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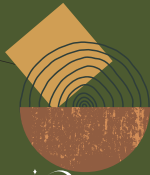
# TERRORIST THREATS TO MARITIME NAVIGATION AND PORTS: **RISK** **ASSESSMENT AND PREVENTION STRATEGY**

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## **TERRORIST THREATS TO MARITIME NAVIGATION AND PORTS: RISK ASSESSMENT AND PREVENTION STRATEGY**

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Given the enormous significance of international maritime trade to the global trading system, there are significant fears about the ramifications of a terror assault on ports, the sea line of communication, and maritime navigation. Importantly, in the aftermath of the September 2001 terrorist attacks on U.S. soil, militant outfits broadened their scope from the aviation and land attacks to include the maritime sector. It raised the international community's concerns regarding potential terrorist attacks against cargo ships, container ships, oil tankers, and onshore and offshore infrastructures, which can cause significant disruptions to the free flow of international shipping and world maritime trade.

Based on past terrorism incidents related to maritime space, the study devised four plausible scenarios of maritime terrorism: vulnerability of sea vessels and ports, critical infrastructure and oil and gas platforms, sinking oil tanker or attacking LNG carrier or containership in narrow channels, and cyber-attack on ports and critical IT infrastructure.

It is contentious whether the risk of terrorism in the maritime domain is 'exaggerated' 'perceived' or 'real possibilities' in the future, but nobody denies that terrorism is the pressing challenge of the 21<sup>st</sup> century. Enhanced physical security of port facilities, increased patrols of waterways, ports, and coastal facilities, container security and protection against explosives, and the creation of databases to track cargo, ships, and sailors are all imperative measures in mitigating the threat. There is a pressing need for a global reconfiguration of international and regional arrangements to counter maritime terrorism. The existing security strategy is reactive and underdeveloped in its application. The International Maritime Organization (IMO) needs to step up its efforts and change its approach 'from reactive to pre-emptive' to tackle the emerging threats to maritime security. Henceforth, the historical notions of piracy and terrorism should be disregarded and a new security regime should be introduced.

**Key words:** maritime, terrorism, piracy, security, ports

## Introduction:

From antiquity to the modern day, the seas and oceans have played a central role in the economic progress of human civilizations. From Mesopotamia to the Indus Valley civilization, all have flourished along the rivers and seas. Therefore, it would not be an exaggeration to say that the progression of human civilization and their economic prosperity and survival remained closely knit with maritime trade. This trend and mode of transportation for goods and services endured until modern times.

It is commonly stated in the literature related to this matter that seas and oceans are major means of maritime transport and the trade of goods between countries. The seas provide maritime routes for transporting large quantities of goods at a lower cost than air or land transport. Consequently, maritime trade plays a crucial role in stimulating national economies and enhancing trade exchange between countries.

Currently, more than 90% of world trade occurs through seas, oceans, rivers, and waterways.<sup>1</sup> The maritime area covers 139,768,200 square miles. This equates to approximately 2.4 times the planet's terrestrial area. The United Nations Educational, Scientific and Cultural Organization (UNESCO) estimated that 60% the share of world population lives at less than 60 km from the coasts.<sup>2</sup> According to Satista Research Department, the size of global seaborne trade more than doubled between 1990 and 2021.<sup>3</sup> In 2021, the volume of international maritime trade was estimated to be around 11 billion tons, while in the 1990s, only about 4 billion tons of goods were loaded in ports globally.<sup>4</sup>

The upward trajectory of international seaborne trade (goods, grain, oil, LNG and other materials) clearly indicates that global future economic progress will be continuously linked with international maritime trade. Global prosperity and wellbeing hinge on the smooth functioning of global supply chains and safe Sea Lines of Communication (SLOCs), and any turbulence, whether small or large, will send shockwaves around the globe and affect the livelihoods of billions of people. In recent decades and especially after September 9, 2001, the Al-Qaida terrorist attacks on the Twin Towers

in New York changed the international security paradigm and global threat matrix in a number of ways. Against this fatal terrorist attack, the United States announced a global war against terrorism (GWOT) against Al-Qaida and its affiliate terrorist organizations. Furthermore, it raised the international community's concerns regarding potential terrorist attacks against cargo ships, container ships, oil tankers, and onshore and offshore infrastructures, which can cause significant disruptions to the free flow of international shipping and world maritime trade.

