise demarcation of maritime boundary would assist in preventing the cases of transgression by fishermen of both countries. The PCA award is really a "win-win" situation for both the countries, as described by the Bangladesh foreign minister, if they follow it up with concrete action."

The Prime ministers of India and Bangladesh signed the historical agreement on 6th June 2015 at Dhaka whereby 4000 km2500 mile boundary between the two was agreed upon and also understanding was reached on the fixing the identity of 52 living enclaves along the borders of the two countries more than 4 decades after Indian Prime Minister Indira Gandhi and Bangladeshi President Mujibur Rahman agreed upon it in 1974. However, after the assassination of Mujibur Rahman no agreement could be reached by successive governments. Under the deal, signed in the presence of Prime Minister Narendra Modi and his Bangladeshi counterpart Sheikh Hasina in Dhaka, the two countries will swap 200 tiny enclaves, most of them close to the official border. Their inhabitants have been deprived of public services and living in squalid conditions.

Established by a treaty between two former princely states, the 106 Indian enclaves in Bangladesh and 92 Bangladeshi enclaves in India are islands of foreign territory inside each country. Under the agreement, each country will take over most of the enclaves on its territory and residents will have the right to stay where they are or move to the other side of

the border. Thus, the maritime dispute settlement had a positive impact in creating friendly relations between the two nations long connected to each other socially, economically and culturally.

India and Myanmar

Myanmar formerly known as Burma, is one of the closest Neighbour and ally with whom India has largely enjoyed a trouble-free and cordial relationship. A number of insurgent groups in our north-east are operating from Myanmar and there has been increased cooperation between the two countries in dealing with the menace. A recent example is the surgical strike by the Indian forces against the Naga Militants inside the Myanmar territory in retaliation to the killing of 18Indian soldiers on the 4th of June 2015.

Significant improvements in the relations were made since 1993 overcoming tensions related to drug trafficking, suppression of democracy and rule of military Junta. Myanmar shares about 1600 km land boundary with India and is situated south of the states of Mizoram, Manipur, Nagaland and Arunachal Pradesh in northeast India. Myanmar also acts as a buffer between India and China in the north east just as Tibet had been for centuries in the north and north west. According to some security analysts any possible "tibetisation" of Myanmar by China can have serious repercussions for Indian security.

India also shares a tryjunction point with Myanmar and Thailand in the Andaman Sea and a trilateral treaty was signed between the 3 countries India, Myanmar and Thailand on 27th August 1993. India has had long historical relationship with Myanmar since antiquity, cultural exchanges included Buddhism and the Burmese script, which was based off the Indian Grantha script. In particular, Theravada Buddhism has tremendously influenced Burmese society and culture for millennia, with 90% continuing to follow the religion to this day.

Myanmar/Burma was made a British Indian province and again separated in 1937. India established relations with Myanmar in 1948 after the latter gained freedom from the British rule. For many years relations between the two countries remained strong due to cultural links, flourishing trade and common interest in regional affairs and the presence of a significant Indian community in Burma. India provided significant support when Myanmar struggled with regional insurgencies.

However, the overthrow of the democratic government by the Burmese military led to strains in ties with India along with most of the countries of the world condemning the action of the military. India condemned the suppression of democracy and human rights and Myanmar in turn ordered expulsion of the Burmese Indians from its territory. Myanmar mostly remained isolated with only China continuing to maintain close relations with the military regime of Myanmar. India continued to support pro-democracy movement led by Aung San SuuKyi.

China utilised the situation to its advantage establishing close economic and military relationship with the isolated military regime of Myanmar. A major breakthrough in indo-burmese relations was made in 1987 when Indian PM Rajiv Gandhi undertook a visit to that country. However, in 1988 the military regime used strong repression tactics against the prodemocracy movement which resulted in Burmese refugees influx to India, which again soured relations between the two. India strongly denounced the Bermese action and as a result Myanmar shifted more towards China.

Faced with pressure due to the suppression of the democratic movement the military regime of Myanmar moved to forge a closer military and economic relationship with communist China, which found itself in similar predicament following the Tiananmen massacre in 1989. China supplied arms to Myanmar which increased its military presence on Indo-Bermese border to a considerable extent. There were also reports about Chinese plans for a deep sea naval base for its submarines near the Hangyi Islands in Myanmar and a radar base near the Coco Islands in the Bay of Bengal which is only about 20 KM away from the Andamans. All this heightened India's naval concerns about a possible chinese presence in the Bay of Bengal resulting in security concerns for Andaman and Nicobar islands. Despite many denials by Myanmar and China, reports have been surfacing time and again about the presence of Chinese forces on the Coco Islands. According to a report published in Dainik Bhaskar daily in Feb. 2014, China is building a new runway and other infrastructure in the Cocos Islands.

A brief dispute over Coco Islands in the Andaman sea also caused problems between India and Myanmar in the past. However, after the conclusion of the trilateral treaty regarding the maritime boundary between India, Myanmar and Thailand in 1993, things have taken a positive turn in the mutual relations between the two nations. In recent years trade has increased and a number of Indian companies have started taking advantages of the economic opportunities and great natural resources in Myanmar. While China has long maintained a friendly relation with Myanmar, India's policy has undergone a major shift with the emphasis on building fruitful partnership by means of cooperation in various fields including economic, military and anti-terrorism related activities. The focus has thus shifted from using pressure tactics and forcing isolation to creative engagement.

It's getting increasingly important for India to engage Myanmar in its growing strategic calculus. First of all, India needs her to fight insurgencies in the northeast of its frontiers. Secondly, China has been pursuing the policy of economic, military and strategic engagement ever more aggressively in the Indian Ocean region by forging different types of alliances with countries like Pakistan, Sri Lanka, Bangladesh, Myanmar etc., thereby posing security challenges for India in her neighborhood. Indian would do well to forge strong ties with neighbors specially Myanmar Sri Lanka and Bangladesh with whom India enjoys comparatively better relationships vis-à-vis Pakistan.

India and Thailand

Diplomatic relations between India and Thailand were established in 1947, soon after India gained independence. India's Andaman and Nicobar Islands share a maritime border with Thailand along the Andaman Sea. The end of the Cold War led to a significant enhancement in the substance and pace of bilateral interactions. India's Look East policy from 1993 and Thailand‟s Look West policy since 1996 set the stage for a substantive consolidation of bilateral relations.

India and Thailand have over two millennia old religious, cultural and trade links. Buddhism has been one of the cultural pillars of relationship between the two. Like many other Southeast Asian countries Buddhism travelled to these countries from India through its Maurya and other rulers. An important event in the relations between two countries was the 1986 visit by Indian Prime Minister Shri Rajiv Gandhi to Thailand. During 1990‟s India's „look east‟ policy converged with Thailand's 'look west' policy to bolster cultural, economic, strategic and trade links between the two nations.

Since 2003, the relationship has blossomed to cover security and defence cooperation and negotiations are ongoing to ink a free trade area agreement. Some observers term the last two decades as the golden age of India-Thailand friendship. Both countries need to do more in order to iron out differences in signing FTA which is under Negotiation for last two decades. Delhi and Bangkok need to further strengthen their security and defence cooperation given their geo-strategic compulsions in the Indian Ocean region."

The leaders of the two countries have been paying reciprocal visits at the highest levels including the visits of the prime ministers and the foreign ministers of the two countries. India and Thailand are located in the extended maritime boundary of each other and share maritime boundaries in the Andaman sea. "This proximity offers immense potential for increased connectivity, particularly between India's north-eastern states and Thailand. New Delhi hopes greater connectivity with ASEAN of its northeaster states would help decrease the development deficit in these states. Similarly, Thailand believes better connectivity could help increase the footprint of its businesses in foreign markets like India with the ASEAN expected to become the ASEAN Economic Community (AEC) by creating a single market in 2015."

India and Thailand have good connectivity in the civil aviation sector operating about 138 flights a week. India sees Thailand as an important bridge between South Asia and the Southeast Asian hinterland. "A trilateral project to construct a highway between India, Myanmar and Thailand is in the works and is likely to be completed by 2016." An India-Thailand Joint Working Group on Connectivity and Infrastructure had its first meeting in September 2012 to explore possibilities of cooperation with third countries, including cooperation on Dawei deep sea port and a special economic zone in Dawei, as also projects

in Lao and Cambodia. Thailand is making efforts to develop ports on its western seashore in the Andaman Sea. A Thai private company is to develop Dawei port in Myanmar as a gateway to India, West Asia and Europe. It has sought Indian help to assist Myanmar to work towards better connectivity from the Indian border to Dawei port.

Bangkok and New Delhi have also made good progress in strengthening defence, security and juridical cooperation. The two have signed agreements on mutual legal assistance; transfer of sentenced persons, and close to signing an extradition treaty. The two claim good cooperation between their law enforcement agencies, particularly in counterterrorism and transnational crimes. An extradition treaty was finally signed between the two countries on 30th May 2013. It was signed by the foreign ministers of the two countries in the presence of the respective prime ministers. The treaty provides the legal framework for seeking extradition of fugitive offenders, including those involved in terrorism, transnational crimes and economic offences among others. This was a major Philip to the security relationship between the two countries.

"In defence, New Delhi and Bangkok have a broad-based engagement which comprises regular joint exercises/joint maritime patrols near the international maritime boundary to counter terrorism, piracy and smuggling; training of officers at each-others' Armed Forces Training institutions and exchange of visits at various levels." There was also a great leap in the trade which crossed $9 billion in 2012-13.

Thus, relations in various fields including trade and security cooperation have been strengthening between the two nations. Thailand is an important link In Indian strategic calculus forging maritime partnerships in the Indian Ocean region building closer ties with her neighbours. India and Thailand are also part of the BIMSTEC initiative.

India and Indonesia

India and Indonesia have had a socio Cultural and trade relationship that stretches back to more than 2000 years. India shares its maritime borders with her in the Andaman and Nicobar Islands along the Andaman Sea. Cordial relationship had existed between the two, with the leaders of the two countries cooperating with one another during their respective freedom struggle working towards the establishment of a free and independent Afro-Asian community. First president of Indonesia Sukarno called upon the peoples of the two countries to work towards strengthening the relationship that had existed for so long.

There is little doubt that seas have played an important role in this relationship. The Indian influence is evident in a great measure on the Indonesian culture. All the major religions of Indonesia Islamism, Hinduism and Buddhism travelled from India to Indonesia. India along with Egypt was one of the first countries to recognize Indonesian independence in 1949. The 3 were also among the foremost founders of the Non-aligned Movement (NAM) in 1961

preceded by the conference of Afro Asian community through the Bandung conference in 1955.

However, the relations between India and Indonesia began to worsen as Sukarno increasingly started shifting his weight towards communist countries specially China. Indonesia offered to help Pakistan during 1965 war by proposing to seize Andaman and Nicobar Islands so as to distract Indian attention from the Kashmir front by mobilising her submarines to help Pakistan. This news obviously disturbed India and increased her distrust of her maritime neighbour. A maritime boundary agreement between the two countries was signed on 14th January 1977.

Indonesia is a major ASEAN country and India's relations with her have been growing after some problems like the one mentioned above. There was great enthusiasm in the beginning with Sukarno being friendly to India. But later with the establishment of an authoritarian regime under Suharto, relations between the two nations somewhat soured. But Indonesia is an important part of the ASEAN and India's ties with ASEAN have been ever growing during last 10-15 years. At the same time with the victory of the democratic forces in Indonesia with the fall of Suharto in 1998, India's relations with her are becoming ever stronger. Since the adoption of India's 'Look East Policy' in 1991, there has been a rapid development of bilateral relations in political, security, defence, commercial and cultural fields.

The multi-faceted relationship got an added fillip with the signing of the „Joint Declaration on Establishing a Strategic Partnership" in 2005 during the State Visit of President Susilo Bambang Yudhoyono. The fact that more than 8 high-level visits have taken place since 2000, is an ample fact of the growing engagement between India and Indonesia in diverse fields including security and defence.

President Yudhoyono's visit to India in January 2011 as the Chief Guest on the occasion of India's Republic Day further deepened the strategic partnership. During the visit, 16 Inter-Governmental Agreements were signed including an Extradition Treaty, Mutual Legal Assistance Treaty, a MoU on Exchange of Financial Intelligence related to Money Laundering and Financing Terrorism.

Indonesia has emerged to become the second largest trading partner of India in the ASEAN region. India-Indonesia bilateral trade has increased from US$ 6.9 billion in 2007-08 to US$ 20.10 billion in 2012-13. India is the largest buyer of crude palm oil from Indonesia and imports coal, minerals, rubber, pulp and paper and hydrocarbons reserves. India exports refined petroleum products, maize, commercial vehicles, telecommunication equipment, oil seeds, animal feed, cotton, steel products and plastics to Indonesia. Furthermore, there is considerable scope and potential for expanding trade between the two countries in the areas

of automotive components, automobiles, engineering products, IT, pharmaceuticals, biotechnology and healthcare sectors.

Both India and Indonesia are large democracies that emphasise pluralism. India is the largest democracy while Indonesia is the 3rd largest. The two countries are also home to the largest (Indonesia) and third largest (India) number of Muslims in the world. Both are members of important multilateral forums like the G-20 and East Asia Summit.

India and Indonesia are maritime neighbours. Given that Indonesia rules the major waterways between the Indian and Pacific Oceans—- waters through which more than half of all international maritime trade passes — the strategic significance of the relationship looms large. In fact India's 2009 maritime strategy document listed the Sunda and Lombok straits, both under Indonesian control, as major choke points with complicating potential for Indian interests. Cooperation with Indonesia is a prerequisite to enable the Indian Navy's operations in these waters. Joint coastal monitoring has been ongoing since 2010, but there is a need to step up this cooperation, including joint maritime exercises and training.

The relationship with Indonesia has also assumed greater importance in the context of China's rise and expanding regional reach. Both India and Indonesia have the potential to act as balancing powers and can aid each other in their mutual goals of engaging China to benefit from its economic might, while ensuring that Beijing's power is not untrammelled. Further there is ever increasing convergence of strategic thought process between the two specially in the field of maritime security.

The Ind-Indo Corpat is a biannual patrolling exercise between India and Indonesia, held in April and October every year in the Strait of Malacca. It involves a "patrol of the seas against piracy, armed robbery, poaching, illegal immigration, drug trafficking, and human trafficking". During India's MILAN2014 international naval exercises held in Feb 2014, Indonesia was also invited and its Naval commander of the submarine fleet expressed the desire to upgrade Corpat to the level of full scale joint naval exercises. Indonesia has showed interest in strengthening defence ties with India aiming cooperation in the Indian Ocean region.

Strategic partnership has thrived between India and Indonesia since 2005 and the two have resolved to work in the field of counter terrorism and maritime security. However, Indonesia also enjoys close strategic relationship with China, which is eager to expand its footprint in the Indian Ocean region. China is Indonesia's largest trading partner and there are sections in the Indonesian political dispensation, which are eager to expand this partnership. So far Indonesia has been able to balance her relationship with India and China, but it may pose future challenges to her strategic choices.

"As would be apparent, maritime cooperation between the two countries, even though modest, is the centerpiece of their bilateral relations. Recent developments in Indonesia's

maritime strategy pose a challenge. President Jokowi has declared that Indonesia must become a "maritime fulcrum" and a "power between the two oceans". As a maritime country, he adds, "Indonesia should assert itself as the World Maritime Axis". It is the first time that an Indonesian leader has enunciated a maritime doctrine with such clarity, and this is to be welcomed.

In theory, this should create expanded opportunities for India to promote maritime cooperation with Indonesia and offer to play a part in helping build the latter's maritime capabilities. However, it is China that has emerged as the likely partner, subsuming Indonesian ambitions into its Maritime Silk Road (MSR) project."

But there are reasons for Indonesia and India to build a credible partnership in the maritime domain. "China's growing assertiveness in the region and, especially, in the South China Sea, the increasing importance of ASEAN, and the mounting challenges within the Indian Ocean Region have seen the two countries move closer to one another in recent times. Indonesia, by virtue of its size and influence in South-East Asia, is likely to become an important element of New Delhi's future foreign policy. Similarly, India's emergence as a possible great power and its strategic location at the heart of the Indian Ocean makes it an ideal partner for Jakarta, particularly as it aims to play a key role in developing a peaceful regional order. This will see the relationship enhanced in the twenty-first century, especially in the areas of diplomacy, security, defence, trade and people-to-people ties."

INDIA'S POSITION IN THE INDO-PACIFIC OCEAN

Each time a political administration coins a new word or diplomatic jargon in its official documents, the geopolitical strategic community excitedly searches to understand the meaning, causes, and implications. The past few years have seen the term Indo-Pacific gain new credence, originating in its use by several governments around the world and gaining momentum via the current US administration's embrace of the phrase. Although the term was introduced more than a decade ago, shifting geopolitical realities have given enough reasons for countries in the region to deliberate on it and formulate their foreign policies accordingly.

Interestingly, the term has brought attention to the maritime domain of Asia and related security perceptions. Since the end of the Second World War, Asian security concerns were linked to the land-based territorial construct and scant attention was paid to the security and foreign policy of the high seas or maritime waters. However, the burgeoning maritime trade among the regional and international countries over the past decades and the lack of an overarching institutional architecture for maritime governance at the regional level, exacerbated by an increase in traditional and nontraditional security threats in the high seas, provided compelling reasons for the littorals of the Indian Ocean and Pacific Ocean to cooperate.

