



# ANNUAL REPORT 2023



**INFORMATION FUSION CENTRE**  
**INDIAN OCEAN REGION (IFC-IOR)**



## **Disclaimer**

Information presented in the IFC-IOR annual report has been derived from various internal and external linkages such as partner nations, other maritime stakeholders, agencies and open sources. The maps used in the report are only for geographical depiction of incidents and may not necessarily depict international boundaries. While due care and effort have been taken to ensure the veracity of data, diligence may be exercised for usage of information contained herein. The information contained in the report and the analysis thereon are not reflective of the views of the Government of India or Indian Navy in any manner.

**T**O ADVANCE MARITIME SAFETY AND SECURITY IN THE INDIAN OCEAN REGION BY ENHANCING MARITIME DOMAIN AWARENESS AND COORDINATING ACTIVITIES, THROUGH INFORMATION SHARING, COOPERATION AND EXPERTISE DEVELOPMENT; ALONG WITH PARTNER NATIONS AND AGENCIES.



**L**ogo of the IFC-IOR draws inspiration from the Centre's vision of 'Collaboration for Maritime Safety and Security'. It highlights the convergence and fusion of information and data from multiple sources, that are extensively analysed to derive usable insights and disseminated to relevant stakeholders. The petals painted in all seven vibrant colours of the optical spectrum depict various national and international partners who contribute in promoting collaborative Maritime Safety and Security towards a peaceful stable and prosperous Indian Ocean Region.

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# MESSAGE FROM THE DIRECTOR



**Captain Rohit Bajpai**  
Director IFC-IOR

Maritime Domain Awareness (MDA) serves as a pivotal element in guaranteeing the safety and security of our oceans. As the seas are ever increasingly gaining prominence, playing a crucial role in trade and transportation, amidst emerging maritime threats, the necessity for comprehensive maritime domain awareness has never been more evident.

IFC-IOR, which is premised on collaborative maritime safety and security in the Indian Ocean Region, serves as a cornerstone in facilitating comprehensive maritime domain awareness in the region. The Centre has established itself as a linchpin in the regional maritime security architecture and has been increasingly playing a pivotal role in enhancing cooperation, information sharing and response coordination; to maritime threats amongst regional and international partners.

IFC-IOR's mission aligns seamlessly with the tenets of India's vision of 'Security and Growth for All in the Region' (SAGAR), underscoring the need for security, stability and prosperity in the Indian Ocean Region.

As we unveil the Annual Report 2023, we find ourselves reflecting on the remarkable journey we have undertaken over the past year and the remarkable strides we have made as an organisation. The last year has been nothing short of eventful, marking not only our fifth anniversary but also serving as a testament to the substantial progress we have achieved over the last half-decade, marking a significant chapter in the ongoing success story of IFC-IOR. This milestone is a testament to the collaborative efforts, partnerships and contributions of everyone who has been part of this incredible journey.

Looking back over the last five years, the Centre has traversed a path of continuous growth and achievement. Today, the Centre hosts International Liaison Officers (ILOs) from 13 partner nations viz. Australia, Bangladesh, France, Italy, Japan, Maldives, Mauritius, Myanmar, Seychelles, Singapore, Sri Lanka, UK and USA. The ILOs play a vital role in facilitating global collaboration, demonstrating mutual trust among the nations and enhancing the Centre's capability to respond effectively to emerging threats

and challenges. The Centre actively engaged in capability enhancement initiatives, providing training and assistance to regional partners in 2023. Whether conducting courses on data management, delivering focused MDA training or collaborating with the nations to set up their information sharing networks, the IFC-IOR has stood tall, at the forefront, in this key endeavour. The Maritime Information Sharing Workshop (MISW), which is the flagship event of the Centre, was conducted from 14 - 16 Sep 23, which saw a participation of 41 delegates from 26 countries.

IFC-IOR has fostered strong partnerships with various organisations and maritime security agencies within the nation and abroad. The Centre has grown at a rapid pace and has established linkages with 25 partner countries and more than 45 maritime security constructs towards sharing information of a crucial nature, as well as towards developing a nuanced understanding of the trends and patterns of maritime incidents in the region.

The AR-23 offers a comprehensive overview of the non-traditional maritime threats recorded in the wider Indian Ocean Region, providing in-depth analysis and valuable insights into each aspect. The most concerning development in this year has been the substantial increase in hybrid maritime security incidents, particularly drone and missile attacks in the Red Sea and Western Indian Ocean. The resurgence of piracy in the latter part of the year is another cause of worry for the seafaring community. The Centre has been at the forefront in the IOR, proactively coordinating operations with shipping owners/ companies/ CSOs for their vessels distressed by piracy attacks and drone/ missile threats amid the challenging maritime security landscape. Following a Government of India/ Directorate General of Shipping advisory on heightened security incidents in the Gulf of Aden, Bab-el-Mandeb, Red Sea, Somalia Basin and Arabian Sea, all Indian-flagged and managed vessels transiting the region have been encouraged to report incidents to IFC-IOR and stay updated through the Centre's Weekly Maritime Security Updates. Consequently, the Centre has assumed the role of 'Reporting Centre' and is round the

clock monitoring the transit of reporting vessels as well as coordinating appropriate response where required. Our team's swift and effective response in these critical situations has not only showcased our organisational flexibility but has also underscored our commitment to maritime safety and security.