Since 2002, terrorist incidents have been reported along the coasts of many countries. Piracy of commercial and cargo ships has also become widespread in the news these days. However, there are now concerns that organized terrorist groups like Al-Qaeda are planning operations in the high seas. In this regard, investigations are still ongoing into a number of attacks in straits and passages, and sometimes certain movements or organizations bear responsibility, such as the Houthi movement based on the coasts of Yemen and the Horn of Africa and near the Bab el Mandeb Strait. However, in many cases, some hidden or known hands carry out these attacks at sea, and weeks and months pass without any clear information being revealed about them.

These concerns have been addressed for a long time, since the 1990s and beyond, during the surge of maritime piracy near the Somali coasts. International alliances were formed to curb this type of piracy. However, the events of the so-called "Arab Spring" and the subsequent significant developments diverted the international community's attention somewhat from this phenomenon. It is worth mentioning that one of the first warnings during that period came from Christian Koch, the Director of the International Studies Department at the Gulf Research Center in Dubai at the time, in 2010. He emphasized that terrorist acts in the high seas should not be ignored.

## Maritime terrorism

Maritime security refers to the "protection of vessels both internally and externally" from extralegal activities such as piracy, human trafficking, armed robbery, and



terrorism. <sup>5</sup>Whereas such actions have been known to the global maritime industry for centuries, it was not until the 1990s that numerous governments and international organizations around the world started watching closely the illegality of terrorism.

Before explaining what constitutes maritime terrorism, it would be more appropriate to define terrorism first, because the term terrorism is very controversial and involves a range of complexities and controversies. As far as the definition of terrorism is concerned, till this day, the world does not have a single, common, and universally agreeable definition of this phenomenon that has remained present since ancient times. The reason why the world and even United Nations member countries do not agree on a universal definition of terrorism is because 'one man's 'freedom fighter is another's terrorist.'<sup>6</sup> However, according to the UNGA, terrorist acts are defined as "criminal acts intended or calculated to provoke a state of terror in the general public, a group of persons or particular persons for political purposes."<sup>7</sup> The United Nations Security Council defines terrorism as "criminal acts, including against civilians, committed with the intent to cause death or serious bodily injury, or taking of hostages, with the purpose to provoke a state of terror in the public or in a group of persons or particular persons, intimidate a population or compel a government or an international organization to do or to abstain from doing any act."<sup>8</sup>

As humanity has evolved and history has extended, revolutionary formations and those aspiring to achieve their goals through terror and absurdity have continued. They have persisted in committing acts of destruction and devastation. However, in the twenty-first century, religiously affiliated terrorism began to capture attention and expand in scope. This happened under the negligence, deliberate ignorance, or covert support of some powers and those with interests in destabilizing certain regions of the world and affecting their stability and security. Some global powers began supporting certain terrorist organizations for their own interests, until the events of September 11th in the year 2011 occurred. After that, religiously extremist

terrorism took a new turn and swept the entire world, especially the Islamic countries, making terrorism a daily routine.

In regard to maritime terrorism, there is no unified definition for it, and its situation is similar to terrorism in terms of disagreement and lack of consensus. Some experts get confused at times, mixing it up with piracy, and sometimes the terms piracy and terrorism are used interchangeably. A number of experts have seen a deep connection between piracy and terrorism, but according to Rand, so far, there is no reliable evidence supporting this link, and the objectives and motivations for both remain completely different.<sup>(9)</sup> The main motives for pirates are to obtain money and resources, while political, religious, and ideological motives play a larger role in the case of terrorism.

While defining maritime terrorism, most scholars refer to the Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation (SUA) article 3, which states that 'seizure of ships by force; acts of violence against persons on board ships; and the placing of devices on board a ship which are likely to destroy or damage it,'<sup>10</sup> although it clearly does not mention the word terrorism; therefore, it cannot be equated with the definition of terrorism. However, the Council for Security Cooperation in the Asia-Pacific (CSCAP) defined maritime terrorism. It states that maritime terrorism is an '....undertaking of terrorist acts and activities within the maritime environment, using or against vessels or fixed platforms at sea or in port, or against either of their passengers or personnel, against coastal facilities or settlements, including tourist resorts, port areas and port towns or cities.'<sup>11</sup>