India has remained a primary actor in the governance of the Indian Ocean, but it cannot work in isolation. Rather it needs cooperation with other important Indian Ocean littorals, many of whom also happen to share maritime domains with the Pacific, thereby connecting the economies of the two oceans. India's approach toward the Indo-Pacific, therefore, can be best seen working in tandem with the maritime policy considerations of other Indo-Pacific littorals. Hence, one must examine the defense and foreign policy white papers of the four large democracies— Australia, Japan, and the US, along with India—to understand their conception of the Indo-Pacific as a region and the threats facing that region and their interests.

A clearer picture of other countries' perceptions is likely to provide some answers as to how India intends to work with them for a regional-level maritime governance architecture. Additionally, this knowledge can be helpful for stakeholder countries in the Indo-Pacific in conceptualizing the term in ways that converge their interests and address the challenges that the region perceives in a collective manner.

The Indo-Pacific as a Geopolitical Construct

A country's foreign policy approach is based upon the geopolitical calculations of its threat perceptions, locating challenges and looking for opportunities. A white paper can be a definitive yet confounding political document to trace these elements—not only for domestic socio-military consumption but also for researchers, policy analysts, and decision makers from the rest of the world. These publications generate considerable interest both domestically and globally. Hence, allies and adversarial states read these documents closely, seeking to understand a country's threat perceptions and the tools they employ to deal with them. Additionally, white papers help other countries revise and refine their own foreign policy approaches accordingly toward the country publishing the document. In this context, a particular focus on any subject area is bound to raise the interest of the rest of the geopolitical community.

The term Indo-Pacific has recently found its place in white papers of four of the world's largest democracies: Australia, Japan, India, and the United States. This illustrates the importance of the region in the foreign policy pronouncements of these four countries in particular and for Asia in general. In 2017, the white papers of all these countries repeatedly mentioned the term Indo-Pacific and stressed the need to proactively secure this region for the peace, growth, and stability of Asia.

Therefore, it becomes pertinent to understand how each of these countries has defined the Indo-Pacific construct in their official documents. The "approach toward defining" a particular region can help provide clarity regarding each country's recognition of threat perceptions and opportunities.

Japan

First in line to initiate the use of the term Indo-Pacific in its official documents was Japan. As early as April 2017, Japan's Ministry of Foreign Affairs (MOFA) released its white paper in which it clearly promoted a "Free and Open Indo-Pacific Strategy" as a part of its foreign policy aimed at proactively "securing the peace, stability and prosperity of the international community." Promoting interconnectivity in the Indo-Pacific is one of the pillars in Japan's vision of "developing an environment for international peace, stability and sharing universal values."

This white paper recognizes the growing confidence of the Asian countries and their keenness to assume leadership and responsible roles in the several domains based on the rule of law, democracy, and market economy within East, South, and Southeast Asian countries. On the other hand, it views Africa as demographically vibrant and rich in natural resources, which makes that continent full of potential and a promising market. Japan sees a role in connecting these two continents via infrastructure development projects and improving business environments through necessary technological and similar investments that can lead to growth and prosperity throughout the region as a whole.

The Japanese construct of the Indo-Pacific is based on combining not just the two large oceans but also the two continents of Asia and Africa. Developing interconnectivity and infrastructure projects among the developing economies of these two large landmasses seems to form the heart of the Japanese concept of a Free and Open Indo-Pacific (FOIP). For the reasons of free flow of goods, capital, and knowledge in addition to human exchange, a robust and well-understood normative and institutional framework is needed as the firm ground upon which the structure can be constructed. The rules of law and complementary understanding of the global commons can be key deciding factors when enacting any formal or even informal working equation among so many countries.

For Japanese prime minister Shinzo Abe and his administration, freedom of navigation, as enshrined in United Nations Convention on the Law of the Seas, forms a central pillar in the FOIP, valuing "freedom, the rule of law, and the market economy, free from force or coercion, and making [Japan] prosperous." In other words, Japan's reflection of the Indo-Pacific is an external manifestation of its domestic vision, which is development oriented based upon respect for norms and rules. This aspiration was also reflected in its 2017 white paper clearly defining the Indo-Pacific as a key area for development.

Australia

With considerable strategic and commercial interests in the region, Australia regards itself as an Indian Ocean nation and has been involved in the Indian Ocean Rim Association regional institution since 1997 to foster economic cooperation. The country started its approach toward the Indo-Pacific as an extended neighborhood in its 2009 defense white paper. Titled

Defending Australia in the Asia-Pacific Century: Force 2030, the document clearly identified that a stable and secure Southeast Asia is a vital strategic interest for Australia. The paper was visionary in predicting that the Indian Ocean and Pacific Ocean regions will converge as a crucial maritime region and global sea route for energy supplies and therefore see several major naval powers competing for strategic advantage in the region by the year 2030.

Apart from securing its immediate vicinity, the Australian defense white paper 2009 maintained the importance of its extended neighborhood. It highlighted the Asia-Pacific as the geopolitical construct that stretched from the eastern Indian Ocean, as a part of its larger strategic interests. For maintaining a global security order, the country drew its strength from the centrality of the United Nations charter's established "rules-based order." To secure its strategic interests, Australian defense policy is transparent about acting independently and being self-reliant in safeguarding its unique strategic interests. At the same time, Australia promotes a willingness to lead military coalitions and make tailored contributions to other military coalitions with countries having shared strategic interests in the region.

The Australian Defense White Paper 2013 became nuanced in its perception of the global changes and noted that "China's continued rise as a global power, the increasing economic and strategic weight of East Asia and the emergence over time of India as a global power are key trends influencing the Indian Ocean's development as an area of increasing strategic significance. In aggregate, these trends are shaping the emergence of the Indo-Pacific as a single strategic arc." Ensuring the safety and security of sea lanes in the Indo-Pacific became a vital strategic interest for Australian national defense and maritime policy. The document called for strengthening the regional security architecture by including countries like China, India, Japan, the Republic of Korea, and the United States as a community to discuss and cooperate on the political, economic, and security issues in the Indo-Pacific region.

The term Indo-Pacific was further shaped and concretized in the 2016 Defense White Paper and 2017 Foreign Policy White Paper, the former of which stated that "a stable rules-based regional order is critical to ensuring Australia's access to an open, free and secure trading system and minimizing the risk of coercion and instability that would directly affect Australia's interests," representing Australia's crucial strategic interests in the Indo-Pacific context. Australia's maritime-based economy requires unfettered access to trading routes, secure communications, and transport to support its economic development in the long run. Hence, the focus of Australian foreign and defense policy is to build a "stable and prosperous" Indo-Pacific region.

India

The importance of the Indian Ocean and its evolution to Indo-Pacific as a strategy needs a more detailed focus in this study. The Indian Ocean derives its name not from the country but the entire Indian subcontinent, which comprises several neighboring littoral and territorial

countries. The Indian Ocean surrounds India on three sides, making the country as maritime focused as the Himalayas and the country's mass (2,973,193 sq. km, with more than 7,000 km of coastline, including its island territories in the Bay of Bengal and Arabian Sea) make it land-centric. The Indian Ocean connects India to near and extended neighborhoods in both eastern and western parts of Asia and to Africa and Oceania.

There is a significant body of respectable literature that has established the Indian subcontinent's maritime trade back to third millennium BCE, beginning with the Indus Valley Civilization. Indian maritime heritage flourished until the seventeenth century, and Indian ports were visited by ships and traders from several countries from the Arab world and Europe, including the Portuguese, Dutch, and British, seeking to trade for Indian spices. However, in modern history, since the birth of India as an independent nation in 1947, the first few decades of maritime trade, commerce, and exchange remained limited due to the shortcomings of the country's infrastructure and institutions. It was in the 1990s that the Indian government enunciated its approach toward its neighbors across the Indian Ocean under the policy of Look East—unveiled by Prime Minister P. V. Narasimha Rao in Singapore in 1992.

The new policy started as a trade and economy-based relationship between India and its ASEAN neighbors. However, for years there remained a glaring lack in application of this policy toward interconnectivity and infrastructure projects to integrate India and its eastern neighbors for the prospects of trade, market, and exchange of information. Realizing this shortcoming, Prime Minister Narendra Modi transformed the existing Look East policy into the more proactive "Act East" policy in 2015. The objective of Act East is to promote economic cooperation, forge cultural ties, and develop strategic relationships among ASEAN countries.

The policy, envisaged both at bilateral and regional levels, includes steady efforts toward developing and strengthening the interconnectivity of northeast India with the ASEAN region through trade, culture, interpersonal contacts, and physical infrastructure projects. In addition to land-based interconnectivity projects, the maritime component of the Look East policy has gradually expanded, and so has the realization of the importance of the security and strategic dimensions of maritime-related trade.

The current Indian leadership understands the growing strategic importance of the Indian Ocean not only for India but also for the entire region. The vast Indian Ocean region is composed of more than 40 states and represents nearly 40 percent of the world's population. One-half of world's container shipment, one-third of the bulk cargo traffic, and two-thirds of all oil shipment pass through Indian Ocean routes, though three-fourths of this traffic is destined for delivery in other regions of the world.

For India, 90 percent of its trade volume and 90 percent of its oil imports rely on Indian Ocean transport. India's current approach to the maritime domain can be described as two layered—regional and extra-regional. The recognition of the Indian Ocean as a common home to its neighboring states, its desire for regional peace, growth, and stability, and the need to protect itself from any threats led to Prime Minister Modi's commencement of his vision of "Security and Growth for All in the Region" (SAGAR) during his visit to Seychelles in 2015. Former Indian Foreign Secretary Subrahmanyam Jaishankar defines SAGAR as "doctrine that succinctly defines India's vision to collaborate with the region."

From the land-based conception of the Asia-Pacific, India's extended neighborhood now coherently encompasses the wider, maritime-based conception of the Indo-Pacific. Therefore, the second layer also considers the interconnectivity of the Indian Ocean and the Pacific Ocean. About 61 percent of the world's petroleum and other petrochemicals moved along maritime routes in 2015. The Strait of Hormuz and the Strait of Malacca are the world's most important strategic chokepoints by volume of oil transit, and the latter lies at the eastern end of the Indian Ocean.

In fact, the Malacca Strait is the primary chokepoint in East Asia, being just 2.7 km (1.7 miles) wide at its narrowest. It is an increasingly important waterway, with an estimated 16 million barrels per day (b/d) passing through in 2016, compared with 14.5 million b/d in 2011 (fig. 1-1). Crude oil generally comprises 85–90 percent of total oil flows per year, and petroleum products account for the remainder. Therefore, safety of these maritime trade routes is a matter of concern for all regional stakeholders, including India. This realization has now broadened India's conceptual understanding of the strategic domain to include Indo-Pacific economies from the previously land-based conception of the Asia Pacific. In November 2017, a secretarial-level consultation between the officials of the Indian Ministry of External Affairs (MEA) and their counterparts from Australia, Japan and the United States focused on cooperation to ensure a free and open Indo-Pacific region for all, marking the first official diplomatic step toward realizing India's Indo-Pacific strategy.

Additionally, recent press releases from the MEA have stressed "India's centrality in the Indo-Pacific along with Japan." Therefore, for India, the Indo-Pacific is crucial for the security of trade and development within the Indian Ocean and for maritime connectivity to the Pacific economies as part of its Act East Policy.

United States

The United States has been long engaged with the Asian region as a whole. It has remained diplomatically, politically, economically, and, most importantly, militarily involved in West Asia (the Middle East in American diplomatic parlance), East Asia, and South Asia since the mid-twentieth century as a part of its Asia-Pacific strategy. Pres. Barack Obama brought a renewed focus to South and East Asia after America's long engagements with Russia and

West Asia. This shift was widely recognized as a "Pivot to Asia." However, under Pres. Donald Trump, the US administration has focused even deeper on the maritime concept of the region, aligning its policies with the Indo-Pacific construct.

The National Security Strategy 2017 and National Defense Strategy 2018 documents—released in December and January—are the two white papers that used the term Indo-Pacific for the first time in American policy. Both documents repeatedly used the term and even placed it before other regions such as Europe and the Middle East, highlighting the salience of the region strategically.

However, the drivers of American strategic policy to shift toward the region as mentioned in the white papers are different from those of the other three countries previously discussed. The documents highlighted the rise of China and the perception of Russia as a threat to the region—labeling these powers as the "two revisionist powers"—reflecting the drivers for American engagement in the Indo-Pacific region. Since then, Secretary of Defense James Mattis and former US Secretary of State Rex Tillerson have used the term Indo-Pacific in their speeches.

This has been a departure from former President Obama's approach to the region, delineated a "Rebalance to Asia and the Pacific" since 2011 and focusing exclusively on the maritime threat of China's belligerent approach in the South China Sea (SCS), East China Sea, and Indian Ocean over the last several years. The Obama administration had engaged with the region through several institutional architectures such as ASEAN and the East Asia Summit and envisioned partnerships and alliances through the Trans-Pacific Partnership (TPP)—the latter of which was quickly scrapped by the Trump administration—as well as enhancement of defense posturing in the region.

The American strategic shift toward the Indo-Pacific region could be gauged by the fact that the US Pacific Command (USPACOM) was renamed as US Indo-Pacific Command (US INDOPACOM) in May 2018. However, it has been argued elsewhere that President Trump's approach toward the Indo-Pacific in the recent documents is inclined toward putting "America First" in domestic as well as global affairs rather than having a vision or a well-rounded foreign policy consideration for the Indo-Pacific.

The Trump administration, though it withdrew from the TPP, continues to view India as a major defense partner. However, the administration's policy pronouncements indicate a desire to form military and economic partnerships with Southeast Asian countries on a bilateral level. The American conceptualization of the Indo-Pacific construct still needs more deliberation to be seen as more than just a theater of conflict and competition—something that recent American documents and statements seem to convey. US policy toward the Indo-Pacific at the current stage is fragmented at best in terms of areas of engagement within the

region and requires more collaborative work with regional stakeholders to develop a comprehensive security framework in the region.

Nonetheless, there are certain caveats one needs to bear in mind while considering the white papers. The objective of a defense or foreign white paper is to substantially define or redefine national strategy, embracing foreign policy and security objectives. Additionally, it explicates tools for foreign security and domestic security, through military and civilian means. It responds to risks emanating from states or nonstate actors; active, deliberate threats; and security implications of major disasters and catastrophes of a non-intentional nature. However, these official documents are to be read beyond their objectivity and require careful approach to not be taken at their face value. Countries can be expected to declare their security objectives without explicitly mentioning their threat perceptions or their strategy to deal with them.

Therefore, too much reading into the defense and foreign policy white papers can be misleading. Additionally, the fact that several countries, such as India, do not even publish defense white papers cannot be construed as a lack of any tools and strategies for ensuring their national security. In other words, white papers are a crucial political document of a country; however, it is not necessary that every political leadership produce one. Absence of one does not necessarily impede a country's capability to join regional or supra-regional regimes or mechanisms to ensure its peace and security.

Apart from white papers, official statements from the crucial government ministries and departments provide an insight into the government's stand on defense- and security-related issues. This paper too has based its conceptual understanding of the Indo-Pacific as mentioned in the various official documents and statements for the purpose of debating and postulating the future of the Indo-Pacific region and construct.

Evolution from Asia-Pacific to Indo-Pacific

In this section, the paper outlines persuasions that likely contributed to the aforementioned shifts toward the Indo-Pacific construct. Chinese belligerence in the South China Sea; the current range of North Korea's nuclear and missile program, encompassing several Indo-Pacific states; and China's Belt and Road Initiative (BRI)—all of which rely heavily upon the maritime construct of the region and impact the peace, growth, and stability of the overall region. Hence, besides the focus on territorial security in Asia, there is a renewed focus on securing the seas and oceans from impending threats and unilateral aggressions.

China's Aggressive Maritime Posture

The South China Sea, incorporating an area from the Karimata and Malacca Straits to the Strait of Taiwan, presents a peculiar challenge that the world is finding extremely difficult to overcome. It is among the world's most important maritime trade routes and is currently

under dispute due to China's unilateral and excessive claims in the region. The SCS connects the Indian Ocean to the Pacific Ocean via the narrow straits—Malacca, Lombok, and Sunda—all lying to the west of it. The region is also important for the maritime trade flow and its abundant resources. Most the economies to the east of the SCS—like China, Japan, and Korea—are dependent upon the oil that comes from West Asia and Africa.

As discussed earlier, crude oil forms the largest part of the maritime trade passing through the Indo-Pacific, and the SCS route forms a crucial sea lane of communication (SLOC). The oil tankers and ships reaching East Asia travel the shortest route through these three straits. Overall, in 2016, maritime trade worth US $3.4 trillion passed through the waters of the SCS, making it one of the most significant maritime trade routes in the world. China has been legally claiming the landforms as well as the waters of the SCS on the basis of historic maps since 1951.

The maritime region lying to the south of Hainan extends to 3.5 million km2 and has been demarcated by Chinese authorities under U-shaped dashed lines to represent its claims, known as Nine-Dash Line (NDL). China has been aggressively countering rival claims by Vietnam and the Philippines on various occasions within this maritime region since the 1970s. The SCS region is surrounded by five countries in addition to China and Taiwan: Brunei, Indonesia, Malaysia, the Philippines, and Vietnam. All the countries claim overlapping exclusive economic zones (EEZ) and rights within the region. However, by claiming the entire region and the resources therein, China has unilaterally impinged the maritime rights of all the other SCS littorals. Since the 1970s, China and other littoral states have disputed over the landforms in the region that fall into their claimed jurisdictions. The most important ones are the Spratly and Paracel groups of islands that lie beyond China's 200 nautical EEZ—some parts fall into the maritime jurisdictions of Malaysia, Vietnam, and the Philippines.