In closing, I, on behalf of the Centre, extend sincere gratitude to our stakeholders, partners and the entire maritime fraternity for their unwavering support. Our commitment to collaboration and information fusion remains unwavering. The Centre looks forward to further strengthening existing partnerships, establishing new affiliations, embracing emerging technologies and adapting to evolving security dynamics with an unflinching aim of ensuring a safe and secure Indian Ocean Region.

**Captain Rohit Bajpai**  
Director IFC-IOR



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# FROM THE EDITOR'S DESK

*It is often said that data is the new oil.  
I would like to add that data is the new gold.*

*-Shri Narendra Modi, Hon'ble Prime Minister of India*

Just as oil fueled the industrial revolution, data drives the innovation and transformation of our modern world. However, unlike oil, which is finite and depletable, data possesses an inherent abundance and potential for renewal. Harnessing this wealth of data and applying sophisticated analytical techniques, allows us to uncover invaluable insights that can empower decision-making and shape the course of our future.

Yet, amidst this wealth lies a challenge: the need for authenticating and verifying data or in-short, data cleaning. Raw data, like gold in its natural state, often contains impurities and inconsistencies that can distort analysis and yield erroneous conclusions. Cleaning this data is akin to refining gold, removing impurities to reveal its true value. At IFC-IOR, it is our endeavour to include only authenticated and verified data whilst presenting statistics and insights. As part of this commitment, commencing 2023, the Contraband section has been aligned with others in terms of regional analysis and Irregular Human Migration in Mediterranean has been omitted. The new

methodology facilitates in depicting more accurate maritime safety and security scan of Indian Ocean Region.

The Annual Report for 2023 offers a comprehensive analysis of various maritime security and safety aspects viz. piracy and armed robbery; contraband smuggling; illegal, unreported and unregulated fishing (IUU); irregular human migration and maritime incidents. Furthermore, it highlights emerging MARSEC threats such as hybrid threats, cyber security threats and climate change, alongside environmental concerns like marine pollution.

By harnessing cutting-edge technologies and the expertise of our dedicated team, we continue to unravel patterns and trends of MARSEC threats. Through verified data and unbiased analysis, we endeavour to empower decisionmakers, policymakers and seafarers alike with maritime safety and security scan of Indian Ocean Region.

Team IFC-IOR remains steadfast to our

commitment of promoting collaborative maritime safety and security towards peaceful, stable and prosperous Indian Ocean Region.

Your feedbacks remain a beacon guiding our incessant endeavours to refine our reports and cater to the evolving needs of our readers. Feedback may be sent by scanning QR code placed on this page.

Wishing the mariners, seafarers and our readers a safe and prosperous year ahead.

*Happy Reading...*



**Commander Deepak Lavaniya**

Deputy Director

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# EXECUTIVE SUMMARY

In 2023, the Centre monitored, recorded and analysed a total of 3,955 incidents across the wider Indian Ocean Region (IOR) and adjacent seas. These incidents are classified into five major categories: piracy and armed robbery; contraband smuggling; Illegal, Unreported and Unregulated (IUU) fishing; irregular human migration and maritime incidents. Additionally, the report addresses incidents related to maritime security threats (hybrid), cyber security, marine environmental pollution and climate change and security. Geographically, the incidents in all major categories were grouped under four regions: South Asia, West Asia, East Africa and South East Asia. Additionally, piracy and armed robbery incidents in the Gulf of Guinea were also recorded.

The report presents collated data and trend analysis utilising both textual descriptions and graphical representations to provide concise informational highlights of significant events throughout the year. Additionally, it offers a comparative analysis of the incidents with the preceding year. However, it is important to note that the presence or absence of incidents in a particular region should not necessarily be construed as a benchmark for comparing the state of security and safety across regions or countries. The absence of incidents may depict either an actual incident-free region or a region with inadequate monitoring mechanisms to report such incidents.

The Centre's monitoring, recording and analysis is concentrated on reported incidents within the maritime domain, encompassing ports, coastal areas, riverways, littoral zones and open seas. While inland incidents are

excluded from the scope, the Centre implicitly acknowledges that illicit activities often transcend geographical boundaries, frequently traversing diverse domains.

## PIRACY AND ARMED ROBBERY

In 2023, the Centre recorded 194 incidents of piracy and armed robbery, a notable increase of 20% compared to 161 in 2022. These incidents are categorised into subtypes such as hijack, kidnap, illegal boarding, attack, sea robbery, sea theft, attempted incidents and suspicious approach. The monthly average incidents rose from 13 in 2022 to about 16 in 2023. Despite the surge in incidents, a positive trend emerged as 78% of reported incidents involved no violence. However, isolated instances of violence resulted in severe injuries and one fatality.

Somalia and petty thefts off Mauritius. The types of incidents varied, with sea theft being the most reported (43% of total incidents) and bulk carriers, tankers and pleasure crafts being the most targeted vessels. Most incidents occurred at night (83%), within 12 nm of the coast (85%) and involved small groups of perpetrators.