### Threat of contemporary terrorism in the maritime domain

Maritime terrorism is not a novel phenomenon. The history of maritime terrorism dates back to the 1930s, when the "Organization against fascism and in support of the USSR" carried out more than 20 assassinations on the merchant vessels of Fascist nations.<sup>12</sup> In 1984, Liberation Tigers of Tamil Eelam (LTTE), a Sri Lanka-based militant group, who were fighting against the state of Sri Lanka for an independent homeland, staged

massive maritime attacks against the Sri Lankan Navy and other sea targets. In 1990, their maritime branch of Sea Tigers have carried out over forty seaborne suicide attacks against coastal and naval targets, and according to some estimates, they were so effective that they destroyed 40–50% of Sri Lanka's coastal ships and killed more than 60 thousand people.<sup>13</sup>

There have been few well-known successful terrorist attacks against shipping targets: in October 2000, a suicide attack by a small boat on the USS Cole in the port of Aden occurred, and as a result of this attack, 17 persons were killed and 17 were injured; in October 2002, the French oil tanker Limburg was attacked in the Gulf of Aden, killing one seaman. In April 2004, suicide attackers detonated three explosive-laden boats near Iraq's southern export facilities of Basra and Khor al-Amaya, killing two US Navy sailors and one US Coast Guard.<sup>14</sup> It indicated a new approach focused on maritime infrastructure, ports facilities, and coastal installations. In October 2005, the cruise ship Seaborne Spirit was attacked 160 km off the coast of Somalia. In June 2018, terrorists attacked the Libyan oil ports of Ras Lanuf and Es Sider, setting at least one storage tank on fire, following which the 16 facilities were closed and evacuated. The most lethal attacks were conducted by the Philippines' terrorist outfit Abu Sayyaf Group in 2004 on the passenger ship named "SuperFerry-14" in the Philippines. There were 900 passengers onboard, and the terrorists managed to kill 116 passengers and crew members. In 2009, Al-Qaida issued a global message calling on all fighters around the world to attack strategic maritime counterpoints as part of a broader economic war against the United States and the West. In July 2010, the Abdulah Azzam Brigade, an al-Qaida affiliate militant group, attacked a Japanese M.star oil tanker in the Straits of Hormuz and injured the crew and damaged the ship. In 2013, Al-Furqan Brigades mounted rocket-propelled grenade attacks on the Cisco Asia cargo ship as it passed through the Suez Canal, but no causality was reported. However, as far as the global record of maritime terrorism matrix is concerned, only 212 reported terrorism incidents occurred from June 11, 1970 to the

date the International Ship and Port Facility Security (ISPS) Code came into operation. According to the Global Terrorism Database, less than two percent of attacks have occurred at sea in the forty years. Although the percentage of terrorist attacks against ships and maritime infrastructures is negligible, maritime terrorist attacks can cause mass casualties, interruption to global trade, and extreme damage to critical infrastructures. Even if only one attack occurs, the potential economic fallout poses a clear and present danger that may cripple global trade and can have knock-on effects on developed and developing economies (the Ukraine– Russia war disrupted the global food and energy supplies).

Terrorism in maritime space is being considered as a potent threat, and the International Maritime Organization (IMO), the UN (Resolution 1540, 1373) and states (PSI, CSI, MPI) have put in place measures to secure the global critical Sea Lines of Communications (SLOC) and maritime navigation and to prevent, respond, and mitigate the effects of any potential terrorist attacks.

#### **- Rising maritime terrorism in Southeast Asia**

Even before the emergence of the modern maritime terrorism threat to, the Southeast Asia region had been deeply infested by piracy and maritime criminal activities. The chief reason behind this was the regional geography, topography, narrow waterways, and incentive for organized criminals to hide their identity and slip into densely populated unguarded coastal areas.

The SEA region has 523 international seaports and remains a major global trading hub of international trade, commerce, and shipping. Three critical straits, i.e., the Singapore Strait, Sunda Strait, and the Strait of Malacca, and many others are located in the SEA maritime region. Hence, any disruptions in these chokepoints have a massive effect on the global supply chain and negatively impact governments, industry, and people alike. Moreover, political and economic conditions in some regional countries are not ideal, which makes a perfect case for terrorism and armed piracy.



The Strait of Malacca is 1000 km long, and it is one of the busiest shipping sea lines in the globe. Fifty percent of the world's largest ships pass through it every year. Almost 80 percent of the oil supply passes through this strait, and two-thirds of LNG exports pass through the Strait of Malacca. It connects the Indian Ocean with the South China Sea and the Pacific. It is the most significant trade route between the Far East, Gulf States, and Europe.