However, the superior economic power and military strength that China possesses in comparison to these other states have afforded it the ability to project its power over several of the landforms since the 1970s. Malaysia, Vietnam, Taiwan, and the Philippines continue to hold several of the other landforms in the Spratly and Paracel groups. The Chinese historic rights over the NDL were "invalidated" in a legal battle between Beijing and Manila over the excessive claims at the Permanent Court of Arbitration in a landmark verdict in July 2016. However, recent reports and satellite images confirm that over the past few years China has constructed artificial islands and dual-use military establishments such as runways and infrastructure in the disputed areas. Beijing has been extensively demonstrating its growing and modernized military and naval fleet while hampering the use of open seas and overflight rights in the SCS by other countries. Such belligerent actions threaten the peace and security of the region in general.

North Korea's Nuclear and Missile Program

Kim Jong-un's authoritarian and autocratic regime in North Korea has used nuclear weapons and long-range missile systems as tools for blackmailing and negotiating with the United States rather than for conventional deterrence. The country has conducted more than 150 missile and nuclear tests since 1984—over half of these tests since 2011 when Kim took power. While his predecessors Kim Il-sung and Kim Jong-il focused on the testing of short- (up to 1,000 km) and mediumrange missiles (1,000–3,000 km), Kim Jong-un aimed his attention at perfecting the intermediate-range missile (3,000–5,000 km) and intercontinental missiles (greater than 5,500 km) that cover the entire Indo-Pacific region, touching the shores of Australia and all of South and Southeast Asia and reaching as far as Oman in the western Indian Ocean.

The totalitarian North Korean regime and its destabilizing behavior have created a sense of insecurity among its neighbors. The nuclear and missile tests have been a matter of concern since 2006. Though the success of earlier tests were contested, the 2016 tests indicated the country had attempted a thermonuclear or hydrogen bomb test yield estimated anywhere between 10–20 kilotons. By comparison, the Hiroshima bomb explosion in August 1945 yielded 15 kilotons. There are unconfirmed reports that Pyongyang is on its way to miniaturizing its nuclear weapons, which could then be mounted on the long-range missiles with the capability to reach Japan and Western parts of the United States—putting the entire Indo-Pacific region under constant nuclear threat.

The danger of nuclear weapons under an authoritarian ruler has contributed to regional insecurity. The United States has been a forerunner in ensuring global nuclear nonproliferation and arms race reduction and, therefore, views as imperative remaining engaged with the North Korean regime. The United States and its allies, notably Japan and Australia, are demanding North Korean submission to a nonproliferation regime as a precondition for any negotiation, and China's and Russia's calls for freeze on further North Korean tests are supported by other states such as France, Germany, Japan, South Korea, and the United States. The larger geopolitical implications of North Korean nuclear weapons have brought together several regional and extra-regional countries to negotiate with Pyongyang's leadership.

Chinese Belt and Road Initiative

There have been many scholarly debates regarding the drivers and the larger geopolitical implications of Chinese president Xi Jinping's Belt and Road Initiative (BRI). China is aiming to stimulate a new approach to economic globalization— one in which Beijing plays a pivotal role in shaping the norms and institution building. First proposed by Xi in 2013, BRI is a much-touted $1.3 trillion connectivity and infrastructure development project encompassing more than 60 countries in Eurasia and East Africa. Beijing promotes BRI as a

development vehicle for the hardware of trade and investment. Additionally, it is also the foundation on which China views its role in future global leadership. The BRI has two primary components: the overland Silk Road Economic Belt (SREB) and the seabased twenty-first-century Maritime Silk Road (MSR)—thus, "belt and road."

The MSR is focused on developing key seaports that connect to land-based transportation routes across countries. The maritime trade route envisioned in this initiative starts from the South China Sea, connecting westward to the Indian Ocean and finally reaching Europe through the Red Sea and Mediterranean Sea. The success of the BRI and Chinese economy is dependent upon the SLOCs in this region. China has been systematically modernizing its army, airpower, and naval forces for several years.

The importance of SLOCs as envisioned in the BRI, has, therefore, incentivized China to build up its military and naval forces to protect its ships. However, the nature of forces being utilized by Beijing has become a matter of concern for the other regional and extra-regional countries involved in the region. Deployment of aircraft carriers, amphibious attack ships, submarines, and related craft points toward an offensive, warlike Chinese psyche rather than any intention to simply protect their maritime routes. Moreover, Chinese investment in building dual-use ports and airfields in Pakistan, Africa, and Sri Lanka and on the South China Sea islands raise questions about Beijing's objectives—in fact presenting China as a regional security threat.

These activities have reverberating impact on other countries that are trying to counter Chinese belligerence through internal (buying or building arms and strengthening militaries) or external (aligning with other powers) balancing, thereby making the region precarious. China is providing loans through its Asian Infrastructure Investment Bank (AIIB) to countries for the development of projects under the BRI. However, there are strong concerns about such "debt diplomacy," under which the recipient nations might have put collaterals against the loans gained from China.

For example, China's leasing of Sri Lanka's Hambantota port for 99 years against the unpaid $3.1 billion loan at a 6.3 percent interest rate is one such example. This is a deviation from the non-collateralized developmental funds given by the World Bank or International Monetary Fund. A recent 2018 study by the Washington-based Center for Global Development claimed that 23 of the 68 potential borrower countries under the BRI were already at a "quite high" risk of debt distress.

The threat of economic insecurity related to such a massive and interconnected project are intimidating. As China moves toward globalization and institution building following a blueprint that deviates from the Western-led order—maybe "with Chinese characteristics"—the norm and rule making under the BRI still remains a big question mark. The current developments in Asia demonstrate threat perceptions in the maritime domain. While the

oceans serve the positive role of interconnecting countries economically, diplomatically, and culturally, they also serve to link the threats found in one area to the entire region. Therefore, none of the countries in the Indo-Pacific can formulate its maritime policies in isolation by excluding these common threat perceptions or being selective of the ones that affect it more than others. The next section is an overview of how the stakeholders are currently cooperating to address the concerns that affect the Indo-Pacific region.

India's Approach in the Indo-Pacific

India's geopolitical location, its capability and ambitions, and the various threat perceptions present in the Indo-Pacific will remain key determinants in shaping the nation's position in the region. India is a large country with a population second in size only to its neighbor, China. India also possesses one of the fastest growing economies in the world. Growing economic ambitions come with more responsibilities and an appetite to play a larger role in the regional geopolitics and security architecture. India, too, is looking forward to its role as a "net security provider" in the Indo-Pacific.

However, New Delhi still lacks clarity on how it can go about taking a leading role in the regional architecture and institutions. Prime Minister Modi has demonstrated his clarity and vision toward India's position and importance in the Indian Ocean. In a speech in February 2016 at the International Fleet Review held at Vishakhapatnam, Andhra Pradesh, Modi stressed India's centrality in the Indian Ocean and the shared opportunities and threats that the Indian Ocean presents to the regional economies.

More than 40 countries have shores on the Indian Ocean, and half of world's container traffic and close to one-third of world's cargo traffic passes through this region. India has 1,200 island territories and a huge EEZ of 2.4 million km2 in the Indian Ocean, establishing the importance of the region for the country—and vice versa. At the same time, the region shares threats of seaborne terror, piracy, natural disasters (like tsunamis and cyclones), and manmade problems such as oil spills and climate change, which continue to put at risk the stability of the maritime domain. The scale and complexity of these challenges toward international maritime stability cannot be the preserve of a single nation.

Hence, to ensure a peaceful and stable maritime environment, Modi explicated his vision of SAGAR, making the Indian Ocean region his foremost policy priority. The policy is conceptually based upon actively pursuing and promoting India's geopolitical, strategic, and economic interests on the seas, in particular the Indian Ocean. India has been involved similarly at the political, institutional level within the Indian Ocean states through the Indian Ocean Rim Association (IORA) since 1997. The organization celebrated its twentieth anniversary in 2017 and has "remained committed to building and expanding understanding and mutually beneficial cooperation through a consensus-based evolutionary and non-intrusive approach in the rapid changing environment faced by the region."

IORA is a dynamic organization of 21 member states and seven dialogue partners within the Indian Ocean. The organization has eight focus areas: maritime safety and security, trade and investment facilitation, fisheries management, disaster risk management, tourism and cultural exchange, blue economy, women's economic development, and academics, science, and technology.

On the other hand, the Indian Ocean Naval Symposium (IONS) forms the functional body, comprising 35 Indian Ocean littoral states that have been grouped into four sub-regions (South Asian, West Asian, East African, and Southeast Asian littorals including Australia). IONS formed in 2008, seeking to provide a regional forum through which the chiefs of navies (or equivalent maritime agency) of all the littoral states of the IORA can increase maritime security cooperation.

Over the past few years, one can observe a lack in attention in India's foreign policy approach focused on issues of immediate bilateral and multilateral importance. This adversely impacted India's relationship with the states at the long-term, strategic level. Now, however, India and the United States have restarted their institutionalized dialogues designed for deepening cooperation in the spheres of defense, technology, and counterterrorism. The two countries have operationalized agreements for allowing greater bilateral interoperability and technology transfer, including the Logistics Exchange Memorandum of Association (LEMOA).

Apart from the United States, the Indian navy regularly carries out naval exercises to increase interoperability in the maritime domain with several countries such as Singapore (SIMBEX), France (VARUNA), Australia (AUSINDEX), Oman (Sea Breeze), Japan (JIMEX), and Myanmar (MILAN and CORPAT). The scope of these exercises has remained limited to the Bay of Bengal and the Andaman Sea. With the above structures in place, it could be safely argued that India has a vision and strategy for the Indian Ocean. However, as India is extending its approach toward the Indo-Pacific as its extended maritime domain, it needs to ponder more deeply the institutional structures required to do so.

Considering the current trajectory of India's involvement in the region through bilateral and multilateral institutions related to several aspects of security (economic, military, political, and so forth), it could be argued that India is approaching the Indo-Pacific with a two-pronged approach—building multilateral alliances for socio-economic and political issues for development and keeping the security issues on a more bilateral level with the other regional powers rather than an overarching institutional proposition within the Indo-Pacific.

One of the key factors driving India toward its Indo-Pacific neighbors was the recognition of a lack of interconnectivity that includes the western region as India's immediate neighborhood in addition to its eastern neighbors. Expanding the area of interest and influence has come to be a foreign policy driver for New Delhi in recent years, and Prime

Minister Modi's foreign visits are examples of the fact. There is a growing awareness among Indian leaders regarding the country's poor position in connecting with its neighboring states in terms of infrastructure building and capacity development due to the country's own internal structural problems.

However, India does share old historical and cultural ties with many of its neighbors, which several subsequent Indian leaderships are trying to revive as part of the nation's "Neighbourhood First" policy. India's approach toward Africa can be seen in this context. As a continent, Africa has huge human and resource potentials, but it lacks development and capacity building needed for its growth. Several Asian countries are taking initiatives to address structural issues that is keeping resource-rich African states from peace and prosperity.

Japan has been playing a major "complementary role" by providing developmental assistance to African states. At the same time, to bridge the supplyand-demand gap between the developing countries—like India and those in Africa—and developed Japan, the Asia Africa Growth Corridor (AAGC) has been proposed. AAGC, in its vision document of 2017, has been envisaged as a socioeconomic project to improve infrastructure, connectivity, and related development projects and increase people-to-people interaction between Asia and Africa. The project envisions that it "will have a strong influence on India's constructive role in shaping the global agenda for sustainable economic development and international cooperation based on the principles of solidarity, equity and sharing." In other words, there is a political willingness among nations and mutual acknowledgment of the opportunities presented by having an institutional structure in place.

On the strategic side, however, there is still a lack of any institutional structure in the Indo-Pacific region. The four large democracies of the region—Australia, India, Japan, and the United States—are in talks for renewing their Quadrilateral Security Dialogue, an informal body better known as the Quad, into a formal institutionalized relationship. The primary objective of the Quad is to maintain a rules-based order in the regional maritime security architecture. The first meeting of the Quad took place in May 2007 on the sidelines of the ASEAN Regional Forum meeting in the Philippines, and the second one was held in conjunction with the Shangri-La Dialogue in Singapore in June 2018.

In 2008, the cordial relations between the ruling Australian government and China temporarily led to Canberra quitting the group. Japan, India, and the United States went ahead with the Trilateral Strategic Dialogue, and the trio continued conducting joint naval exercises, known as the Malabar exercises in the Bay of Bengal near India and in the waters near the Okinawan coast of Japan. After the failure of the first iteration of the Quad, a revival occurred in 2017. Changing geopolitics in the region and China's belligerent maritime posture at the regional level and bilaterally with several countries of the neighborhood—including India, Japan, Vietnam, and the Philippines—had heightened the sense of threat

perceptions in the intervening decade. Despite seeing China as a threat individually, the defense and security white papers of the four Quad nations do not reflect this perception at a collective level.

Except for the US paper, which repeatedly mentions China as the threat to American interests in the Indo-Pacific, the white papers from the other three members of the Quad have centered their focus on the growth and developmental aspect and maintenance of a rules-based order in the Indo-Pacific region. The lack of a common understanding of the Indo-Pacific region as a theater and the delimitation of its scope form the basis of the fault line for any organizational and operational structure to be developed among the four countries. India shares a long-disputed territorial border with China, and the two nations fought a brief but bloody war in 1962.

China and Japan too have a disputed maritime border in the East China Sea. Similarly, Australia and the United States share their maritime zones with China in the Pacific Ocean. Still, all the members of the Quad conceptualize the Indo-Pacific in their own manner based upon their maritime interests, rights, and threat perceptions, and these disparate conceptions are likely to have implications for any intra-regional legislation required for political and institutional building. The territorial/maritime proximity and economic interdependence with China can be seen as one of the major reasons for these countries to avoid increased hostility in the region.

Complications and a Way Forward

The term Indo-Pacific has gained currency in India since 2006, when the term was used as an academic and strategic concept. The regional geopolitics has come a long way since in defining the threats and opportunities for India and other littorals in the Indo-Pacific region. Japanese prime minister Abe's "Confluence of the Two Seas" speech in 2007 in the Indian parliament brought regional focus to the term by advancing cooperation and development. The United States and Australia, as the other stakeholders in the peace, security, and development in the Indo-Pacific region, joined the ranks recently to initiate a regional-level maritime dialogue. Nonetheless, the term still suffers handicaps from several angles, starting with the conceptualization of the term and further from a lack of finding common grounds to form a supra-regional institution to address security concerns.

That said, there are a few existing institutional mechanisms that can function as a platform for dialogue and deliberation among the regional stakeholders, reducing the need for establishing new institutions for maritime security in the IndoPacific. These include the East Asia Summit (EAS), the ASEAN Regional Forum (ARF), the ASEAN Defence Ministers Meeting Plus (ADMM Plus), and the IORA)—all of which deal with security issues within the region. These ASEAN sister organizations have seen some successful participation over

the past years, with several high-ranking political and military officials from the member and observer countries attending each year.

However, the same cannot be said of the outcomes of such meetings, as the joint communiques or statements produced after these summits have reflected the inability to establish common grounds in terms of threat perceptions. Still, it brings the focus back to the centrality of ASEAN countries as the pillar for the establishment of an Asian security architecture. ASEAN countries have shown their willingness to develop an open and inclusive maritime security architecture but have shied away from any strategic-level, Quad-like arrangements. Just like several other neighbors, many ASEAN countries have complicated relations with China. On the one hand, there are disputed maritime boundary issues that some of these countries face individually with China, and on the other, they are dependent upon China economically—even more so now, as the BRI offers attractive land and maritime infrastructure and connectivity development opportunities to Southeast Asia.

ASEAN countries see these development-based projects as a boost to their economies. Additionally, land-oriented ASEAN countries such as Laos, Cambodia, Myanmar, and others share better bilateral relations with China than the maritime counterparts, which has reflected in their seeming inability to come up with a collective position in ASEAN with regard to China. The latter, too, plays an upper hand while negotiating with ASEAN at the multilateral level as seen in discussing maritime issues.

The Declaration on the Code of the Conduct on South China Sea (DoC 2002) that is yet to be concretized into a binding code of conduct, remains a point in case. China's precondition while discussing the DoC is to keep the maritime issues pertaining to SCS out of the agreement, which has kept the agreement from reaching fruition. The reinstituted Quad had an enthusiastic start with a joint secretary-level meeting among the countries; however, the initiative is facing issues with India repeatedly not accepting Australia in its Malabar naval exercises over the years. India did not provide its reasons for the exercises that were held in June 2018 near coast of Guam.

Moreover, Indian foreign policy is in a flux vis-a-vis its relations with China, and as the general elections are approaching in 2019, the current leadership appears reluctant to put India in a volatile situation. Nevertheless, the Indo-Pacific regional maritime framework is likely to see a joint effort from the four countries based upon a common agreement of being free, open, and inclusive, governed by a rule of law, and norms based upon the consent of all to ensure the peace and prosperity of the region. However, the same cannot be said about the establishment of the Quad in the current form of a purely military angle.