While piracy and armed robbery remained suppressed in most regions, South East Asia saw a surge, accounting for 103 incidents. East Africa experienced a significant increase, notably in hijacking of dhows off the coast of

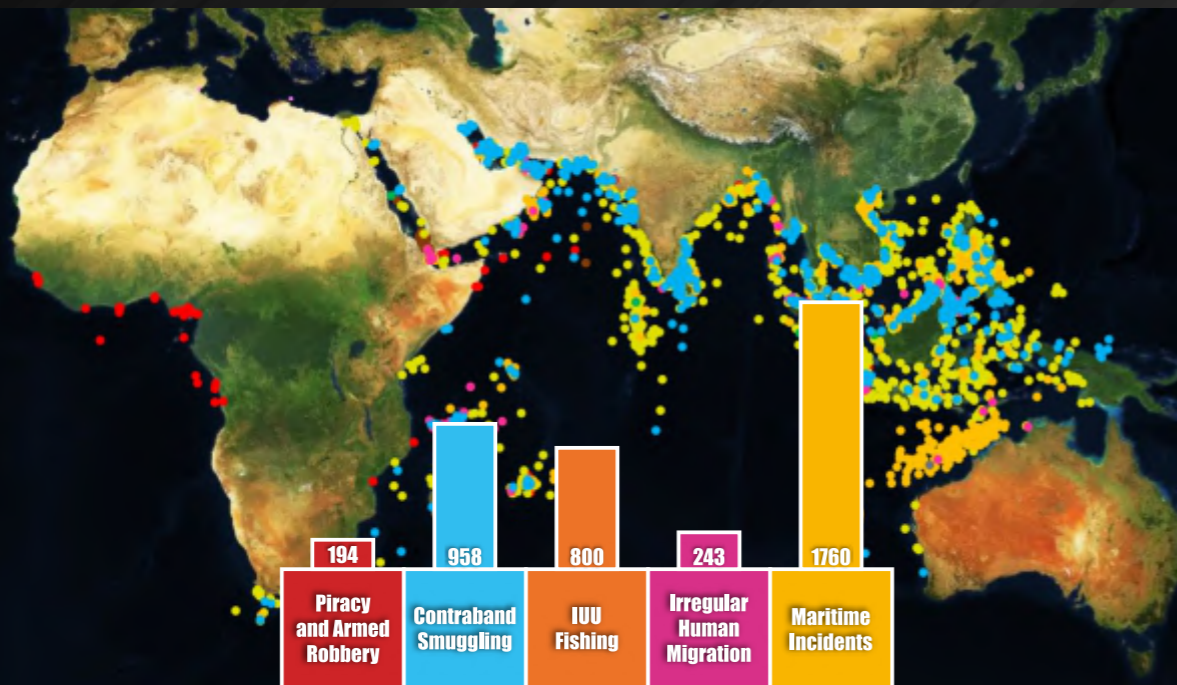
The incidents monitored in the last quarter of 2023 may indicate the resurgence of piracy and armed robbery, especially in Gulf of Aden. The ongoing conflicts and recent developments in the Red Sea area, removal of High-Risk Area (HRA) wef 01 Jan 23 coupled with depleting fishing stocks due to increased IUU fishing activities are likely to pose challenges in Gulf of Aden.

## CONTRABAND SMUGGLING

Contraband smuggling, particularly narcotics, continues to rise in the IOR, posing multifaceted threats to the well-being and health of the affected nations. The Centre recorded an 18% upswing in incidents, totaling 958 seizures. Narcotics accounted for 31% of incidents, while domestic products and fuel smuggling each represented 17% of recorded instances. Major drug seizures in the IOR included large shipments of Amphetamine Type Stimulants (ATS) such as methamphetamine, cannabinoids and opioids such as heroin.

Conversely, West Asia saw an overall 35% decrease, but witnessed a rise in weapon smuggling. South Asia faced a substantial 59% increase, particularly in incidents involving drugs, domestic products and natural resources. South East Asia recorded a 16% rise, with fuel smuggling being predominant. The trends highlight the need for region-specific interventions, acknowledging the varying dynamics and challenges each region encounters. International collaboration and information sharing remain crucial to address the transnational nature of these illicit activities, particularly given the evolving methodologies observed in contraband smuggling.

East Africa experienced a notable 70% surge in reported incidents, with drugs leading the list.





The report delves into the intricate methods employed by traffickers in smuggling narcotics and contraband across borders. The analysis also underscores the modus operandi, encompassing tactics like rip-on/rip-off, concealment in ship structures, strategic maritime corridor selection and concerns about potential use of

selection and concerns about potential use of unmanned vessels. As smuggling methods evolve, law enforcement agencies must adapt and collaborate effectively to counter these dynamic challenges, protecting the region's security and well-being.