The Singapore Strait has narrow entry and exit points, which provide relative ease for pirates and terrorists to attack the slowly passing ships. Apart from threats to cargo ships and oil tankers, there are serious threats to ports and their associated facilities. In case of terrorist incidents, the consequences would be far reaching for the global supply chain financially. According to one study, if the port of Singapore were to close, the toll on the global economy would be \$200 billion per year.<sup>(15)</sup> Keeping in view the increasing critical importance of seaports in global trade and economy, terrorist organizations would be more interested in hijacking Liquefied Petroleum Gas (LPG) ships and then exploding the carrier to disturb port functioning, damaging critical ports infrastructure and causing a precious loss of human lives. A fireball 1,200 m wide could well be generated by the explosion of a ship tanker carrying 600 tons of LPG.

There are many terrorist groups in Southeast Asia with the expertise and development to execute an attack of this magnitude, including: Abu Sayyaf Group, Laskar Jihad, Islamic Jihad Group, Kumpulan Militan Malaysia, Al-Qaeda, and the Moro Islamic Liberation Front, which have been involved in criminal and terrorist activities since 2000. The attack by the Abu Sayyaf Group on the Superferry 14 is a clear example of their expertise and proficiency in carrying out terrorist operations, where the ferry was carrying about 900 passengers, and the group killed 116 of them, in addition to crew members. This terrorist attack was the most lethal in terms of loss of human lives and had a negative impact on undermining confidence in the maritime shipping industry.

According to the International Maritime Bureau annual

report, 115 incidents of piracy and armed robbery against ships will be recorded in 2022, and half of them will occur in Southeast Asian waters, particularly in the Singapore Straits, where attacks continue to grow.<sup>(16)</sup>

### **Complex nexus of piracy and terrorism in Africa**

The African continent is encircled by five bodies of waters: the Atlantic Ocean, the Indian Ocean, the Red Sea, the Suez Canal, and the Mediterranean Sea, all of which have historical importance to the African continent, the Middle East, and the rest of the world in terms of trading, international shipping, piracy, forced and voluntary migration. In recent years, the international community has been more alarmed with the state of maritime security in the oceans, seas, regional waters, safety of the Sea Lines of Communications, and critical chokepoints.

Moreover, in the last few years the African continent has been significantly affected by sophisticated and organized piracy and terrorism, especially with the downfall of the (ISIS) terrorists' engagements have expanded their radical cause across the continent, mainly in the Sahel, Gulf of Guinea, and Gulf of Aden. Maritime terrorism has also been a point of intersection of domestic politics and violence, and this is where the problem lies, since its effects are structural and go beyond national borders and regions. For many years, the Gulf of Guinea remained an unsafe maritime area in terms of the rising rate of violence and attacks. The United Nations Security Council (UNSC) adopted Resolutions 2018 (in 2011), 2039 (in 2012), and 2634 (in 2022), stating serious alarm about the mounting piracy and armed robbery in the region and its implications for regional and global security.<sup>17</sup>

According to the United States Department of Energy (DOE), approximately 6.2 million barrels per day of crude oil and petroleum and 50 million tons of agricultural products cross the Bab al-Mandab Strait toward Asia, the United States, and Europe.<sup>18</sup> The strait is only 28 km wide at its narrowest point and splits Yemen on the Arabian Peninsula from Djibouti and Eritrea in East Africa. The Strait is among the vital choke points for oil trade and international commerce. In case of any

terrorist attack on this critical chokepoint that unites the Red Sea, Suez Canal, and Arabian Sea, maritime traffic would be forced to travel around the Cape of Good Hope at the southern tip of Africa, disrupting the flow of international shipping and leading to increased costs of shipping and insurance.<sup>19</sup>

Therefore, in the midst of global and regional geopolitical tensions, weak governments, fragile institutions, and rising economic instability have given the terror groups confidence to explore the maritime domain to fulfill their ideological and political agenda, extort cash, and disrupt the free flow of international maritime trade. In 2019, according to the International Maritime Bureau (IMB), 162 incidents of maritime piracy and armed robbery against ships were reported worldwide, forty percent of which were recorded on the African continent.<sup>20</sup> Due to fragile state authority at sea, the maritime piracy and terrorism nexus has increased in continental waters, mainly in the western region of the continent.