Several countries, including ASEAN nations, though agreeable with joint maritime and military exercises, have expressed their reservations regarding militarizing the region with warships. The countries in the region are seeking freedom of navigation and overflight rights

as common for all and have denounced unilateral attempts by any country to claim territorial rights of sovereignty over these global commons. Additionally, these nations seek peaceful settlement of disputes and the formation of partnerships based upon shared values and interests rather than war fighting. In other words, the Quad states need to consider these aspirations of the regional stakeholders and ensure an overall security of the region beyond the military perspective.

Having stated that, as most of the littoral countries in the IORA are dependent upon maritime trade and have considerable stake in the security of the Indo-Pacific, such concerns need to reflect in regional policy making collectively and without ambiguity. This article establishes that India's position in the Indo-Pacific stems from its location and its interests in the region. The nation is keen to take a larger role in the regional security architecture—for which it needs to move beyond the Indian Ocean and take a proactive role in consensus building among the regional stakeholders.

At the same time, US foreign and security policy need to move beyond China's containment and seek to engage with American allies at a regional level beyond military or economic bilateral partnerships. India has a role to play beyond just being a major defense partner to the United States in ensuring a peaceful, free, and open Indo-Pacific. Along with Australia and Japan, India can deliberate on how New Delhi wishes to conceptualize the Indo-Pacific and then address the threat perceptions collectively. The Indo-Pacific is still evolving, and now is an opportune time for the Indo-Pacific littorals to cooperate on issues of concern to build a maritime security framework architecture and for India to take a prominent role in it.

MARITIME CO-OPERATION IN THE INDIAN OCEAN REGION

The Indian Ocean Region (IOR) has emerged as a vital geopolitical arena in the Asian Century. The primary coalescing factor is the systemic nature of the interconnected maritime context where global, regional, and national objectives come together. The strategic interests of multiple actors involved in the IOR overlap and converge at sea. Once a virtual strategic "backwater", the Indian Ocean is increasingly becoming an arena for strategic competition between the major powers, particularly India and China. All actors with IOR interests stand to benefit from ongoing peace and tranquillity. The IOR maritime domain is fundamental to global and regional economic and environmental well-being.

IOR freedom of navigation has to be protected because it is essential to world and regional trade, and critical to global energy security. The Indian Ocean marine environment impacted by climate change, pollution, and oceanic resource exploitation needs to be husbanded; it is vital to global environmental security and regional food security. Maritime territorial sovereignty is crucial to regional stability and nation-state integrity. Law and order at sea must be applied across the entire maritime expanse; criminal activities transcend national maritime boundaries and variously impact all states. Similarly, there are shared obligations

for maritime and aeronautical search and rescue (SAR) and requirements for humanitarian assistance and disaster relief (HADR) across the Indian Ocean. Importantly, no single nation-state or other entity has the mandate or the wherewithal to ensure the integrity and security of the IOR maritime system. Cooperation between actors with interests in the Indian Ocean, both internal and external, is necessary into the future.

The Association of Southeast Asian Nations (ASEAN) occupies a central geostrategic position astride the confluence of the Indian and Pacific Oceans. Whether individual ASEAN states have Indian Ocean or Pacific Ocean littoral geography, a combination of the two, or are largely landlocked, their collective interests are profoundly affected by the inherently indivisible nature of the Indo-Pacific maritime context. For example, emerging tensions in the South China Sea that impact regional stability and could disrupt vital maritime trade routes are of significant concern to Indian Ocean trade, just as Somalian piracy in the Gulf of Aden impacted regional maritime trade. Notably, several ASEAN states committed maritime forces to assist international anti-piracy efforts in the Western Indian Ocean, operating under the banner of the voluntary multinational naval partnership, Combined Maritime Forces. Similarly, the operations at the eastern end of the IOR under the Malacca Strait Patrols (MSP) mechanism involving Malaysia, Singapore, Indonesia, and Thailand generate maritime trade security for all who use the Indian Ocean.

IOR MARITIME COOPERATIVE CONTEXT

The IOR geopolitical context presents major challenges to maritime cooperation. It is complex, diverse, dynamic, and fragmented; the IOR is difficult to deal with as an integrated entity. Geography, combined with historical, cultural, racial, ethnic, economic, political, and ideological factors, makes conceptualising the IOR as a coherent entity problematic. It is perceived to be a largely disaggregated oceanic and littoral region, more a collection of sub-regions than a single region. However, from a maritime perspective, there is a rising imperative for cooperation that spans the entire Indian Ocean and interconnects with the oceans to the east and west.

There are several regional cooperative entities in the Western Pacific that deal with aspects of maritime cooperation and maritime security, with ASEAN a central participant, and some Indian Ocean states involved. There is a relative dearth of IOR nation-state level arrangements or architectures in place specifically designed to facilitate maritime cooperation. The Indian Ocean Rim Association (IORA) is the only region-wide body designed to facilitate regional dialogue at the government-to-government level, although its membership does not include all IOR littoral states. ASEAN states that are members of IORA include Indonesia, Malaysia, Singapore, and Thailand. IORA has recently experienced resurgence after an extensive period where its effectiveness was doubtful and frequently criticised by member states. India, Australia, Indonesia, and other members have committed energy and resources to revitalise IORA in an effort to enhance its relevance and utility.

IORA's focus is primarily to promote economic cooperation, supported by human, social, environmental, and intellectual dialogue. Maritime cooperation features prominently among the six priority areas for IORA. Maritime Safety and Security is the first priority, followed by Fisheries Management at priority three. Disaster Risk Management (priority four) and Academic and Science and Technology Cooperation (priority five) also have some maritime aspects. Special IORA projects include the Maritime Transport Council (MTC), Fisheries Support Unit (FSU), and the IORA Centre of Excellence on Ocean Science and Environment. IORA is devoting significant attention to the "Blue Economy", with a core group tasked with "Promoting Fisheries and Aquaculture and Maritime Safety and Security Cooperation in the IOR". An IORA Indian Ocean Dialogue forum in Perth, Australia, in September 2015 identified several maritime cooperation focus areas for the future: combatting transnational crime, maritime security and defence cooperation, regional cooperation in SAR operations, the Blue Economy as a driver of economic growth, countering illegal fishing, and HADR.

The only IOR-wide entity charged specifically with maritime security collaboration is the Indian Ocean Naval Symposium (IONS). The focus of IONS is interaction between senior naval and maritime security officials, primarily to consider operational and technical matters. Modelled along the lines of the Western Pacific Naval Symposium (WPNS), IONS is an Indian-led initiative that first convened in 2008. IONS is at a relatively nascent stage of development and progress has been slow, in considerable part due to the disparate nature of strategic alignments in the IOR. There is no direct connection between IONS and IORA. ASEAN navies that are party to IONS include Indonesia, Myanmar, Singapore, and Thailand, while Malaysia has Observer status. IONS does not present an appropriate forum to consider international policy issues, which are the purview of heads of government and ministers.

Some maritime-related cooperative entities in the Indian Ocean come under United Nations auspices. These include the Indian Ocean Global Ocean Observing System (IOGOOS), primarily a marine scientific research project under the Intergovernmental Oceanographic Commission (IOC) of the United Nations Educational, Scientific and Cultural Organization (UNESCO); the Indian Ocean Memorandum of Understanding for Port State Control (IOMOU) that comes under the International Maritime Organization (IMO) and is intended to support enactment of the International Ship and Port Security (ISPS) Code in the IOR; and regional fisheries management organisations (RFMOs), including the Southwest Indian Ocean Fisheries Commission (SWIOFC), the Southern Indian Ocean Fisheries Agreement (SIOFA), plus the Indian Ocean Tuna Commission (IOTC).

Another area of IOR cooperation is in maritime and aviation SAR where adjacent Search and Rescue Regions (SRR) mostly have close cooperative arrangements, with instances of mutually beneficial SAR capacity-building programmes. The importance of international SAR cooperation has been highlighted by high-profile events like the March 2014 Malaysian

Airlines MH370 tragedy in the Indian Ocean. Notably, from a regional and global SAR perspective, the engagement of ASEAN member states in international SAR treaties and arrangements is patchy. All ASEAN member states are parties to the Convention on International Civil Aviation, 1944, and most are parties to the International Convention for the Safety of Life at Sea (SOLAS), 1974. However, only Indonesia, Singapore, and Vietnam have so far ratified the International Convention on Maritime Search and Rescue (SAR), 1979.

There are numerous bilateral and sub-regional arrangements in the IOR that have varying, mostly limited, maritime cooperation relevance, with ASEAN as one of the more effective sub-regional cooperative entities that is also an Indian Ocean stakeholder. One arrangement with specific maritime application is the Djibouti Code of Conduct concerning the Repression of Piracy and Armed Robbery against Ships in the Western Indian Ocean and the Gulf of Aden (DCoC), conceptually based upon the Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia (ReCAAP).

Overall, the lack of effective Indian Ocean regional maritime cooperative arrangements and mechanisms is likely to become critical, given emerging maritime security risks and vulnerabilities that will require collective and cooperative consideration and action. There is a strong case for enhanced IOR regionalism, with a focus on cooperation across the maritime domain. This presents perplexing challenges in the IOR strategic context: how to develop realistic and workable collective and cooperative security strategies?

OPPORTUNITIES FOR ASEAN MARITIME ENGAGEMENT IN IOR

The interests of ASEAN and other Indian Ocean stakeholders, both internal and external, converge at sea. ASEAN's strategic location around the eastern end of the Indian Ocean sea lines of communication (SLOCs), part of the inherently interconnected globalised maritime system, demands that it play a constructive role. ASEAN should be integrally engaged in all aspects of IOR maritime cooperation. There are several areas where ASEAN is well placed to contribute and derive benefit; in some respects, ASEAN is uniquely positioned.

ASEAN represents an exemplar of regional cooperation that is demonstrably lacking and sorely needed in the IOR. Habits and mechanisms for cooperation between diverse ASEAN member states have been built over decades. ASEAN has provided a catalyst for economic, security, and other cooperative and collective endeavours, primarily in the Western Pacific. The ASEAN experience and lessons learned can be useful in informing cooperative approaches in the IOR.

ASEAN engagement in the IOR should go beyond that of the individual ASEAN states that have Indian Ocean littoral geography and are currently involved in specific arrangements. ASEAN may be well placed to moderate Indian and Chinese strategic competition in the IOR. ASEAN, as a separate entity, should consider applying to join IORA as a Dialogue

Partner. This would enable mutually beneficial sharing of information, experience, and ideas and help place explicit emphasis on Indo-Pacific maritime congruence.

Similarly, ASEAN states could encourage cooperation and sharing of experience between the Western Pacific Naval Symposium (WPNS) and IONS, which could assist IONS to move forward. WPNS has been operating since 1988 and there are many mutual areas of operational and technical interest including, for example, law and order at sea, HADR, SAR, and promoting procedures for unalerted encounters between naval and coastguard forces.

A major area of mutual interest for ASEAN and the IOR that impacts all aspects of maritime cooperation is maritime domain awareness (MDA). High quality MDA is important for ensuring the safety and security of maritime trade flows, protecting the maritime commons, and imposing law and order at sea. While a level of cooperation is already happening, there is considerable room for improvement. For example, the Information Fusion Centre (IFC) hosted by Singapore as a regional maritime security information sharing centre represents regional best practice. Good liaison with several IOR states, including India and Australia, is already in place and this can be built upon and expanded across the Indian Ocean.

Finally, ASEAN should urge member states to ratify the 1979 Maritime SAR treaty and other IMO conventions and protocols that impact maritime safety, security, and marine environmental protection. Related domestic legislation and regulations should follow so that all ASEAN states effectively contribute to international maritime cooperative arrangements.

INDIAN OCEAN AND MARITIME DISPUTES

The Indian Ocean is the world's third-largest body of water and has become a growing area of competition between China and India. The two regional powers' moves to exert influence in the ocean include deep-water port development in littoral states and military patrols. Though experts say the probability of military conflict between China and India remains low, escalated activities (such as port development and military exercises) and rhetoric could endanger stability in a critical region for global trade flows. But the diverse nontraditional security challenges in the Indian Ocean Region (IOR) also offer areas of potential collaboration for China and India, as well as other regional actors.

What is the importance of the Indian Ocean?

The Indian Ocean covers at least one fifth of the world's total ocean area and is bounded by Africa and the Arabian Peninsula (known as the western Indian Ocean), India's coastal waters (the central Indian Ocean), and the Bay of Bengal near Myanmar and Indonesia (the eastern Indian Ocean). It provides critical sea trade routes that connect the Middle East, Africa, and South Asia with the broader Asian continent to the east and Europe to the west. A number of the world's most important strategic chokepoints, including the Straits of Hormuz and Malacca through which 32.2 millions of barrels of crude oil and petroleum are

transported per day—more than 50 percent of the world's maritime oil trade—are found in the Indian Ocean Region, which itself is believed to be rich with energy reserves. Nearly 40 percent of the world's offshore petroleum is produced in the Indian Ocean, coastal beach sands and offshore waters host heavy mineral deposits, and fisheries are increasingly important for both exports and domestic consumption.

Why is the Indian Ocean a source of competition?

China and India are dependent on energy resources transported via the secure sealanes in the Indian Ocean to fuel their economies. India imports nearly 80 percent of its energy, mostly oil from the Middle East, and is due to overtake Japan as the world's third-largest energy consumer (behind China and the United States). According to a U.S. Department of Defense report, 84 percent of China's imported energy resources passed through Strait of Malacca from the Indian Ocean in 2012. As Beijing and New Delhi press to maintain economic growth, their dependency on the safe transport of resources will likely intensify. China's growing global influence and India's rapid economic rise have heightened the ocean's strategic value. Meanwhile, the United States' rebalance to Asia—shifting from a foreign policy dominated by the Middle East to one more centered on Asia—has also been a contributing factor elevating concern over Indian Ocean security. Diverse security challenges affect the region ranging from natural disasters to concerns over energy security, piracy, and military posturing.

How are China and India competing in the Indian Ocean?

Both countries have developed initiatives to bolster infrastructure and other connections in the region, which the World Bank describes as among the "least economically integrated." Competition between Beijing and New Delhi is not necessarily overt, but each country is seeking to strengthen ties with smaller regional states to secure their respective security and economic interests.

Beijing's regional vision, backed by $40 billion of pledged investment, outlines its One Belt, One Road plan—combining the revitalization of ancient land-based trade routes, the Silk Road Economic Belt, with a Maritime Silk Road. China's ties with regional states have deepened, including the influx of Chinese capital into construction projects in Bangladesh, Myanmar, Pakistan, and Sri Lanka. Since launching counterpiracy operations in 2009, Beijing has become increasingly active in the region. China has also undertaken efforts to modernize its military, particularly its naval deployment capabilities to protect overseas interests like personnel, property, and investments. Experts also argue that Beijing's forays into what is at times described as India's neighborhood are driven by China's excess capacity challenges—incentivizing Chinese firms out of domestic markets to compete in and open new markets abroad.

For its part, India sees itself as the natural preeminent regional power. Prime Minister Narendra Modi has doubled-down on fostering stronger diplomatic, economic, and security ties with IOR maritime states as a means to strengthen India's economy, establish its role a driver of regional growth , and simultaneously diminish China's growing appeal, writes CFR's Alyssa Ayres.

"It is India's neighbourhood that holds the key to its emergence as a regional and global power," writes former Indian foreign secretary Shyam Saran. Though Beijing deflects claims of hegemonic aspirations, it identifies security in the IOR as a primary concern for Chinese "core interests." In 2015, a white paper charting China's military strategy indicated a shift of People's Liberation Army Navy to focus on both offshore water defense and open seas protection. Chinese behavior suggests that Beijing seeks to establish a persistent regional maritime presence. It now boasts a semipermanent naval presence through its counterpiracy activities in the Indian Ocean and has more aggressively asserted itself in the Pacific with extensive patrols and land reclamation projects in disputed waters.

China's ambitions in the region have been described by many scholars by the "string of pearls" metaphor, which holds that China is taking on economic and investment projects with Indian Ocean states to secure ports or places where its military forces could set up naval facilities or at the very least, refueling and repair stations. Chinese experts dismiss this, claiming that China seeks access, not bases, for economic gain. C. Raja Mohan, director of Carnegie India, a regional center of the U.S.-based Carnegie Endowment think tank, argues that as rising powers, China and India's pursuit of partnerships with smaller regional states is inevitable. "Everyone is playing this game," he says. "Bases is going to be the name of the game in the Indian Ocean, and that game is going to be pretty attractive in the coming years."

Still, "maritime competition between China and India is still nascent and should not be overblown," cautions CFR's Daniel S. Markey in a Contingency Planning Memorandum. Still, he writes that a "tit-for-tat politico-military escalation" is possible in the larger Indo-Pacific, a region spanning both the Indian and Pacific oceans.

What fuels China-India tensions?

China-India relations are fraught, colored by historical disputes and the perceived threat to India of China's rise. Tensions have persisted despite overtures by Chinese President Xi Jinping and Indian Prime Minister Narendra Modi. Much of the friction stems from a longstanding dispute along a 2,400-mile border in India's Arunachal Pradesh and China's Tibet and the legacy of the 1962 Sino-Indian War along the Himalayan border.

The expansion of a Chinese presence in the Indian Ocean has heightened India's concerns. Beijing says its activities are commercially motivated and intended to better protect its interests and people abroad. However, Brahma Chellaney of the Center for Policy Research (CPR), an independent Indian think tank, argues a ramped up Chinese presence in the Indian

Ocean and elsewhere is consistent with Xi Jinping's intention of making maritime power central to achieving Chinese dominance in Asia.