## ILLEGAL, UNREPORTED AND UNREGULATED FISHING

IUU fishing is a global menace, jeopardizing marine ecosystems, economic stability and the livelihoods of millions. In 2023, the Centre monitored 800 reported IUU fishing incidents, witnessing a significant 33% surge from 603 incidents in 2022. As it is challenging to categorise incidents distinctly as 'illegal', 'unreported' or 'unregulated' fishing, the reported incidents have been categorised as 'Local IUU' and 'Poaching' to avoid inaccurate representation of data. Local IUU involves violations by a state's own vessels within its jurisdiction, while poaching refers to foreign vessels acting in violation of another state's laws in an area under that state's jurisdiction. Local IUU fishing and poaching accounted for 60% and 40% of reported IUU incidents respectively. Both categories witnessed a notable increase compared to 2022, with local IUU fishing registering a 24% rise and poaching incidents increasing by 48%.

The regional distribution of these incidents highlighted South East Asia as the most

affected region, constituting 65% of all recorded IUU incidents, primarily occurring off the waters of Malaysia, Philippines, Vietnam, Indonesia and Thailand. South Asia followed with 21% of reported incidents, witnessing a significant surge compared to the previous year. West Asia saw a decrease in overall IUU fishing incidents compared to the previous year, mainly off Oman, while East Africa observed a significant uptick, notably off Mauritius, with an increase in both local IUU fishing and poaching incidents.

Despite varied regional dynamics, the overall trend suggests a pressing need for continued international cooperation and strengthened enforcement measures to combat IUU fishing effectively and protect marine ecosystems. Legal gaps and the presence of extra-regional fishing fleets contribute significantly to IUU fishing. Implementation of robust regulatory measures, data compilation and international collaboration are pivotal to safeguard marine resources and ensure sustainable fisheries management.

## IRREGULAR HUMAN MIGRATION

Despite a nominal decrease in recorded IHM incidents from 300 in 2022 to 243 in 2023, the scale and impact remain significant. IHM incidents in the IOR accounted for 66 migrant fatalities and 114 individuals reported missing in 2023.

IHM is driven by the persistent quest for a better life and security. Migrants undertake

high risk transits on overcrowded and often unseaworthy small boats. 14,183 migrants were rescued and 551 smugglers/ traffickers were apprehended during 2023.

East Africa faced the persistent challenge of IHM, notably off the coast of Mayotte, where socio-economic factors contribute to migration attempts. South East Asia and South Asia

recorded a decrease in incidents. West Asia experienced an increase in IHM incidents, with Oman accounting for the highest number. The report delves into the methodologies

employed for IHM, including the use of social media platforms, usage on converted fishing vessels and stowaways onboard merchant vessels.

## MARITIME INCIDENTS

The Centre recorded 1,760 maritime incidents, reflecting a 26% increase from the 1,395 incidents in 2022. The incidents are divided into three categories: incidents affecting vessels, incidents affecting individuals and incidents with legal connotations. Vessel-related incidents, constituting 60% of recorded cases were primarily caused by mechanical failures. Noteworthy is the concentration of 'Vessel Detained' incidents in Malaysian waters, emphasizing the need for adherence to regulations. The report indicates an upward trend in various incidents, except for capsizing and cargo mishap, suggesting improved coordination and prompt responses from regional authorities. Efforts of regional law enforcement agencies led to 18,410 lives being rescued, marking a significant 56% increase from the previous year. However, 528 seafarers lost their lives and 736 individuals were reported missing during 2023.

South East Asia accounted for 61% of the total maritime incidents, particularly off the coasts of Indonesia, Philippines and Vietnam. The month-wise breakdown highlights an average of 147 incidents per month in 2023, with peaks during cyclones and adverse weather conditions.

Significant maritime incidents in 2023 included capsizing of LU PENG YUAN YU 028 and the fires onboard LADY MARY JOY 3 and SAGAR NANDINI-2. These incidents exemplify the challenges faced at sea, emphasizing the need for robust safety measures, adherence to regulations and coordinated search and rescue efforts. The analysis underscores the importance of regional collaboration and information sharing among maritime stakeholders to enhance maritime safety.

## MARITIME SECURITY THREATS (HYBRID)

The escalating challenges posed by hybrid maritime security threats in 2023 are characterised by a combination of overt and covert military and non-military means. Notably, the Red Sea and Western Indian Ocean witnessed a disturbing surge in conflict-related incidents, specifically aerial attacks involving drones and missiles, presenting a significant threat to maritime security.

In 2023, the Centre monitored a substantial increase in incidents, totaling 43, compared to 12 in the previous year. These incidents included drone attacks, missile attacks, vessel seizures, threats over radio and attempted

boardings. The majority of these incidents occurred between the ports of Hodeida and Mocha in the Red Sea, attributed to spillover effects of global conflicts and regional geopolitical tensions. The consequences of these attacks were profound, with shipping companies rerouting vessels away from critical chokepoints, such as the Suez Canal and Bab-El-Mandeb, leading to increased transit times, war risk premiums and disruptions in global trade.

UAVs or drones played a prominent role in the surge of attacks, with 23 incidents recorded in 2023, a stark increase from the three incidents



in 2022. Additionally, 10 missile or projectile attacks were reported, often preceded by UAVs flying overhead, potentially providing targeting data. While no casualties were reported, damages to the targeted vessels were significant, emphasizing the evolving threat landscape in the maritime domain.