The Somali pirates' operation area expands from the Gulf of Oman to the Red Sea, south of the Maldives to the Mozambique Channel, and along the Indian territorial waters in the east. The counties affected by piracy are Somalia, Tanzania, Comoros, Madagascar, Mauritius, Djibouti, Kenya, Mozambique, the Seychelles, and Yemen, in addition to Pakistan and the Persian Gulf countries.

Since January 2005, pirates from Somalia have carried out 1,068 attacks and 218 resulted in successful hijackings, with the abduction of at least 3,741 crewmembers of 125 different nationalities and payment of \$315 to \$385 million as ransom.<sup>21</sup> Considering Somali piracy as an increased cost of trade, it translates into an estimated \$18 billion yearly loss to the world economy.<sup>22</sup>

The actual and potential relationship between pirates and terrorists is seen as another source of global concern. The cooperation between pirates and some members of the extremist group Al-Shabaab is not to be underestimated, as it contributes to the instability in Somalia. The terrorist groups associated with piracy, armed piracy, and terrorism include the Niger Delta Liberation Movement, which is based in the Niger Delta

region, and the extremist group Al-Shabaab in Somalia, extending their operations to East Africa, especially in the Horn of Africa. According to a report recorded in West Africa in 2021, the highest number of piracy and ship hijacking incidents reached 38 incidents that occurred in the international waters of that region.

- **Emerging terrorist threats in the Persian Gulf region**

The Persian Gulf region is strategically important for the global energy supply chain and international maritime trade and commerce. The region includes Saudi Arabia, Qatar, United Arab Emirates, Bahrain, Kuwait, Iraq, and Iran; it contains approximately fifty percent global oil and forty percent 40 per cent gas reserves and hence plays geopolitical and strategic roles in regional and global politics. From new geopolitical concepts, the region has become a heartland and center of center and connects the five most vibrant regions of the world: Africa, South Asia, South East Asia and Europe.<sup>23</sup>

The Strait of Hormuz, a 33 km wide choke point, is the only outlet that connects the Persian Gulf to the Gulf of Oman and the Indian Ocean. According to estimates, one-sixth of global oil production (18 million barrels of oil) and one-third of the world's liquefied natural gas (LNG) pass through this tiny strait.<sup>24</sup> Uninterrupted free flow of global marine trade and shipping lanes and passage through the Strait of Hormuz is critical for economic prosperity in the region and the world at large.

Due to the global and regional security shifting landscape, the region witnessed many ups and downs. More recently, the Persian Gulf has witnessed a rapid surge of attacks on ships and oil refineries, which has threatened the global oil supply chain and maritime trade. The war in Yemen and Syria and the regional geopolitical tussle between Iran and the Kingdom of Saudi Arabia have cast a deep shadow on the security of the Gulf region, particularly on the oil and petrochemical industry.

In April 2004, suicide attackers exploded three explosive-laden boats near Iraq's southern export oil terminal in Basra. On September 14, 2019, drones and cruise missiles struck the Kingdom's Aramco's





biggest oil facilities, i.e., Abqaiq, the world's largest oil processing facility, and the Khurais oil fields (both sites Abqaiq and Khurais produce 5.7 million barrels per day, which is half of the total output of Kingdom's oil production and accounts over five percent of the world's supply) in the east of Saudi Arabia. Kingdom blames Iran and its proxy Houthi rebels for this attack.<sup>25</sup> In 2019, four commercial vessels belonging to the Kingdom of Saudi Arabia, Norway, and UAE were sabotaged near Fujairah port, outside the Strait of Hormuz. The United Arab Emirates government stated that this incident was an 'attempt to undermine the security of crude supplies'<sup>26</sup> and also it is an assault on "UAE and safety of navigation".<sup>27</sup>

According to the investigation, it was 'sophisticated and coordinated operation.'<sup>28</sup> Nobody claimed the responsibility of the attack; however, the U.S. pointed fingers toward Iran, but Iran denied it and called for investigations. According to the US Naval Intelligence, these attacks occurred carried through using 'limpet mines' that are being used to harm the 'merchants ships on various times over the past many years, and are a critical threat to merchant vessels in the Persian Gulf, Strait of Hormuz, and the Gulf of Oman.'<sup>29</sup> Similarly another attack occurred in 2022, when missiles and drones struck the Saudi Aramco refinery in Riyadh and Aramco facilities in the Saudi cities of Jizan and Abha. The Iran-aligned Houthi rebels claimed responsibility for the attack. According to the Saudi Energy Minister, 'these repeated acts of sabotage and terrorism on vital installations and civilian structures ... do not just target the Kingdom but aim to undermine the security and stability of global energy supplies'.<sup>30</sup>

Therefore, any event, whether terrorist or covert state act to disrupt the flow of maritime traffic or closure of oil and gas facilities (2022 Houthi rebels attack on Aramco refinery), could potentially wreak havoc and turmoil in global oil markets, and the price of crude could skyrocket and destabilize global financial stability.