While China's aims are disputed, both sides continue to ramp up military capabilities in the ocean region. China continues to deploy greater numbers of naval forces to support counterpiracy operations in the western Indian Ocean, and invests and sells arms, including tanks, frigates, missiles, and radar, to India's neighbors. Beijing is currently restructuring its military: Xi Jinping announced in September 2015 that the People's Liberation Army would cut 300,000 of its troops to redistribute resources to sea and air capabilities. As China adapts its military force to meet its global ambitions, its posturing has grown bolder. In October 2015, China finalized the sale of eight submarines to Pakistan, and in recent years, Chinese submarines have docked at the Sri Lankan port of Colombo and the Pakistani port of Karachi. More still, Beijing's land reclamation efforts and assertive behavior in the Pacific could bleed into the region, suggest the U.S. Naval War College's Andrew Erickson and Kevin Bond.

India is also reinforcing its regional maritime presence. "Activating partnerships and expanding capabilities in the Indian Ocean has been central to our quest for security," said Indian Foreign Secretary Subrahmanyam Jaishankar at the launch of Carnegie India in April 2016. The country has vowed to spend billions to build up its navy, including anti-submarine capabilities, has sent vessels to visit the South China Sea, and called for freedom of navigation and the peaceful resolution of territorial disputes as part of its Act East policy. The construction of military bases, modernized equipment and fleets, new maritime assets, and the expansion of security ties are all part of New Delhi's push to assert itself as the region's leader. Modi initiated the first bilateral India-Australia exercises and India participated in multilateral naval games in the Bay of Bengal with the United States, Australia, and Japan. David Brewster of Australian National University says there is little doubt that despite India's traditional principle of nonalignment, outreach to the United States, Australia, and Japan are calculated moves that could play a significant role in counterbalancing China.

What other countries have strategic interests in the IOR?

Small regional states, such as Bangladesh, Maldives, Myanmar, Seychelles and Sri Lanka, are recipients of both Chinese and Indian aid and investment, primarily for transport and infrastructure development. The majority of their foreign policy ties are determined by what deals can be made to help them meet their national development goals, says Nilanthi Samaranayake of Virginia-based CNA, a nonprofit research and analysis organization.

Global powers from outside of the region also have an interest in maintaining the ocean's security. The United States operates a naval support facility—Diego Garcia—on UK-leased territory in the central Indian Ocean, while France maintains a presence in the region

from Reunion, its Indian Ocean island outpost. Australia has a modern naval force operating in the ocean, and the IOR is increasingly featured in defense, national security, and maritime strategies developed in Canberra.

What are transnational concerns in the ocean?

Despite the rise in competition, multilateral cooperation involving China, India, and other states, takes place on issues including piracy, disaster relief, and drug smuggling. The following areas show potential for expanded cooperation:

- *Counterpiracy.* Piracy has been costly to ocean-faring traders but global and regional responses have shown success. Oceans Beyond Piracy, a Colorado-based non-profit, estimates that the economic cost of piracy off the Somali Coast amounted to $2.3 billion in 2014, a drop from the estimated $5.7–$6.1 billion loss two years prior.

Counterpiracy efforts near the Gulf of Aden have been the most successful manifestation of regional cooperation. More than eighty countries, organizations, and industry groups participate in operations in the IOR under the auspices of the ad hoc, voluntary Contact Group on Piracy off the Coast of Somalia (CGPCS), created in January 2009 in response to UN Security Council Resolution 1851 on Somali piracy and armed robbery at sea. Since military cooperation began, the volume of attacks has shrunk. Yet experts warn that pirates have turned to more sophisticated equipment and if naval pressure in the western Indian Ocean is reduced, pirate activity would rise again.

China and India carry out anti-piracy activities independently, deploying naval vessels to escort merchant ships, provide protection, conduct rescue operations, and confiscate contraband. In April, China dispatched its twentieth naval escort task force to the Gulf of Aden. Meanwhile, India has prevented forty piracy attempts and developed an online registration service for merchants to request Indian naval escorts.

- *Search and Rescue.* Another recent example of cooperation was the search effort for the Malaysia Airlines Flight 370, which disappeared en route from Kuala Lumpur to Beijing in March 2014. At the height of operations, twenty-six countries, including China and India, contributed to the search mission. Wreckage believed to be from the flight was discovered in July 2015.

- *Disaster Relief.* There is room for growth on humanitarian aid and disaster relief cooperation. After the 2004 Indian Ocean Tsunami, governments, including Australia, France, India, Japan, Malaysia, New Zealand, Pakistan, the UK, and the United States, participated in extensive relief and rehabilitation efforts . Separately, China disbursed more than $62.2 million in aid, shipped supplies, and dispatched medical and rescue teams. More than a decade later, the IOR's vulnerability to natural

disasters and the subsequent effects of climate change could provide impetus for more extensive collaboration.

- *Fisheries*. Consumers in Indo-Pacific countries on average obtain 20 to 50 percent of their animal protein from fish, and industrial fishing is an important export for smaller countries in the IOR. Regional players identify overfishing and environmental degradation as serious risks to sustainable economic development and food security, but mechanisms to establish sustainable fisheries have not been effective. The Stimson Center's David Michel blames [PDF] challenges to cooperation on the region's existing security architecture: the majority of institutions, such as the Indian Ocean Tuna Commission, only operate at a sub-regional level or focus on specific species.

What are the prospects for improved regional governance?

Experts say there is a growing need for an effective regional security architecture, similar to extant mechanisms among major powers in the East and South China seas, to address the IOR's diverse challenges. Regional multilateral organizations, such as the Indian Ocean Naval Symposium (IONS), which facilitates the exchange of military views to enhance communication and transparency across the region's naval forces, do exist. However, experts say IOR members must undergo an extensive region-building project for countries to be willing to act together more effectively.

China and India have expressed eagerness to assume greater responsibility in policing maritime global commons and to be recognized as major powers. China's activities are likely to expand in conjunction with its One Belt, One Road initiative, but this does not have to come at India's expense, say some experts. "India is going to have to come to terms with China's entry into the Indian Ocean," states CNA's Samaranayake. New Delhi could also benefit from partnering with Beijing to integrate the region. Broader initiatives like the BRICS Development Bank and the Asian Infrastructure Investment Bank (AIIB) are also pulling India into to a larger leadership role alongside China.

The biggest challenge to creating coordinated effective action across the Indian Ocean is the lack of institutions of governance that cover the whole space, says CFR's Alyssa Ayres. "It may sound mundane, but institutionalized organizations with a regular diplomatic calendar and senior officials meeting to work on an agenda drive processes of consultation and action."

MODULE-VI

RECENT DEVELOPMENTS AND MARITIME VISION 2030

THE EMERGING GLOBAL MARITIME ORDER: INDIA'S STRATEGY

With 70% of the earth's surface covered by ocean encompassing 97% of its water, the vast oceans are formidable space with places and depths that are still unexplored. While the ocean covers most of the earth, yet around 95% of the deep sea bed remains largely unexplored. Historically, the oceans have been the gateway for explorers, invaders, crusaders and traders to new continents and shores, bringing the world closer. Maritime history provides evidence of trade via sea routes occurring at least two millennia back. Romans, Egyptians, Mediterranean's, Persians, Scandinavians and Sumerans all have contributed to ancient maritime history and it`s growth. The Indian subcontinent has been central to the growth of maritime history with the first tidal dock being built in the Harappa Civilisation around the Gujarat Coast. The Chola Empire in the south of India is well known for its establishment of the largest naval force during its time which enabled it to establish its ruling until South East Asia. The strategic relevance of oceans, waterways and navies is well discussed in Kautilya's Arthashastra as well, highlighting the significance of ordained for securing and utilising waterways and the oceans.

In the beginning of 20th century history of international relations, the role of the seas fell within the purview of traditional security with naval presence to safeguard borders and port security being the core of the maritime security architecture. The 1956 United Nations Convention on Law of the Seas conference was the first step towards addressing the territorial water claims on a global level and going beyond the discussion on naval presence to include access to resources as a major aspect. The establishment of rules by the UN was to ensure the access to natural resources was feasible and accessible to all countries. The demarcation of territorial waters and the subsequent necessity to guard them are at the heart of maritime security. The UNCLOS has been a catalyst in ensuring a fundamental form of ocean governance and its significance on international law and framework for maritime governance is indisputable.

India's maritime security strategy focuses on all aspects of the challenges that are affecting the health and the future of oceans and countries. As it combines the traditional and non-traditional security paradigms of maritime security, it provides a cohesive definition that is apt to address prevalent challenges such as environmental degradation, migration, climate change, energy security, human trafficking and piracy among other non-traditional challenges. With Indian Navy playing a far bigger role in Humanitarian and Disaster Relief (HADR) and Non-Combatant Evacuation Operations (Neo), its importance as an essential actor in non-traditional security is well established. The role of navies and the definition of maritime security have changed especially in the Indian context, highlighting the myriad challenges and opportunities of the current maritime global order that would be faced by India in the coming decades.

Climate change, environmental degradation, access to resources and expanding sea lanes and the evolving international ocean regime highlight the need to focus on maritime security. With nations committed to fulfilling the Sustainable Development Goals (SDGs), the role of oceans in this is significant. Addressing the strategic, environment and ocean ecosystem challenges are one of the greatest challenges for India and the world.

The `**TERI-KAS Resource Dialogue V- Global Maritime Order- India's Strategy**´ aimed to understand the changing nuances of the high seas and the evolving definition of maritime security that moves beyond the realm of traditional security approaches. The 2-day conference began with an inaugural session on 7th March 2019 followed by a one and half day of intensive panel discussions with closing on 9th March 2019 in Mamallapuram, Tamil Nadu. The major focus areas of maritime security that were discussed are as follows:

- Global maritime order and the changing strategic environment
- India's status as a global maritime power
- Accessing resources- strategic, economic and scientific challenges
- Blue Economy and its significance for India
- Health of the ocean- role of climate change and environmental degradation
- Ocean governance- role of the polar regions and significance of international law
- India's maritime governance architecture and the future needs
- Non-Traditional security and maritime order
- Global maritime order: opportunities and challenges for India

Global maritime order and the changing strategic environment

Since the 50th and 60th century, sea routes have been used for colonisation which leads us to a question on our resource security and maritime issues. Political realism postulates that states are obsessed with security and territorial expansion, thus landing us to a history full of war. The security threats that a nation can face are divided into traditional and non traditional threats, wherein the major challenges to well-being of people arise from non-military sources.

For example countries like UK and the US's war fighting and non-traditional maritime issues are always kept separate, traditional defense being handled by the naval forces while piracy being overseen by coastguards or other ancillary units. Out of these, maritime security tends to protect sovereignty and maritime resources counter non traditional threats. But under the maritime strategy of India, maritime security has been considered as an umbrella function involving the safeguard of national maritime interests. American strategic Mahan rightly said in 1890 "War has ceased to be the natural or even normal conditions of nations, and military considerations are simply accessory and subordinate to other great interests which are economic and commercial". The underlined theme is that navies exist only to safeguard commerce, trade and sea link.

Today the key agenda of navy includes both maritime security and oceanic resource sustainability. With limited land based resources under stress and with advancement of technologies opening new frontiers of maritime, India should be progressively turning towards oceans to meet our sustainable development goals, including clean energy from wind, wave and tidal resources.

The Indian Ocean nations have made a strong case for Blue Economy and have an important role in the development of the national maritime strategy and look expectedly at India for the financial and technological resources. Other oceanic countries like Bangladesh, Maldives and Sri Lanka despite knowing that they have abundance of natural resources but could not exploit these resources due to lack of required finances and technology. Despite being rich in oceanic minerals and resources, the pursuits of Blue Economy in India have been hindered by the absence of a unitary government agency that could take up the responsibility and emerge as the focal point for all maritime issues. Therefore, two critical requirements for the progress of Blue Economy in India have been identified, first the formulation of a comprehensive national maritime strategy and second the creation of an umbrella maritime commission or an authority that could synergise the endeavours of all the government agencies. Climate change also has serious bearings on maritime security as Global warming and fossil fuel emissions have accelerated the melting of Arctic Sea ice causing a rise in sea levels and more acidic oceans. Since changes in the Arctic can dramatically influence global weather, its impact on maritime security and trade would be significant specifically in context to disasters and disruption of business as usual at sea. This climate instability has two major implications; firstly, mankind's increased dependency on the oceans will become hostage to uncertainties as around one-fifth of the world consumes four-fifth of the finite resources. Secondly natural disasters in low lying regions are increasing due to these climatic changes which could cause social upheavals and crisis.

As a part of its 2001 Russian territorial Claim, Russia took a submarine Arktika to the depths of the Arctic Pole region in 2007. They also planted a Russian Flag in a Titanium tube to seal their claim on the arctic region. This incident ensured the grip of Russia on half million square miles of Arctic Sea bed which is supposed to carry 10 billion tonnes of oil and gas. This incident has triggered a risk of contention among the eight members of the Arctic council. Each of these nations has taken an estimated area of 300-400 thousand sq. km holding oil prospects and therefore large oil companies are racing towards these areas hoping to gain resource access. This exploitation of Arctic's oil and gas is possible only because of current environmental changes. Hydrocarbon deposits which were locked beneath ice are now commercially accessible due to global warming and ice melting has given access to these hidden resources.

It is a vicious cycle which starts from the consumption of fossil fuels causing large amount of emissions of carbon dioxide, triggering global warming, leading to the melting of Arctic ice and hence providing access to more areas of fossil fuel exploitation. This is a self-

perpetuating and destructive cycle for global damage unless we switch to other cleaner forms of energy. The melting of the Arctic sea ice has also opened new Polar sea routes in connecting the Pacific to the Arctic (which the explorers were searching for many years), though benefiting the shipping companies but depressing for the environmentalists to see such a massive amount of geographic changes.

India's resources are limited and dwindling and investment in alternative energy resources from the oceans would be a critical contribution to India's energy security. Ocean energy technologies are under development and require a major push to become commercially available for increased consumption. From the context of natural resources, today India doesn't have the required technology to exploit the resources at ease even though Arctic can prove to be a great opportunity for India. Whether it is rampant piracy or maritime terrorism at sea,- India is up for challenges. Navies are essentially there to meet traditional threats but are faced with frontiers of non-traditional threats that have traits of unpredictability. Maritime power is much more than fighting for navy, but as a nation India has yet to achieve the other pinnacles or constituents of maritime power like shipping fleet, ship building industries and deep sea fishing and deep sea mining because there is a lack of technological capability or trained manpower to exploit oceanic resources.

China has the biggest merchant navy, mechanised fishing fleet, ship building industry and coast guard in this world, making it capable to be called as a 'Maritime Power' but it is premature for India today to call itself so. Thus India's maritime capacity building is still a huge missed economic opportunity. Maritime policies like Sagar and Sagarmala have been proposed to offer solutions to the maritime issues but they still lack a holistic government approach for operationalisation of such initiatives.

India's status as a global maritime power

India's initiatives in maritime strategies are increasing and are highly respected. In 2013, India signed a trilateral maritime security accord with Maldives and Sri Lanka that would likely expand to a five-power grouping including Mauritius and Seychelles. Meanwhile, China has taken many initiatives like the Belt and Road Initiative (BRI), which is a multibillion-dollar venture including 80 countries in Africa, Asia, and Europe . India has refused to join it. The China-Pakistan Economic Corridor (CPEC), a part of BRI, is one such initiative by China to strengthen its economic power with Pakistan which might have spillover effects on the Indian governance. Looking at these concerns, joining the BRI could prove useful for India, if the country represents itself as a strategic partner. India has joined hands with Japan for the Asia Africa Growth Corridor (AAGC) which is a sea corridor linking Africa with India and other countries in South-East Asia and Ocean. India has been slowly expanding its strategic reach across the seas; however, there is still room to improve the relations with other littoral states in the region.

It is unlikely for India to maintain two bilateral favorable equations simultaneously with USA and China to expand and strengthen its maritime profile. Yet, if India is able to find a balance then it can strengthen its presence in Indo-Pacific region as one of the two major giants of the region. Rather than focusing on supremacy on the seas, India would benefit from an augment coastal governance, stability, peace and prosperity in the Indian Ocean Region. Therefore, the governance of the Indo Pacific region should be partnership based rather than dominance based, to ensure creating mutual prosperity in a free and open Indo-Pacific.

India is also looking beyond the Indian Ocean and refocusing its maritime strategy from the Indo Pacific focus. Moving beyond IOR, India has strengthened its links with ASEAN and is also looking farther ahead of the region. The recent defense cooperation agreement with Peru is showcasing that China's strategy on the other hand is to invest in small islands and empowering them economically. This is geopolitically regarded as a topic of concern, because China is completely changing the strategic balance in the pacific islands which is still home to many western powers. India hosted an institutional forum for an India- Pacific Islands Cooperation and in one of its meetings the Indian PM, Narendra Modi, gave closing remarks stating "We look forward to goodwill visits by the Indian Navy to Pacific Islands and the ships could also extend support in areas like healthcare through medical camps on the islands". Indo-Pacific is one of the largest oceanic and land region with vast untapped mineral resources in the largest exclusive economic zones and Indo-Pacific countries often seek help from other countries (Russia and US) to protect their marine resources. Similar to China and Russia, India has also setup certain space monitoring stations to look at the Indo-Pacific regions. Therefore, India should invest more in the strategies eying the Indo-Pacific region, as China has done in the recent past.