The Centre monitored one incident of vessel seizure/ detainment in Nov 23, involving the

Bahamas-flagged vehicle carrier MV Galaxy Leader. Perpetrators, using a helicopter, boarded the vessel west of Hodeida. Several instances of attempted boardings, threats over radio and suspicious approaches were thwarted by the presence of international forces. These incidents underscore the continuous and collaborative vigilance and response efforts required to mitigate hybrid maritime security threats.

## MARINE ENVIRONMENT POLLUTION

Marine pollution remains a significant threat, jeopardizing ecological systems and marine life while rendering coastlines unusable due to pollutants. In 2023, the Centre observed a notable increase in incidents, monitoring 32 cases, including 14 oil spills and diverse forms of pollution. South East Asia accounted for the majority, with 18 incidents.

Two significant incidents underscore the environmental impact of such events. The grounding of the Gabon-flagged tanker MV Aashi in Indonesia led to a spread of asphalt across an expanse stretching 70 km, threatening conservation areas and impacting the local fishing community<sup>1</sup>. The sinking of the MT Princess Empress off Philippines resulted in a 120 km long oil slick, causing a loss exceeding

USD 5 million in addition to environmental damage<sup>2</sup>.

In response to rising pollution concerns, 2023 saw the implementation of notable IMO regulations, including the Energy Efficiency Existing Ship Index (EEXI), Carbon Intensity Indicator (CII), amendments to the Control of Harmful Anti-Fouling Systems on Ships (AFS Convention) and the adoption of the 2023 IMO Strategy on Reduction of Greenhouse Gas Emissions. The adoption of the agreement on the conservation and sustainable use of marine biodiversity under the United Nations Convention on the Law of the Sea further reinforces the collective effort required to address environmental challenges in the maritime domain.

<sup>1</sup>Press Release Marsec - 17 April 2023 (English).

Available at: [https://oceanjusticeinitiative.org/wp-content/uploads/2023/04/Press\\_Release\\_Marsec\\_17\\_April\\_2023\\_en.pdf](https://oceanjusticeinitiative.org/wp-content/uploads/2023/04/Press_Release_Marsec_17_April_2023_en.pdf) (Accessed on 15 Dec 23)

<sup>2</sup>DOJ indicts ship owners, maritime officers over Mindoro oil spill.

Available at: [DOJ indicts ship owners, maritime officers over Mindoro oil spill](https://www.pna.gov.ph/2023/12/15/doj-indicts-ship-owners-maritime-officers-over-mindoro-oil-spill/) | Philippine News Agency (pna.gov.ph) (Accessed on 15 Dec 23)

## CYBER SECURITY THREATS

The maritime industry is currently navigating a significant technological shift, accompanied by a growing concern for maritime cyber threats capable of disrupting operations. The vulnerability of port management systems to cyber attacks poses substantial risks to maritime safety and security. With the interconnected nature of maritime infrastructure, threats can originate from diverse sources, potentially causing supply chain disruptions, economic losses and data breaches. Notably, cyber attacks are evolving in sophistication, with only a fraction being detected and many incidents may go unreported.

Cyber security incidents in 2023 recorded a surge, with 11 recorded attacks on shipping companies and port infrastructure. Ransomware attacks emerge as the primary technique employed by cybercriminals, impacting insurance companies, shipping fleets and port systems. Several incidents, such as the cyber attack on DNV, ransomware attack on Royal Dirkzwager and the attack on the port of Nagoya, Japan, underscore the potential for significant financial loss and operational disruption for the maritime sector.

## CLIMATE CHANGE AND SECURITY

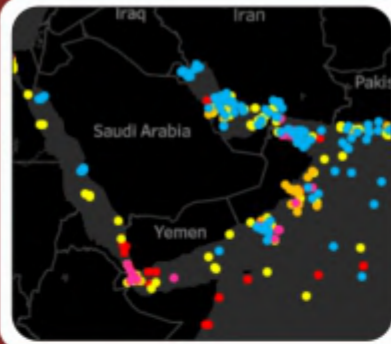
Climate change has far-reaching implications for the world's oceans and seas. Rising sea levels, extreme weather events, ocean acidification and alterations in sea temperature and circulation patterns pose challenges to the maritime domain. Key areas of concern include the rise in sea levels, heightened severity and frequency of natural disasters, conflicts over fisheries, climate-induced migration and threats to freshwater supply.

associated with climate change are expected to intensify pre-existing issues and conflicts while simultaneously giving rise to new challenges. In the long term, this phenomenon poses a risk not only to stability of national and regional political landscapes but also to human survival. In the short term, climate change disrupts natural systems, leading to adverse effects on human systems and potentially contributing to the occurrence of maritime crimes. Further, the escalation of certain maritime crimes, such as illegal fishing, may act as a catalyst for the emergence of others, such as piracy.