Although the attacks by actors in the Arabian Gulf on maritime targets, oil and gas fields, and platforms do not necessarily fall under the international criteria

for maritime terrorism, they have achieved the same political, psychological, and strategic results that most terrorist groups aim to achieve through their objectives. These incidents serve as a precedent for terrorist and militant organizations to follow the same behavior.

### **Terrorist threats to ports**

Given the enormous significance of international maritime trade to the global trading system, there are significant fears about the ramifications of a terror assault on ports. The aftermath of the September 2001 terrorist attacks and militant outfits broadened their scope from aviation and land attacks to include the maritime sector, hitting port infrastructure, container traffic, and cargo ships. The change in targets and tactics was due to global attention directed toward land and sky, whereas the global maritime domain had been exposed to terrorist attacks. Presently, there are at least 4000 sea ports around the globe used by ships for trade all over the world. In many ways, port security parameters are significantly different from aviation security. For example, airports have defined territorial security parameters, but in the case of ports, the regulators have to consider the land, air, and sea dimensions of the security. Although landside physical security can be ensured to some degree, it is highly difficult to secure and prevent an attack from seaward, especially if there is small craft activity in the port.

Seaports are the most difficult areas to secure for three main reasons: they have large areas, have multiple entry points, and are full of activity 24/7. It makes it much easier for terrorist activity to take place underneath the radar. There are many dangers to ports and ships on numerous scales. While analyzing previous terrorist incidents at sea, it was observed that terrorists strategize their plans well ahead of terrorist attacks, in which they observe port facilities and ships before initiating an attack. They might recruit port employees and crew members and plant their proxy in ships and ports, making all port facilities and ships vulnerable to terrorist attacks, particularly cargo ships, which are more unprotected than passenger ships. Hence, regulating access to port facilities and ships is far more critical insuring the smooth running of the global supply chain of goods and material through waters.





space to attack commercial ships, military, offshore and onshore facilities, port facilities, SLOCs, maritime navigation, and mobile offshore drilling and rigs.

Keeping in view the contemporary terrorism acts related to the maritime environment, the study identified four plausible terrorism scenarios that terrorists can select as targets:

### 1. Vulnerability of Sea vessels and Ports

Ships are the most vulnerable targets for maritime terrorism, including supertankers, containerships, ferries, and passenger ships. Hence, by hitting the super tankers, attackers can achieve the twin objectives of maximum damage to material and human loss and knock out the global energy supply line with colossal financial implications. Second, containerized shipping is a perfect target for terrorists to hide nuclear, chemical, biological, and radiological material in the container and detonate in the port vicinity. There are millions of containers in use, and it is humanly impossible to check or scan each container. Normally, custom authorities check it randomly, and only 8% of all cargo containers arriving at U.S. seaports every year are checked.<sup>37</sup> According to one estimate, the attacks could cost fifty-eight billion US dollars, and another estimate states that in case of single cargo container leakage, it would cost companies more than \$1 trillion.<sup>38</sup> In addition, cargo ships are not the sole target, as passenger ferries can also be a primary focus for terrorists, as demonstrated by the Abu Sayyaf group in 2004 when they targeted a ferry in Manila, as mentioned earlier.

#### Critical infrastructure and oil and gas platforms

Ports hold elaborate and complex infrastructures within the vicinity and surrounding areas, including oil depots, liquidated natural gas (LNG), and hazardous cargo facilities. Any terrorist attack could damage the fuel terminal, causing human, material, and environmental losses. In Aug 2020, an explosion at Beirut port, a central port in Lebanon, caused the detonation of 2,750 tons of ammonium nitrate, killed 218 people, injured more than 6,000, and devastated large parts of Beirut. 300,000 people were displaced, causing an estimated \$4.6 billion in financial losses.<sup>39</sup>