Accessing resources, as well as strategic, economic and scientific challenges

The UN has declared the next decade as a 'decade of oceans' and the concept of Blue Economy itself is gaining popularity all around the world and in India. The Economic Advisory Council to the Prime Minister also recently focused on the 'leveraging potential of oceans' and Blue Economy itself. As there is no agreed definition on Blue Economy today, different institutions started to explain it from their perspective. In India, Blue Economy is considered a combination of environment, economic security and economic development. However, identified challenges mostly lie in the periphery of lack of exploration of oceanic energy resources, current climate changes, implementation and policy frameworks for ocean governance.

The Indo-Pacific offers vast resources under it and these resources are vital for sectors such as electronics and communications. The electronic boom requires many precious metals and minerals such as the wide usage of rare earth elements. Today, China is the largest manufacturer of electronic goods and leads the production of vast natural resources such as

rare earth elements, But in the recent past with rising need for such minerals resources, other countries have also embarked on a journey to discover those resources in land and sea. Japan for example has also discovered a huge amount of rare earth elements in their exclusive economic zones, which would last for more than 700 years. Although India has been granted permission for exploitation of resources in the Indian Ocean under some contracts, these are time bound. Other countries, like Canada and Norway, are evolving from prospection technologies to extraction technologies. Canada has already invested huge amounts in developing technologies for sea floor mining and also constructed subsidiaries in Polynesian Islands, especially Tonga. Hence, like other countries, India could also start investing in extraction technologies. If it aims to become one of the advanced nations, it needs access to the resources like Rare Earth Elements (REE), especially from a manufacturing perspective. India lacks availability of rare minerals but ironically there is an estimated 500 million tonnes (or US$ 120 billion worth) of minerals available in deep sea beds that remain unexplored in the Indian Ocean region. Untapped resources, like oil,gas and minerals in deep sea beds would need appropriate technology for exploration and development. India has found massive amounts of gas hydrates in the Indian ocean region and the potential of the find is significant.

India lags in deep sea mining technology, which leads to underutilisation of resources. The legislations concerning mining and exploring in the sea are also weak. India needs to strategize its efforts along with the optimization of risks attached. The Arctic region is also witnessing major changes in its ecology which tends to have a direct impact on the other parts of the world. India is going through major climatic changes, like uneven rainfall patterns and glacier melting. Effective collaboration of India with the Arctic countries on multilevel projects can prove to be important for the Indian Ocean specifically at the time when it is poorly observed. Efforts are needed not just to develop on the infrastructure and technology front, but also from the policy makers and scientist's front who have the wherewithal to focus on capacity building.

Blue Economy and its significance for India

Blue Economy has the largest potential to grow and is also growing much faster than the rest of the economy. For this fast paced growth of Blue Economy, blue trade is the most important factor. In the past, only two factors were considered important for economic growth -capital and labour. It was assumed that there is an unlimited availability of resources, but since the Rio Summit, it has been proved that resources are depleting at a very high rate, which leads to a limited amount that is left for the next generations. Since then, Blue Economy has come up as a new paradigm, however only few countries have successfully strategized and acted on it. Today, Denmark is the only country that has segregated Blue Economy as a separate entity within its economic structure and placed it on the Government's development agenda.

The lack of recognition of Blue Economy is caused by the fact that there is no joint agreement on the definition. Estimation of blue trade is very difficult, wherein the activities that would be included need to be identified along with identification of goods and services. To understand and recognize the importance of blue economy Research and Information Systems for Developing Countries, India RIS has been conducting a study that includes 169 countries and 780 products in total at 6-digit Harmonized System (HS) code, an international standardized system of names, ranging from a time period from 2002-17. The results of the study stated that blue trade has a very high share in total trade (15-22%) of India. According to various studies of the world, the total contribution of Blue Economy in each country's total GDP ranges from 5-10%, however, in case of India, this contribution is around 15-20%, which is a significant contribution

The structure of blue trade has been defined and divided into living resources and non-living resources, maritime construction, manufacturing, processed foods and maritime energy. India has been persistently lacking behind in the manufacturing arena and ranks much behind China. Marine manufacturing in India has seen similar trends but is increasing now, similarly the part of the agricultural sector which has marine related economic activities, declined from 2003 to 2007 but is currently picking up. Services sector on the other hand is very difficult to assess but under the Blue Economy. Three sectors are most prominent: travel, transport and business services. India`s economy is known to have trade deficit, however in terms of blue trade a trade surplus can be observed, both in the goods and services sector.

Blue trade is contributing significantly to the Blue economy and serves as a main driver of it; nonetheless India has not spent much on its development. Present schemes and policies are not sufficient compared to the magnitude of the challenges the country faces in the maritime domain which are echoing the need for major policy thrust. Today, around 19 ministries in the Indian government have the responsibility of administering different activities of Blue Economy emphasizing simultaneously the need for integration of policy outlook along with financial and technological autonomy.

The government agencies working on Blue Economy face various challenges deriving from a vague estimation of it in the Indian economy context as there is still no common definition of it. Another issue is data requirement to estimate the Blue Economy. The National Accounting Agency has been trying to record Blue Economy activities and there are around 200 economic activities that have been identified that would need to be recorded on a regular basis. These economic activities however are still not clearly defined and therefore categorized under Blue Economy. India does not have a National Resource Accounting body to assess the environmental resources of the country, thus no asset repositories or valuation of assets is possible be it renewable or non-renewable resources.

Since the size of Blue Economy is very huge and employment and trade (value and volume) are also very large, there are currently no homogenous statistical indicators to measure them. Thus, the major challenges faced by the government today are that the economic activities are spread across many industries and institutional sectors like households, firms and government. The capturing of the activities in the different sectors and institutions vary by the methodologies of the organisations that are carrying them out. Thus, the combination of these three elements are needed. Nevertheless, such an exercise requires lot of coordination or surveys solely concentrating on a cost-benefit analysis of Blue Economy.

Blue trade within Blue Economy also highlights the importance of integrated network of trade in the world, however recent events have shown that many countries are going against it and withdrawing from world's major institutions and agreements. With the majority of exported and imported goods being traded through sea routes, Blue Economy is important for the world to promote trade. This transition to Blue Economy would need the sea lines of communication to be completely decluttered for seamless movement of trade. This depends on the growth and development of the merchant shipping sector in India. India has constantly lagged behind China in terms of volume of trade or the number of registered ships. In terms of merchant shipping India's national fleet is currently not proportional to the size of the economy. India has been unsuccessful in bringing the maritime sector at par to the overarching economic visions of the country. The merchant industry has failed to invest sufficiently in R&D and IPRs in merchant shipping sector. Intellectual Property Rights (IPR) is not just a standalone benefit but also an enormous commercial benefit. In terms of Research and Development R&D activities, India has failed to create a significant maritime think tank for forecasting and analysis and the important link between IPR and R&D, which is recommended when developing a public-private based partnership.

The critical issues in shipping are that no financial institution and banks lend money to the shipping sector as this sector is not very attractive due to its risk averseness. In the 1980s, it did start with ICICI, however banks lack domain specialization. Apart from financial loans, the merchant shipping sector is also far away from insurance facilities that can cover the risks. With emerging opportunities in the maritime sector globally and blue economy becoming a major aspect in understanding the economic opportunities of the ocean, it would be appropriate for the Indian Shipping sector to undertake progressive measures. The Indian shipping sector needs to take a leap in the technological, legislature and financial aspects while simultaneously rationalizing it and building new elements complementary to sustainable development.

There is a need to build a governance framework for the fisheries management as there is lack of food security management in maritime security strategies. Food security is multidimensional and not just limited to supply but also access and availability. It is not just a national and local issue but also has individual and household perspectives. Today, around

842 million people suffer from chronic hunger where fisheries and aquaculture play an important role. Coastal and offshore areas are major fishing areas and thus have high dependence on marine food as a source of protein. Additionally, ocean resources are under pressure from pollution, overfishing and environmental degradation that harms this food source.

In terms of law and governance structure, food related international laws are dominated by Food and Agriculture Organization (FAO) which sets the standards. The FAO committee on fisheries and the sub-committee on aquaculture have guidelines for the procurement of food. While FAO agreement encourages regional cooperation and covers 18 regions, the Indian Ocean was not encompassed in this. In India, the initiatives are not unified and disaggregated, focusing more on agriculture and not fisheries that are relevant under Blue Economy. On the national level there are several laws on fisheries, like the Fisheries Act 1897, National Policy on Marine Fisheries 2017 and many other legal instruments and policies that are present at the state level. But the question that arises is, how far the strategic document for region has prioritised the issue of food security. "Maritime Security" in the European Union (EU) is considered as an economic development issue but not as a food security issue. India's maritime security strategy in 2015 addressed both, food and maritime security. On the other hand, Africa's Integrated Maritime (AIM strategy) aims at controlling and combatting illegal fishing. Thus, there is a need for mainstreaming food security as a part of maritime strategy. A multilevel agenda and intervention is a necessity.

There are some major issues that hover around the ocean economy, Firstly, a large scale of unrecorded and unreliable data. As the fishing sector is dominated by unorganized employment, the data remains unrecorded at large. Other than the data issues, deep sea mining is also a plausible challenge because of the unavailability of high equipped technology and regulation. This is also visible in the fishing sector, where the total catch has been much below the potential amount due to lack of modernization and adoption of faster fishing methods and equipment. Hence, Blue Economy has to grow in all dimensions but with responsibility. Secondly, the tourism sector has developed in selected areas. Thirdly, the growth of the shipping and ship building sector hasn't been further developed. Thus, greater thrust to ensure growth and development is needed at all ends be it in trade or manufacturing. Trade share in GDP is also low, as only 7% of the total world trade in 2015-16 compared to 40% in the late 1980s (Economic Survey 2016-17) is carried out by Indian ships.

Other than this, the trade coordination mechanism has also been weak. The Indian government requires adequate tools, processes and coordination as an institution and coordination between private, government and Research and Development activities. . Therefore, there exists a blurred line between economy and Blue Economy on the institutional and understanding level, that needs to be addressed urgently to enable a holistic maritime policy for India.

Health of the ocean- role of climate change and environmental degradation Recognising the importance of non-traditional threats, the UN has proposed Sustainable Development Goal (SDG) to address the issues of the oceans or 'life below the water'. There are ten major targets identified, that need to be fulfilled until 2030 but it is unclear which Indian authority is to initiate policies and work on these targets. The Ministry of Earth Sciences is responsible for four major targets, among them is the topic marine pollution.

Marine pollution is primarily caused by floating plastic from land, which is much more dangerous than climate change if it is kept unchecked and released in the oceans, as it takes millions of years to decay. The second target is the protection of coastal ecosystem that is severely overburdened. Ocean acidification caused by large amounts of carbon emissions in the air and water bodies, causing a rise in the pH of the oceans is a major emerging concern that needs further research and is the third target to be achieved by the Ministry of Earth Sciences. The fourth identified target is the generation of scientific knowledge and transfer of technology for capacity building in oceanic studies. The achievements of the targets are monitored regularly by the Ministry of Statistics and Programme Implementation Oceans are important in terms of providing water or absorbing carbon emissions and vital to the environment. It is particularly important for transportation purposes as 90% of the Indian trade is carried through oceans (as much as 90% of the electronic traffic and 70% of the oil). The Ministry of Earth Sciences is trying to cover the length and breadth of oceanic pollution. The ministry, on the basis of these targets, has recognised three major missions, to promote research in the field of ocean science and technology, to provide best possible services and also to conduct scientific research and oceanic resource management and their assessment. According to these targets and missions, the ministry has five different institutions working on different objectives. Since oceanic research needs best observation capabilities, the ministry has been successful in establishing a strong network throughout the world in the last 15 years. Though coastal monitoring is available on 1300 islands across the country, few of them lack access to resources, farming etc. and hence the ministry is trying to establish relevant opportunities and coastal protection measures for them. Non-traditional maritime threats also include impacts due to climate change and changes in marine ecology. These threats have to be addressed at all tiers of the society, i.e. at the regional, state and national level.

Environmental security is ideally concerned as 'a threat without enemies', making it difficult to visualise and act upon it. The targets of the SDG 14 are focusing on these non-traditional threats that are fast becoming a major obstacle for every nation´s growth especially from the ocean perspective. Ocean acidification affects marine biodiversity and increasing carbon solubility in the oceans change the chemistry of water i.e. decreases the pH which has large implications on the marine organisms living under water. It has been proven by many studies that a mere change of 0.5 in the pH level of the oceans can drastically alter the skeletons and sea shells, causing an impact on marine biodiversity.

Other than ocean acidification, plastic pollution is another aspect that causes extensive damage to the ocean. India has a number of stringent policies against climate change and carbon emissions but there are no stringent policies to control plastic pollution in the country. According to the legislation, plastic usage was banned in 2002 but till date the states are struggling with the enforcement. 80% of the land based plastic pollution that is reaching the ocean is coming from 10 major rivers of India and causes a massive impact on the ocean's ecosystem.

The other issue of concern in regard to plastics are microplastics, which are less than 5 mm in size and primarily found in oceans. Ghost nets are one such example. Those discarded fishing nets thrown in the seas and cause huge discomforts to the marine animals and the biodiversity. According to the studies 136,000 whales and other sea animals have entangled in these nets and approximately 640,000 ton of these nets were found in the sea.

Ocean governance - role of the polar regions and significance of international law

The Arctic holds 40% of the world's energy and abundant resources which the melting of ice is making accessible. Firstly, the warming of the oceans change the ecosystem of the Arctic circle becoming a favourable place for many living organisms (these organisms may not have been able to exist) to be able to survive in the region- such a scenario poses a question on the future of the existing ecosystem. Secondly, with melting and warming of ice, non-living resources like oil and gas will become accessible and can easily be harnessed.

It has been estimated that a total of 3.68 trillion non living resources will be available that is almost 30% of the total hydrocarbon resources globally. Thirdly are the changes in the ship routes and fourth is the climate change.

The major elements changing in the Arctic include increased air temperature, reduction in the summertime ice extent, reduction in mean thickness, increased ocean freshwater content, amplified ocean acidification and warming permafrost. The two main climatic issues discussed are Arctic acidification and Arctic oscillation. The Indian Ocean is becoming increasingly important in modulating global climate variability. Heat originally stored in the Pacific was transported by Indonesia, and ended up in the Indian Ocean. This means that the Indian Ocean is now home to 70% of all heat taken up by global oceans during the past decade. Rainfall is also seen to decrease in India, drizzling patterns have vanished and cities are facing uneven drought and floods. Thus, if melting in Arctic continues, the Indian Ocean will also be affected, being in need of an immediate action in the near future.

India's scientific contribution to Antarctica is Important and demands full policy and geo political support within Indian government. India has been active in the region due to the Antarctic legislation, but in the past years it has become much more complex and compelling to act in the region. The reach of India to Antarctica is increasing as there is no other land body between the two countries and India has just recently opened its second

station on the South Pole as a step towards the integration of both regions. The Indian Ocean and Antarctica linkage is thus very important. India's quest for a multipolar i.e. to bring Arctic and Antarctic Polar Regions under the geo-political research lens of India will thus be better served.

In the 1950s and 1960s if India had participated in the International Geophysical Year, it would have been one of the 12 signatories to the Antarctic Treaty, which would have given it a significant status in the region. Antarctica has gone through a lot of physical and legislative changes since the treaty and the rise of geopolitics in the region is visible, however permanent ban on mining of resources for 50 years has been levied. In 2048, when the ban on mining would come up for review, it would be interesting to observe whether the parties to the treaty would uphold the ban or lift it. Colonial presence is also very dominant in the Antarctica and according to the Antarctica Treaty there are no termination dates of these claims. As on date there are seven claims on Antarctica with three claims by Argentina, UK and Chile overlapping and other semi-claimants which need geo-political equilibrium. There is also one part of Antarctica that is unclaimed. Australia has 42% of continent territorial claim including sovereign rights over adjacent areas. Its government is spending significantly to quote its interest in Antarctic's region. China is also trying to make its presence felt by constructing five stations there and deploying a ship for research. In recent years, the Antarctic Treaty system has become a complex system due to the emergence and presence of many players. As we move towards the future, the complexities and geo-political challenges of the world will further escalate.

In August 2007, Russians planted a one metre-high titanium flag on the seabed at the North Pole, using submarines and flying bombers to their territorial claim. Similarly, other Arctic countries such as Norway, Canada and Denmark launched projects to provide a basis for seabed claims on extended continental shelves beyond their exclusive economic zones. Continental Shelf is the submerged area of the land mass that goes gradually in the sea where it falls and then creates a continental slope to rise again. Next to a slope or shelf area there is a rise area which is called the 'continental margin' area. However, if the continental shelf area extends beyond the 200 nautical miles exclusive economic zones, there are certain formalities to be completed as the continental shelf relates to the land mass. Therefore, any extension of the claim would mean a claim of the continental shelf and the question of a delimitation of the exclusive economic zones arises. Hence, the question on continental shelf is a question of delineation. The UNCLOS convention provides some very specific complex formulas in Article 76, stating that scientific and technological data has to be demonstrated to show that there is a continental land mass above the margin and relevant data has to be submitted to the Commission of the Continental Shelf. Based on the recommendations of the commission the outer limits can be proclaimed by the state.