Climate security represents the impact of climate change on both traditional and non-traditional security threats. The effects

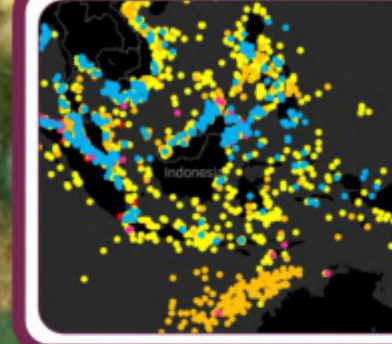
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### West Asia

- 307 maritime security and safety incidents monitored, a 16% decrease compared to 2022 (364 incidents).
- Significant increase recorded in hybrid maritime security threats incidents (43 incidents compared to 11 in 2022). Irregular human migration incidents saw a 32% rise compared to the previous year.
- Contraband smuggling, IUU fishing and piracy and armed robbery witnessed a decrease of 36%, 32% and 31%, respectively, compared to last year.
- There was an upsurge of conflict-related incidents involving aerial attacks on ships using drones/missiles in the Red Sea and Western Indian Ocean in the last two months of 2023



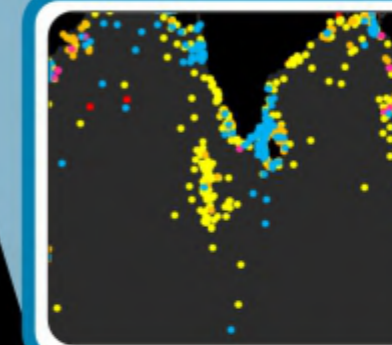
### South East Asia

- 2,310 maritime security and safety incidents monitored, an 32% increase compared to 2022 (1,760 incidents).
- Maritime incidents, IUU fishing, piracy and armed robbery and contraband smuggling witnessed an increase of 45%, 34%, 20% and 16% respectively compared to 2022. Marine environment pollution saw a significant increase - 21 incidents compared to 08 in 2022.
- Irregular human migration witnessed a 10% decrease compared to 2022. However, coercing of migrants to consume drugs/ crystal meth (shabu) to endure hardship on overcrowded boats (reported in a few incidents) is a development of concern.



### Gulf of Guinea

- 33 incidents of piracy and armed robbery monitored, similar to incidents in 2022 (34 incidents).
- The perpetrators were armed in nearly 60% of the incidents.
- Majority (64%) of the incidents were reported within territorial waters. However, one incident was reported even beyond 200 nm.
- The region continues to witness higher degree of violence associated with piracy and armed robbery. In the incidents, one fisherman lost his life and two crew members sustained severe injuries.



### South Asia

- 896 maritime security and safety incidents monitored, a 15% increase compared to 2022 (780 incidents).
- Contraband smuggling and IUU fishing incidents recorded 60% and 35% upsurge compared to 2022.
- Irregular human migration and piracy and armed robbery witnessed a decrease of 71% and 23% respectively compared to 2022.



### East Africa

- 486 maritime security and safety incidents monitored, a 34% increase compared to 2022 (362 incidents).
- Significant increase recorded in piracy and armed robbery (37 incidents compared to 12 in 2022). Contraband smuggling, IUU fishing and maritime incidents saw a rise of 70%, 65% and 27% respectively, compared to the previous year.
- Irregular human migration witnessed a 7% decrease compared to 2022.
- The incidents monitored in the last quarter of 2023 may indicate the resurgence of piracy and armed robbery, especially off Somalia.



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# INDIAN OCEAN REGION MARSEC SCAN 2023





# PIRACY & ARMED ROBBERY



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# PIRACY & ARMED ROBBERY

## Overview

In 2023, the Centre monitored 194 incidents classified under piracy and armed robbery, a 20% increase compared to 2022 (161 incidents). The incidents in this section have been further grouped into ten subcategories: hijack, kidnap, illegal boarding, attack, sea robbery, sea theft, attempted incidents (robbery, theft and boarding) and suspicious approach. All subcategories have reflected an increasing or a comparable trend to the

year 2022, except attempted sea theft and suspicious approach. The Centre recorded a monthly average of approximately 16 incidents in 2023 compared to 13 incidents in 2022. **Increased vigilance, enhanced law enforcement efforts, arrest of perpetrators in the last few months and proactive reporting of incidents by the shipping community are the likely factors contributing to this upturn.**



No violence was involved in approximately 78% of the reported incidents. However, some instances of violence were reported where one crew member (master) was severely injured in one of the sea robberies in South East Asia and one fisherman lost his life in the Gulf of Guinea.

Piracy and armed robbery remained suppressed in most areas of the region except

South East Asia in the first three quarters of 2023. However, **incidents monitored in the last quarter of 2023 may indicate the resurgence of piracy and armed robbery, especially in East Africa. The ongoing conflict and recent developments in the Red Sea area, removal of High Risk Area (HRA) w.e.f. 01 Jan 23 coupled with IUU fishing activities are likely to pose challenges in East Africa.**<sup>1</sup>