The blast is estimated to be the largest non-nuclear explosion to have been recorded.<sup>40</sup> Although this particular blast at a port does not come under maritime terrorism, it does involve seaports and maritime trade. Frankly, it tells a lot about what could happen if critical seaport infrastructure is attacked. In July 1988, a chain of explosions and fires prepared by terrorists occurred on the Piper Alpha oil platform in the North Sea, 200 km off the northeast coast of Scotland. The tragedy resulted in 167 casualties and destruction of the platform.<sup>41</sup>

### 2. Sinking oil tanker or attacking LNG carrier or containership in narrow channels

Apart from destroying the ships, hijacking vessels, and targeting ports infrastructure, the terrorist could use submarine drones to attack the super oil tanker or LNG carriers in narrow waters and damage the ship and its hull. This would not only block the sea passage but also harm the environment of the areas. Due to forced speed restrictions in these congested waterways and narrow chokepoints, ships are required to maintain slow speeds, which can raise risks to ships. The possibility of such an attack cannot be ruled out in Strait Malacca, Strait of Hormuz, Suez Canal, and Strait of Bab el Mandeb. To give a context, in 2021, a 400-m-long (1,312ft) ship, knocked by strong winds in the Suez Canal, disrupted the flow of global maritime trade. From the strategic Suez Canal, 12% of global maritime trade flows to Europe and Asia. For port authorities, it was a gigantic task, and it almost took six days to open the blocked passage. According to estimates, it caused \$54 billion in financial loss to global maritime trade.<sup>42</sup>

### 3. Cyber-attack on ports and critical IT infrastructure

Apart from physical threats to ports and ships, there is another evolving threat to the horizon, which is a cyber-threat to maritime infrastructure. Port Information Telecommunication (IT) infrastructure, such as container tracking and cargo handling systems, is potentially vulnerable to cyber-attacks. With the growing automation and application of Artificial Intelligence (AI) in the maritime sector, there are increasing possibilities that terrorist or non-state actors backed by the state can





at preventing and combating terrorism and piracy in the open sea. In 2018, the joint exercises between the Pakistani Marine Corps and the Saudi Marine Corps were successful in special trainings on landing crafts on the beaches. This type of training is a preparation to attack terrorists practicing maritime piracy on the shores, raiding them in their dens and places where they prepare for their aggressive operations, not just at sea.

In 2020, the Arab Coalition established to defend the constitutional government in Yemen thwarted a terrorist plot at sea by the Houthis through the seizure and neutralization of a sea mine. The spokesperson for the Arab Coalition at the time stated that the Houthi militia planted a dangerous mine south of the Red Sea to target ships and boats, and the coalition was able to neutralize and disable 157 mines, warning that the Houthi militia continued to threaten the movement of navigation and international trade ships in the Bab al-Mandab Strait and south of the Red Sea.

## Conclusion

There is a pressing need for global reconfiguration of international and regional arrangements to counter maritime terrorism. The existing security strategy is reactive and underdeveloped in its application. There has been a notable paradigm shift as maritime terrorism is evolving as a new type of systematized crime that works in congruity with renowned terrorist entities. Therefore, it is necessary to move beyond historical perceptions of piracy and terrorism, and introduce a new security system capable of overcoming all obstacles and addressing potential threats in all their forms

As the world is transferring digitally, technology in the maritime domain and international transportation and logistics are changing rapidly. With the increasing reliance on automation, the application of artificial intelligence (AI), digital systems, and technology, sea ports are prone to cyber-threats. Cyber Pirates can attempt to disrupt ports, access sensitive information, and hijack ships.

Today, the maritime sector is facing multifaceted threats ranging from piracy, terrorism, and cyber domain. There is an urgent need to evolve regional and global understanding of shared knowledge, information, and best practices to address, respond, and mitigate the effects of perceived or credible threats of terrorism to the maritime environment, infrastructure, international shipping, and logistics.

Based on past maritime terrorism incidents related to maritime space, the study devised four plausible scenarios of maritime terrorism: vulnerability of sea vessels and ports, critical infrastructure and oil and gas platforms, sinking oil tanker or attacking LNG carrier or containership in narrow channels, and cyber-attack on ports and critical IT infrastructure.

The debate is ongoing as to whether the risks of terrorism in the maritime domain are 'exaggerated' or 'tangible' or 'real possibilities' in the future, but no one denies that terrorism is the greatest challenge of the twenty-first century. Enhancing security for port facilities, increasing patrols of waterways, ports, coastal facilities, container security and protection against explosives, and establishing databases to track goods, ships, and sailors are necessary and essential measures to mitigate the impact of terrorist threats.

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