Russia was the first country to make such a submission in 2001. It also included a submission based on a particular area named as the "Lomonosov ridge" with an outer

limit of 300-400 nautical miles. The Commission on the Limits of the Continental Shelf was not satisfied with the Russian submission, doubting the Lomonosov ridge to be even assigned as a ridge. In continental shelf the rights are based on resources and it includes the secondary organisms. Denmark has recently submitted its claim for northern Greenland, and Canada is yet to make one. In 2015, Russia made a revised submission on the Arctic region including the Lomonosov ridge and demonstrated scientific details which are now under the scrutiny of the commission. In the Antarctica, the situation is slightly different. Today, 87% of the continent is under territorial claims. But irrespective of the submissions, nations made for other areas in the Antarctica, they also stated that this is a partial submission. During the Antarctic

Treaty consultations it was decided that the issue of Article IV may crop up and it was requested to the commission by all parties in the consultation process to not consider this part of the submission. Therefore the parties have not given up on their territorial claims, even though Article IV states that it does not allow any type of expansion of claims but it does not deny any claims either. This is one such issue that is yet to be resolved. The second major issue is about the Arctic melting which will lead to the submerging of certain islands and rocks that if belong to certain Exclusive Economic Zones (EEZs) then the sovereignty issues will emerge and would become an issue. The territorial claims on Antarctica had a moratorium after the treaty that states that, one can claim but no one can touch the claims that have already been made. Legally, Arctic and Antarctica are both very different because in Arctic, the Arctic council comprising of the major countries closer to the polar region plays a crucial role and is at the core of the Arctic region's management, so even if India goes through the international law it may not have hold or a direct stake on any of the resources.

Antarctica on the other hand is very different, due to the structure of the treaty and India has acceded to the Treaty in 1983[3], providing its access to continue its research in the region. India has been contributing to the meetings and if India has scientific aspirations then participation in the treaty would prove as a means to strengthen India's scientific knowledge and its global presence. High seas are also bifurcated into two resources: the living and the non-living resources. There has been rising research interest in marine genetic resources that provide both strategic and economic advantage. The commercialisation of certain living resources that are highly valuable for industries like pharmaceutical due to their medicinal properties is a major area that requires intensive research. Then there exists the Indian Biological Act that addresses the genetic resources that we still do not know yet and the other is the Marine Protected Area and ministries are still trying to build suitable indicators these resources. Today, commercialising red algae for biofuels is much talked about, but as they lie under invasive species India still does not have laws to deal with these species. Community based monitoring and evaluations have worked appropriately in other countries but they do not exist in India. Also, coordination is lacking in the high seas

between the regions and state level institutions. India's approach and plan to oceanic security and access to marine resources are still unclear.

India's maritime governance architecture and future needs

The global maritime order today is very eager to counter the challenges arising from and at sea. The sustainability concern is critical to adhere to the challenge of climate change and ensure good order at sea for the global sea boundary. Because global sea boundaries are the backbone of the economic interdependence framework, sustainable use of various exclusive economic zones is important for the global commons. Such a vast spectrum of challenges cannot be addressed without a new formal global maritime order and governance institutions. Thus, in a pursuit of Blue Economy, India will not only generate faster income but also create a new horizon to aspire for. Also, the country will surely benefit from this good governance generated.

Political and economic fragility of states located in non-strategic regions encounter issues like maritime crime, migration, degradation of ecology, thus causing a destabilising and growing threat. Perspectives are changing as the economies are becoming more destabilized. The first and only one global marine assessment of the world's oceans is the United Nations General Assembly (UNGA) document. It warns that blue activities (activities in the ocean) are so large in number and have huge impacts on the ocean that the limits of the carrying capacity have reached their highest levels already and now damaging the sea biodiversity and the corals. Larger communities depend on ocean for fishing and the extraction of minerals, oil and gas, rare earth metals, renewable energy and other resources is prerequisite for every economy. Thus to realise the full potential of Blue Economy and specially SDG14 by 2030, we need to stabilise the global warming at 1.5°C. This can be done by micro-coordinating with local communities, building new business models and thus decreasing the sectorial conflicts in the nation. India's approach does not address the complexities of non traditional security threats so far and hence requires multi agency coordination in strict timelines. Strategic equilibrium is relevant to promote order at sea and the development of Blue Economy. For the next 12 years it is crucial for India and the world to achieve the 2030 benchmark for the SDGs, for this, a joint effort of developed and developing countries is needed while a lack of this coordination would raise uncertainties both, in the short and the long run. The SDGs include a new goal of ocean conservation that acknowledges the value and importance of coastal areas. However, the main challenge is the estimation of the true value of oceans and their exploitation cost from an economic, social and environmental perspective.

Non-traditional security and maritime order

Collaboration is the key to deal with coastal and ocean issues internationally. The security issues have also seen a transition as the maritime security moved from military and

traditional issues to non-traditional security threats. The latest Naval Strategic Publication (NSP) 1.2 focused on three areas to ensure safety and safety along with national maritime interests. Firstly, security of seaborne trade which directly impinges on the national economy, secondly, maintenance of freedom of navigation while strengthening the UNCLOS and lastly, cooperation and coordination against common maritime threats facing India and its allies. Today, minerals are the significant drivers of economic development. India and China are the most active nations in the Indian Ocean region.

China is already exploring minerals at the South-West Indian border. Therefore, there are huge opportunities but uncertainty still looms over mineral exploration with the possibility of large scale pollution. There is a need to conduct further research to understand the impacts of deep sea mining on ocean ecosystem and ecology.

Blue Economy has increasingly become an integral component of ocean governance. The concept was promoted at the Rio+20 Conference as the marine dimension of the broader 'Green Economy', which defined Green Economy as "one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities".[4]According to IORA, Blue Economy is the subset of ocean economy. Maritime security is an enabler of the Blue Economy, for example through safeguarding navigation routes, providing important oceanographic data to marine industries and protecting rights over valuable marine resources and activities within claimed zones of maritime jurisdiction. The non-traditional security threats have effects on the military and also on strategy, policy, operations, training, capacity building and environmental protection.

Global warming is one of the biggest threats, warming of waters is changing the ocean ecosystem rapidly and also transforming various ocean species that are still to be studied extensively. The ocean currents are carrying species, plastics and pollution from one part of the world to another causing massive disruption in the ecological chain of the receiving seas.

While the world is seeking collaborative solutions, when it is the time to come together countries find it a challenge to do so due to economic, political and social issues. The marine species have been the most affected by climate change due to the heating of oceans. Jelly fish have almost thrived in warmer oceans and strategists are failing to look at the impact of evolving marine species on ocean eco system and on sea based infrastructure. Manmade infrastructures on oceans are slowly changing the ocean's ecology as they provide more room to certain species to thrive, leading to imbalance in food chain and ocean ecosystem. Jelly fish have been able to thrive in warmer oceans and received favourable conditions for polyps (young jellyfish) to grow, leading to population spurts in many areas. Large jellyfish congregations have deeply affected fishing in many countries and have played a central role in putting critical infrastructure under risk. Thermal and nuclear power plants in Florida, Japan and Scotland and also a desalination plant in Israel, were forced to shut down

because jellyfish blooms were clogging the water inlets. Various cases of jellyfish blooms destroying aquaculture across the globe have emerged, highlighting the complex challenges climate change is throwing at the world. Japan has seen the largest amount of jellyfish blooms, costing billions of yens for the Japanese industry. The impact on critical infrastructure from ocean warming and acidification needs to be examined extensively to ensure and protect national infrastructure. Such incidents also highlight the need to emphasise on decommissioning of ocean based infrastructure in a methodical manner without damaging the surrounding ecosystem. There is a need for a detailed study to explore the precise linkages between effects of the climate change, non-traditional threats and between maritime agencies and their efficacy in dealing with naval operations. A modification of the doctrinal and tactical approaches accommodating such changes / challenges is needed. Modification of training patterns of associated maritime agencies and the incorporation of such changes in equipment parameters and infrastructure of such agencies is critical to address non-traditional security threats.

Unregulated and illegal fishing is another aspect that endangers the ocean ecology and while checks and balances have been established to address illegal, unreported and unregulated fishing (IUU), yet the current international law regime still lacks rigid barriers and stringent mechanisms to address the rising problem. The maritime regime is also clustered with a few countries being the largest shipbuilders, some being the largest ship owners, few countries hosting the largest number of ship registries (flags of convenience), largest ship demolishers and others with the strategic presence (naval and coast guard) to tackle non-traditional security threats. Additionally, certain countries are signatories to international conventions, while some are not. Such clustering and uneven implementation of international law highlights a logistical and a challenge in international relations. However, coordination amongst international agencies and national governments is itself a tedious process, and the regulation of IUU and other illegal activities such as migration and trafficking becomes challenging in international waters with national forces not allowed to conduct hot pursuit beyond its borders. While technologies such as Automatic Identification System and special licences to catch particular fish species are in place, transnational criminals have found ways and means to avert these. A cohesive international system is required to address non-traditional security threats, and there is need to reform various aspects of the UNCLOS to address the issues of the present.

Global maritime order: Opportunities and challenges for India

India has a long way to go in the Blue Economy front. There is not only a lack of maritime consciousness but also a lack of technology, motivation for innovation and the identification of Blue Economy as a future prospect in the country. Though the Indian Navy has served its traditional maritime duties well, as illustrated by the history, there is a dire need for attention to the non traditional security threats. In the technology front, India has developed technologies which unfortunately have not been utilised to their fullest capacities.

India also needs technologies to harness the Blue Economy opportunities not just internally through scaling up R &D but from external sources also through technological collaboration, knowledge sharing and exchange.

In the recent decade, the government has made major contributions to bring out the agenda of Blue Economy, but the developments made are still unutilised be it due to lack of interest on the part of government or private parties, which is why India has not fully used its own knowledge and expertise. The lack of synergy among all stakeholders also adds to challenges from maritime perspective. Maritime security has become more complex with the emergence of non-maritime security challenges that are emanating from land based sources- a critical example is plastics and microplastics. Food security has sprung as an important aspect of the role that marine environment plays in ensuring food security, and India's high hunger index shows that India still faces food shortage as well as malnutrition. Therefore, Africa and India have much higher potential in accessing marine resources to fulfil their nutrition and food security goals. there has been a persistent question of the demarcating line between Blue and non-Blue economy that needs to be addressed on an urgent basis. Though India has a robust strategy for the IORA, it needs to further strategize for the development of the Indo- Pacific agenda, Indian Ocean Naval Symposium and actively engage to increase its Maritime Domain Awareness (MDA). The recent establishment of the Information Fusion Centre (IFC) for the Indian Ocean Region by India is a vital step but shouldn't remain the only one. India needs to strategically engage with its neighbours, strengthen current relations and develop new alliances to enhance its presence in the high seas. While doing so, it needs to develop resources such as fisheries, deep sea mining and energy resources sustainably and implement a robust shipping industry that would serve the economic interests of the country. Therefore, there is a delicate balance that needs to be maintained for a vast country like India.

Mainstreaming non-traditional security threats in India, Maritime Domain is of critical importance for the progress of Blue Economy and for the achievement of SDGs. India wants to explore the far reaches of the Blue Economy however, current administrative arrangements have narrowed the Indian Ocean Region focus. There is also a lack of synergy and coordination among various governmental departments, which is essential to achieve Blue Economy. India would need to increase its strategic and economic presence in global maritime order and Blue Economy could act as a catalyst to achieve this. This requires an increased governmental momentum to synergise activities, agencies and ideas. Such an exercise can only be successful when all stakeholders are integral to adoption and implementation of Indian maritime agenda and policy.

MARITIME VISION 2030

The Maritime India Vision-2030, a 10-year blueprint with the aim of overhauling the Indian maritime sector, envisages ₹3 lakh crore investment in port projects that in turn promises to generate employment for 20 lakh persons

NEW DELHI : The Maritime India Vision-2030, a 10-year blueprint with the aim of overhauling the Indian maritime sector, envisages ₹3 lakh crore investment in port projects that in turn promises to generate employment for 20 lakh persons.Prime Minister Narendra Modi unveiled the Maritime India Vision (MIV) 2030 on Tuesday while inaugurating the three-day Maritime India Summit 2021, participated by 24 nations.

"Maritime India Vision 2030 would involve an investment of over ₹3 lakh crore, which would generate more than 20 lakh jobs and unlock annual revenue potential for major ports worth over ₹20,000 crore," according to the Ministry of Ports, Shipping and Waterways' document.As per the document, ₹1-1.25 lakh crore investments are planned in augmenting the infrastructure of major ports, which would help in creating 7-10 lakh jobs.It envisages developing mega capacity ports in high potential areas of Gujarat, Maharashtra and Odisha-West Bengal Cluster at an investment of over ₹80,000 crore.

The government plans to increase the transshipment volumes of Indian cargo at Indian ports from 25 per cent in 2020 to more than 75 per cent by 2030 by operationalisation of Vizhinjam port and development of Transshipment zone in Kanyakumari and Champbell Bay. Initiatives to enhance Ease of Doing Business are planned under it which include implementing Enterprise Business System (EBS) to simplify and digitize processes across Major Ports by 2021, developing National Marine Logistics Portal to implement 100 per cent paperless processes including online payment and implementing unified ship e-registration portal."Port-led industrialization would help realise a revenue of over ₹10,000 crore for major ports, while generating a cost savings of ₹20,000 crore," it said.

Maritime India Vision 2030

The Maritime India Vision is a 10-year blueprint with the aim of overhauling the Indian maritime sector. The Maritime India Vision 2030 was launched by Prime Minister Narendra Modi at the Maritime India Summit in November 2020.

Overview of Maritime India Vision 2030

Upon the completion of the project, authorities speculated that it will boost the shipbuilding industry in India as well as encouraging cruise tourism.

The Maritime India Vision 2030 is the latest venture of the Sagarmala programme which outlines a series of policy initiatives and development projects.

The development project will see an investment of Rs. 3.4 Lakh Crore to increase cargo volumes to the tune of 2600 million tonnes. This will lead to the creation of additional jobs (direct or indirect) and create more sources of revenue of about 20,000 core for state-owned major ports.

To oversee the funding of the Maritime India Vision 2030 a dedicated Maritime Development Fund (MDF) will be created. Initial seed funding of about 25,000 cores will be made for the MDF.

The Maritime Development Fund will be crucial in arranging for low-cost long-tenure financing to the sector with the Centre contributing Rs 2500 core over seven years. This scheme will promote shipping tonnage to boost the maritime industry in India

The regulatory authority to be set up as per the Indian Ports Act will provide oversight across major and non-major ports, enhance institutional coverage and ensure structured growth of the ports sector to boost investor confidence.

Additional Projects under Maritime India Vision 2030

- The Maritime India Vision 2030 will create the Waterways Connectivity Transport Grid, a project that will develop connectivity with Bangladesh, Nepal, Bhutan and Myanmar.
- Additionally, a Riverine Development Find (RDF) will extend low-cost funding to finance inland vessels and for extending the coverage of the tonnage tax scheme to inland vessels.
- The Port Charges will be rationalised to make them more competitive along with scrapping of hidden charges levied by ship liners, thereby bringing in more transparency and accountability
- For decongestion of urban areas, and developing waterways as an alternative means of urban transport

New Delhi, Mar 02: Prime Minister Narendra Modi on Tuesday inaugurated the 'Maritime India Summit 2021' through video conferencing. He also released the e-book 'Maritime India Vision 2030', during the video conference. India will invest USD 82 billion in port projects by 2035, raise share of clean renewable energy source in maritime sector, develop waterways and boost tourism around lighthouses as part of port-led development, Prime Minister Narendra Modi said.

The Ministry of Ports, Shipping and Waterways is organising the second edition of the Maritime India Summit (MIS), with Indian Prime Minister, Shri. Narendra Modi, inaugurating the MIS on March 2nd. The event, which will be held virtually with 24 partner

countries, will showcase more than 400 projects and is expected to attract delegates from across the world.

The Shipping Corporation of India (SCI), along with NMPT and SDCL, have been entrusted with conducting the Breakout Session 3, with the topic "Opportunities in Maritime Financing and Insurance." The session will be chaired by Mrs. H.K. Joshi, SCI chairman and managing director, and is scheduled to take place on 3rd March between 11.00 and 11.30 am Indian Standard Time.

The session aims to highlight the investment potential of the Indian maritime sector, in line with the Government of India's Maritime Vision 2030. The session will cover key trends and developments in maritime banking and financial services, port and terminal financing, the financing of coastal, inland waterways and allied infrastructure as well as challenges relating to ship finance and how to fund the revival of the Indian shipbuilding sector. A panel discussion by various industry leaders about how India could become a reinsurance hub will follow.

Maritime India Vision-2030, a 10-year blueprint aimed at reviewing India's maritime sector, envisions an investment of Rs 3 in a port project, which could create employment of Rs 200,000. It is promised. Prime Minister Narendra Modi announced the Maritime India Vision (MIV) 2030 on Tuesday, launching the three-day Maritime India Summit 2021 with 24 countries participating.

According to the Ministry of Ports, Shipping and Waterways, "Maritime India Vision 2030 includes investment of more than 3 rupees, creates jobs of more than 20 rupees and annual revenue of major ports worth more than 20,000 rupees. The possibilities are unleashed. "Material. According to the document, an investment of Rs 1-1.25 is planned to strengthen the infrastructure of major ports, which will help create jobs of Rs 70-100,000.

Gujarat, Maharashtra, Orissa-We envision developing a mega-capacity port with an investment of Rs 80,000 or more in the potential regions of the West Bengal cluster. The government plans to increase the amount of Indian cargo transshipped at Indian ports from 25% in 2020 to more than 75% by 2030 through the operation of Vizhinjam Port and the development of transshipment zones in Kanyakumari and Chamber Bay.