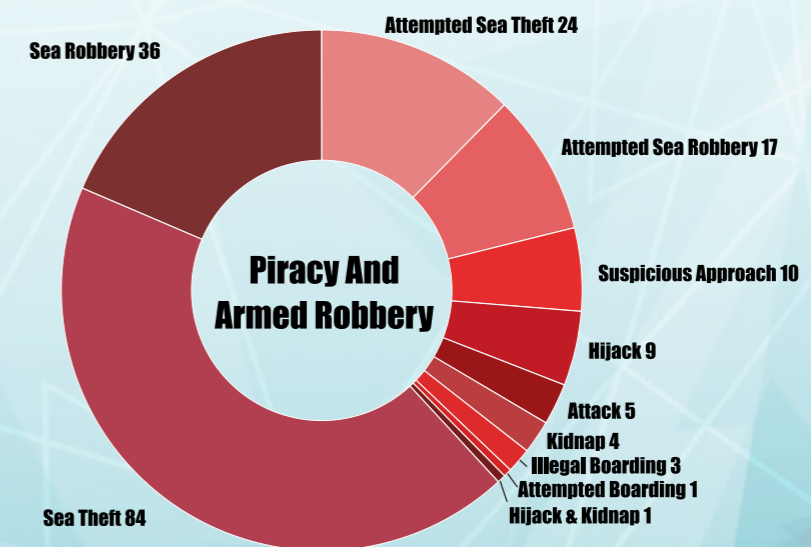
## Attempted vs Successful Incidents

The types of incidents captured by the Centre include both attempted and successful events of piracy and armed robbery. 11 incidents of unsuccessful attempts to board and suspicious approaches to a vessel were recorded by the Centre in 2023 compared to 20 incidents in 2022, which constituted 6% of the total incidents. Majority of the attempts were thwarted due to proactive actions by the vessels in accordance with BMP5<sup>2</sup> and BMP<sup>3</sup> WA viz., evasive maneuvers and the presence of armed security teams. The perpetrators succeeded in stealing items, hijacking vessels or kidnapping crew members in 134 of these incidents, a 44% increase compared to 2022

(93 incidents). This constituted 69% of the total incidents recorded by the Centre.

About 21% {attempted sea theft (24) and attempted sea robbery (17)} of the overall incidents were unsuccessful. This is attributable to alert crew raising the alarm promptly. The analysis of the incidents revealed that the perpetrators were not willing to take risks and escaped empty-handed to avoid apprehension/ arrest.

Like the previous year, sea theft (84) was the most frequently reported type of incident in 2023, accounting for 43% of total incidents.



<sup>1</sup>The Centre monitored 86 incidents in East Africa, a 69% increase as compared to 2022 (51 incidents). In 2023, 11 foreign fishing boats were seized and 144 foreign fishermen apprehended compared to six fishing boats and 57 foreign fishermen in 2022. Also see IUU Fishing section on page no. 73.

<sup>2</sup>BMP5 - Best Management Practices To Deter Piracy And Enhance Maritime Security in the Red Sea, Gulf Of Aden, Indian Ocean and Arabian Sea, Version 5-2018

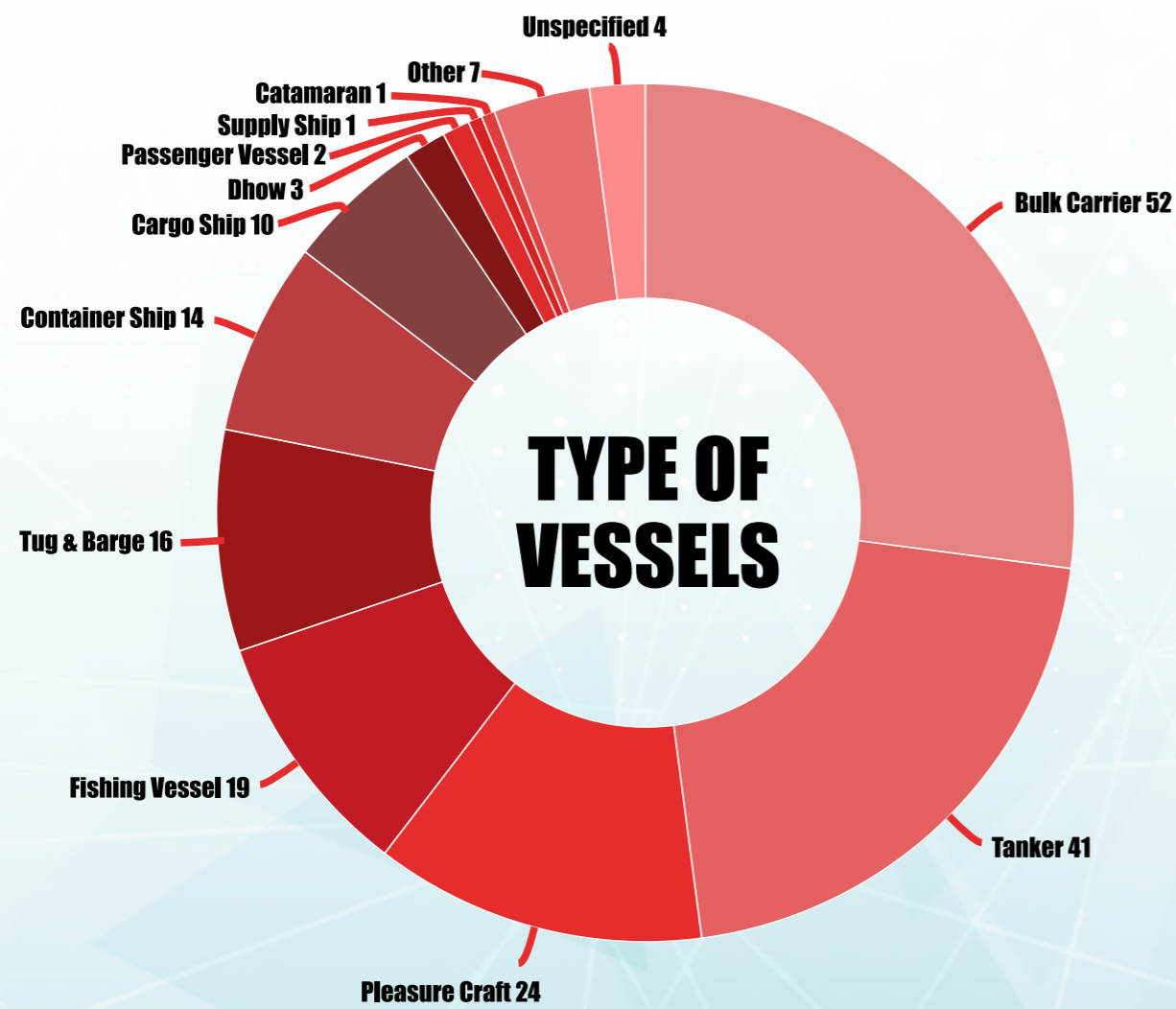
<sup>3</sup>BMP WA - Best Management Practices to Deter Piracy and Enhance Maritime Security for Vessels & Mariners Operating Off the Coast of West Africa including the Gulf of Guinea consolidates and enhances existing guidance for specific threats in this region. First Edition - 2020.