By 2021, initiatives are planned to enhance business ease, including the implementation of Enterprise Business Systems (EBS), which simplifies and digitizes processes across major ports. Electronic registration portal. "Port-led industrialization will help to achieve revenues of over 10,000 rupees at major ports, while at the same time generating cost savings of 20,000 rupees," he said.

He said the shift from road / rail to costly transportation could generate cost savings of Rs 9,000-10,000. In addition to promoting waste affluence through sustainable dredging and

domestic vessel recycling, on the green with the aim of increasing the share of renewable energy from less than 10% today to more than 60% by 2030. We are planning to develop a sustainable port. Zero accident port target by 2022.

The policy also focuses on "Make in India, Make for the world," which will make it a major shipbuilder by increasing the total tonnes of vessels built in India by a factor of 15 by 2030. I will. It strengthens the cruise infrastructure by developing dedicated cruise terminals at 12 selected ports, as well as the Maritime Development Fund to provide low-cost, long-term funding to stakeholders in the maritime sector. It is supposed to be established.

It will also facilitate the development of five themes: cruise tourism pilgrims, heritage, Ayurveda and wellness, island tourism, and regional international circuits (India, Sri Lanka, Myanmar, Thailand). The policy plans to provide incentives for cruise ships around the world to make India its home port, with a focus on strengthening maritime agencies to strengthen India's training and development capabilities on par with global standards.

Charting course for maritime growth

The Indian maritime sector accounts for 95% of EXIM trade by volume, and is a significant employment generator. India's coastline is 1.05% of the global coastline, and the country accounts for 10.4% of global maritime trade in FY 2019. It contributes 9.03% of the total seafarers (officers) globally, making it an integral part of the shipping ecosystem.

India's position in the global maritime sector is fundamental for international trade. This trade is facilitated by the growing port capacity in India. In FY 2019, the capacity for Indian ports stood at 2,377 million tonnes per annum (mtpa) while it handled traffic of 1,281 mtpa. Twelve major ports accounted for 1,514 mtpa of capacity and handled 699 mtpa of traffic, leading to utilisation of a mere 46.2%. Non-major ports, which account for 863 mtpa of capacity, handled 582 MTPA traffic—an utilisation of 67%. Thus, key enhancements in policy, investment, operations and technology are critical to bringing India to the forefront of global maritime trade.

The ministry of ports, shipping and waterways has launched the Maritime India Vision 2030 (MIV-2030) to continue driving accelerated growth in the sector. MIV 2030 projects cargo traffic to reach 2,570 mtpa by 2030. The vision outlines 10 broad themes, encompassing 150+ initiatives covering all the facets of the Indian maritime sector—an effort to define and meet national maritime objectives. These initiatives are broadly aimed at development of port ecosystem, port operations and services, waterways and, shipping and cruises.

For ports, world-class infrastructure will form the backbone of the envisioned transformation. In line with global trends of mega-ports, development of four mega-port clusters with capacity of than 300 mtpa are planned in Gujarat, Maharashtra, Tamil Nadu and West Bengal-Odisha. These clusters were post evaluation of industrialisation and hinterland-

connectivity potential. Since the sector has been moving towards mega vessels, an increase of the draft at all major Indian ports is targeted.

India's strategic location has long required development of a transshipment hub. Hence, for better efficiency of the country's maritime trade, the ministry would work towards developing a transshipment hub (TS) in South India. At present, approximately 75% of India's transshipment cargo is handled by ports outside India, including Colombo, Singapore and Klang. This increases the cost/TEU for EXIM players. Therefore, there are plans to increase the transshipment capacity through accelerated operationalisation of such ports, development of green-field TS ports at Kanyakumari and Campbell Bay as additional transshipment hubs in a phased manner, and increase capacity of existing ports like Cochin.

Automation of ports, seamless movement of cargo and paperless transactions are basic needs of a maritime country looking to become a top player in global maritime trade. Currently, lack of digitalisation, lack of availability of real-time information and limited standardisation of port procedures are negatively impacting seamless trade. Hence, steps have been identified in MIV to improve ease of doing business in the maritime sector. A National Logistics Portal (Marine) is to be launched as an integrated platform for all EXIM stakeholder, s enabling 100% paperless processes. It will the focal point for domestic shipment tracking, cloud-based document management, digital payments, etc. Additionally, more than 50 smart interventions, like predictive maintenance, deployment of automated quay cranes, etc, have been identified to transform major ports into smart ports.

Concrete steps have been identified for driving Aatmanirbhar Bharat through increased manufacturing and decreasing logistics cost. Pockets with high potential to undertake port-led industrialisation, spread over 6,000 acres, have been identified. This would be complemented with projects aimed at reducing logistics cost, such as development of commodity-specific infrastructure at ports for promoting coastal shipping and automation/mechanisation of operations. Together, these initiatives would push Make in India, Make for the World MIV-2030 also aims at building safer and environmentally-sustainable ports. Increased share of renewable energy in port operations, sustainable use of dredging material, reducing freshwater consumption and emissions, promoting development of 'zero accident' ports and real-time monitoring of HSE KPIs are some of the key measures to develop Green Ports.

On the shipping front, MIV aims to make India the leading ship recycling and repair hub, while increasing the gross tonnage of ships built in India by more than 15 times. This would be achieved through channelisation of domestic demand for ship-building and repair, leveraging Right of First Refusal (RoFR) rules under Aatmanirbhar Bharat Scheme. India has already demonstrated strong ship-building capability with several shipyards delivering good quality vessels globally. Repair and recycling clusters would be developed, with usage of

scrap material promoted through modification of BIS regulations and re-development of ship recycling infrastructure at Alang.

Further, to increase regional maritime cooperation and trade, a Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) centre is planned to be established in India. It would facilitate infrastructure investment and trade agreements with BIMSTEC countries. Efforts would also be made to develop and export India's core competencies like IT, naval architecture, and maritime training to support other developing countries.

India is endowed with various Inland Water Transport (IWT) options comprising rivers, canals, backwaters, creeks, and tidal inlets. These provide environmentally-friendly mode of freight logistics and passenger transport with lower operating costs. The government has prioritised development, over the next ten years, of 23 NWs with significant traffic potential. NW 1 (Ganga-Bhagirathi-Hooghly system) and NW 2 (Brahmaputra) hold immense significance as they connect neighbouring countries with India's hinterland. These waterways are to be connected to form the Eastern Waterways Connectivity Transport Grid, providing for cost-effective EXIM with Bangladesh, Bhutan, Myanmar and Nepal.

Development potential of sectors like cruise tourism (both river & ocean cruise) has also been identified as a part of the vision. To this end, government has already undertaken several measures like rationalisation of port charges, cabotage relaxation for foreign vessels, expediated immigration and development of cruise terminals. Themes-based coastal and island circuits have also been identified on a priority basis.

MIV aims to increase the share of Indian seafarers in the global talentpool. Advancements in maritime trade would lead to evolution in capabilities for on-shore operations. Accordingly, training programmes focusing on maritime skills would be launched in partnership with industry.

MIV will make India a maritime superpower, creating ~20,00,000+ more jobs and propelling India towarsds realisation of the '$5-trillion economy' goal.

This will help increase the share of Indian seafarers from the current 12 percent to over 20 percent. In addition to increasing cargo movements from 73 million tonnes (MTPA) annually to over 200 MTPA, we are prioritizing the development of 23 national waterways with the greatest potential in Phase 1.

The document also focuses on the development of an eastern waterway connecting transportation grid to strengthen regional connectivity and reduce transportation costs from Bangladesh, Nepal, Bhutan and Myanmar. Former Minister of Ports, Shipping and Waterways, Mansuf Mandaviya, chaired a series of extensive brainstorming sessions with all major port chairs and ministry officials, simplifying and facilitating the operation of major

ports. Announced plans to convert the port. "Smart port" and "more intelligent port" envisioned in Maritime India Vision-2030.

CHANGING DYNAMICS OF INDIA'S MARITIME POLICY

The ever-dynamic and vacillating maritime strategy of India has been an acknowledgement and response to myriad geopolitical demands, aiming to suit its ambition in the wider global order. Consequently, there has been a perpetual renewal of maritime security propositions and geopolitical imperatives, over the last decade or so, aimed at widening the diplomatic pursuit for India. One such domain is the Indo-Pacific narrative, gaining salience in the recent past, highlighting India's strategic re-orientation witnessed in the country's new and evolving maritime policy. The strategic delimitation of the Indo-Pacific has been aptly extended by the country to encompass not only the eastward movement of India across the Bay of Bengal, beyond the ASEAN nations but also the western expanse- to the western Indian Ocean, the island nations of the Arabian Sea and eastern shores of Africa. This is one zone of convergence for India, having evolved from growing security, connectivity and economic interests. That being so, India's maritime approach has felt the necessity to evolve from a more benevolent proposition to a dominant and aspiring force by expanding its ambit of opportunities and outreach facilitation.

Interestingly, India has found itself amidst increasing contestations among the major global powers- the primary stakeholders in the Indo-Pacific, like Australia, Japan, the USA and China with the increasing trade transits and strategic nodes. The country's transformative attempt for the maritime space by creating a seamless stretch of security architecture, moving from the coasts up to the high seas, capacity building through appropriate acquirement and manufacturing with increased investments and the evolving significance of the Navy have been noteworthy here.

Keeping its core national interest in consideration, India has been trying to preserve, promote and protect majorly and overtly certain principal maritime gains including protection of territorial integrity from sea-based threats, developmental aspects related to the Blue Economy to the pursuit and protection of the Sea Lines of Communication (SLOCs) and maritime resources within and beyond the maritime zones of India (MZI). The idea has been to create a congenial and holistic maritime domain.

Against this backdrop, the maritime strategic blueprints or the naval doctrines of India may be cited as the best possible reflection or manifestation of the country's maritime aspirations. The newest compilation promulgated by the Indian Navy, titled *Ensuring Secure Seas: Indian Maritime Security Strategy* (November 2015) is one such document, envisaging the shifting contours of India's maritime role, predominantly hinting at maritime military capability and the disposition of the Indo-Pacific framework. The aspiration has been to seek and uphold security control of the important chokepoints in the Indo-Pacific and the Asia-

Pacific regions, like the Strait of Malacca, the Strait of Hormuz and the Bab-el-Mandeb, to mention three, apart from the aforementioned developmental aspects. In fact, this strategy has taken the position of the former Indian maritime doctrine of 2007- *Freedom to Use the Seas: India's Maritime Military Strategy.*

'Diplomatic maneuvering' is another important pillar of India's maritime strategy with regard to countries like China and the resultant challenges associated with the policy to connect and utilize the main ports of the Indian Ocean under the guise of infrastructural development and preventing piracy by China. Emanating from this scenario was Indian Prime Minister Narendra Modi's 2018 Shangri-La speech, outlining India's vision towards greater connectivity and equal access towards the India Ocean region. The final destination was upheld as a comprehensive status quo, to be outlined through the Act East and Act West policies and rules based order, removing resistance to enhanced cooperation and uninterrupted exercise for the optimal utilization of economic benefits offered by the region.

India has also been utilizing strategic spaces like the Bay of Bengal to ensure the security of 90 percent of its external trade volume (mainly oil imports), along the crucial SLOCs traversing through the Bay, finally utilizing the aspect as a stepping stone to the wider Indo-Pacific. With deepening engagements with the Bay littorals like Indonesia, Malaysia and Singapore, and the easternmost reaches of the Indian Ocean, the area is being treated as an 'inter-regional arena'. Organization like the Bay of Bengal Initiative for Multi Sectoral Technical and Economic Cooperation (BIMSTEC) may provide equal leverage as a key transit route between the Indian and the Pacific Oceans, placed at the intersection of the Chinese and the Indian strategic interests, thereby fuelling India's Act East Policy as well as deeper integration with ASEAN equally. Advancements to the South China Sea also deserve mention, through India's Act East policy and engagements with South East Asia, though it does not have any direct claims to the domain. Nonetheless, with an interest of keeping the SLOCs free, agreements like the LEMOA (Logistics Exchange Memorandum of Agreement) with USA, allowing the militaries of the two nations to use each other's facilities, has increased bilateral 'interoperability'.

India has also tried to harness the optimal potential of the western Indian Ocean (WIO) as well, through its Act West venture, trying to make its presence felt mainly in the Vanilla Islands covering Comoros, Madagascar, Mauritius, Mayotte, Reunion and Seychelles. The strategic presence of China here, much to the dismay of India, has been a threat to the latter's access to continental Africa. Once India gets an 'observer status' at the Indian Ocean Commission (an intergovernmental commission which tracks the development of the five African Indian Ocean nations) situation might improve. Also, India's diplomatic relationship with Seychelles in the recent past and being called a 'primary area' of its interest has been a fine way forward in the region. The situation might improve with better investments in the future through naval bases.

At this juncture, India has started leveraging the overarching theme of being a 'net security provider' as a 'formal endorsement' of India's active leadership capability for regional security and stability. Moving beyond any sort of ambiguity, India has been defining its presence in the Indian Ocean Region (IOR) and the Indo-Pacific. With the argument of the free and open Indo-Pacific (FOIP), the various conceptions and interpretations associated finally culminate into the creation of better multilateral platforms for India with like-minded partners in the region, for example, the idea of creating the 'Quad' or a quadrilateral partnership (with USA, Japan, Australia and India) or strengthened bilateral naval exercises demanding a strategic vision for the future. It is only through a renewed geopolitical scenario that India would be able to make its mark in the new vision of the global maritime outlook.

MARITIME COOPERATION IN THE INDO-PACIFIC BETWEEN THE REPUBLIC OF INDIA AND THE GOVERNMENT OF AUSTRALIA

The Prime Minister of Australia, the Hon Scott Morrison MP and Prime Minister of the Republic of India, H.E. Mr Narendra Modi discussed maritime cooperation between the two Indo-Pacific partners during their Virtual Summit on 4 June 2020.

In pursuance of the above, the Leaders decided on a Shared Vision for Maritime Cooperation in the Indo-Pacific region to harness opportunities and meet challenges together as Comprehensive Strategic Partners, and declared the following:

1. India and Australia reiterate their commitment to promoting peace, security, stability, and prosperity in the Indo-Pacific region, which is vital for the world. As two key Indo-Pacific countries, India and Australia have an enduring interest in a free, open, inclusive and rules based Indo-Pacific region. They have a shared interest in ensuring freedom of navigation and overflight in the Indo-Pacific region, and maintaining open, safe and efficient sea lanes for transportation and communication. With a shared maritime geography and a deep and long-standing friendship, India and Australia are natural partners to work together towards realisation of this shared vision.

2. India and Australia are committed to supporting a rules-based maritime order that is based on respect for sovereignty and international law, particularly the United Nations Convention on the Law of the Sea (UNCLOS).

3. India and Australia have common concerns regarding the strategic, security and environmental challenges in the Indo-Pacific maritime domain. These include activities and actions in the maritime domain that are inconsistent with international law, particularly UNCLOS, including terrorism, piracy, drugs and arms smuggling,

irregular migration, people smuggling, trafficking in human beings, poaching of marine species, narcotics trafficking and illegal, unreported and unregulated fishing. The region's environmental challenges, such as marine pollution, climate change, ocean acidification, shortage of potable water, loss of habitat due to storm surges and saline water intrusion, are also of shared concern.

4. India and Australia share a strong bilateral relationship, underpinned by ongoing cooperation across many areas of mutual interest. This cooperation includes the Australia-India Framework for Security Cooperation, regular dialogues involving Ministers responsible for foreign, defence and trade policy, and a broad range of senior officials meetings, such as the Defence Policy Talks, Australia-India Maritime Dialogue and Navy to Navy Staff Talks.

5. India and Australia will work together bilaterally, regionally and multilaterally, and in minilateral arrangements, to support regional architecture in line with their shared values and interests. India and Australia reiterate their commitment to ASEAN centrality and unity and will strengthen their coordination in regional and multilateral fora, such as the East Asia Summit, the ASEAN Regional Forum, ASEAN Defence Ministers Meeting-Plus, the Indian Ocean Rim Association, the Indian Ocean Naval Symposium, the Indian Ocean Tuna Commission and the International Maritime Organization, to achieve their shared vision for maritime cooperation in the Indo-Pacific region. India and Australia welcome the ASEAN Outlook on the Indo-Pacific.

6. In this context, India and Australia will work closely to develop, with all interested partners, the Indo-Pacific Oceans Initiative (IPOI) announced by Prime Minister Narendra Modi at the 14th East Asia Summit on 4 November 2019 at Bangkok. Through this Initiative, they will endeavour to improve the management of the shared oceanic domains, including in key areas of cooperation such as preserving the maritime ecology and reducing the impact of marine pollution (especially plastics); maritime security; sustainable use of marine resources; capacity building and resource sharing; disaster risk reduction and management; science, technology and academic cooperation; and trade, connectivity and maritime transport.

7. Recognising that India and Australia have a shared interest in promoting maritime security and safety, they will deepen navy-to-navy cooperation and strengthen maritime domain awareness in the Indo-Pacific region through enhanced exchange of information. Both countries will also work to enhance civil maritime cooperation between law enforcement agencies and coast guard cooperation.

8. Given the importance they attach to ensuring sustainable use of living and non-living marine resources in the Indo-Pacific region, in accordance with international law,

they commit to protecting the Indo-Pacific marine environment and reducing the impact of marine pollution, particularly plastics, and climate change.

9. India and Australia will work jointly towards implementation of an Action Plan with specific measures to advance their bilateral maritime cooperation in line with this Vision.