## Type of Vessels

Bulk carriers were targeted in 27% of the incidents, followed by tankers 21% and pleasure crafts 12%. 53 incidents (27%) were reported onboard vessels with low freeboard and/ or those that transit at slow speeds, most of which were recorded in South East Asia. Incidents were also reported onboard fishing vessels, service vessels, tugs and barges under tow, supply

vessels and barges under tow, supply vessels and passenger vessels. While the vessels with low freeboard were identified to be easy targets, perpetrators have also successfully boarded container vessels with high freeboard. The incidents of theft/ robbery onboard tugs/ barges were appreciated to be opportune attacks aimed at stealing ships' stores, engine spares and scrap metal for some quick money.

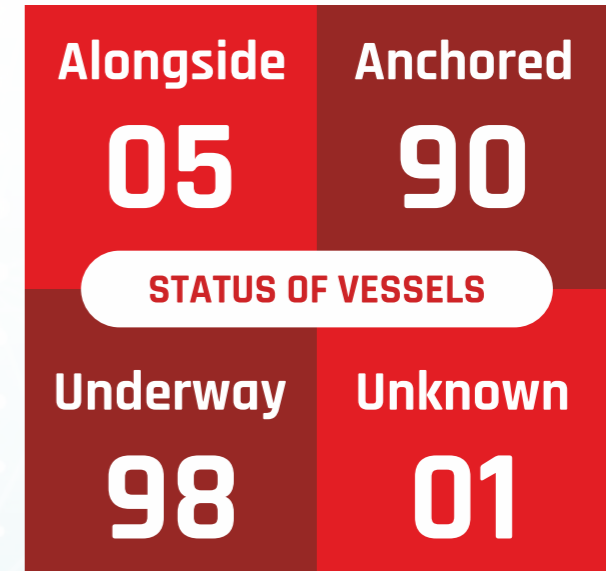
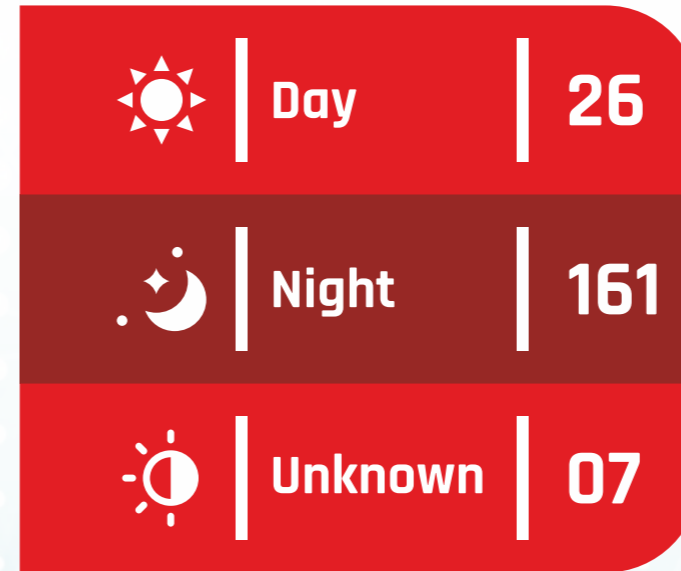


## Navigational Status and Time

Similar to the previous year, most of the incidents recorded were reported on vessels underway 51%, followed by anchored vessels 46% and vessels berthed alongside 3%. Significantly lower number of incidents

alongside in harbours is a positive statistic, signifying better security in ports. Similar to previous years, 83% of the total incidents recorded occurred during the period of darkness.

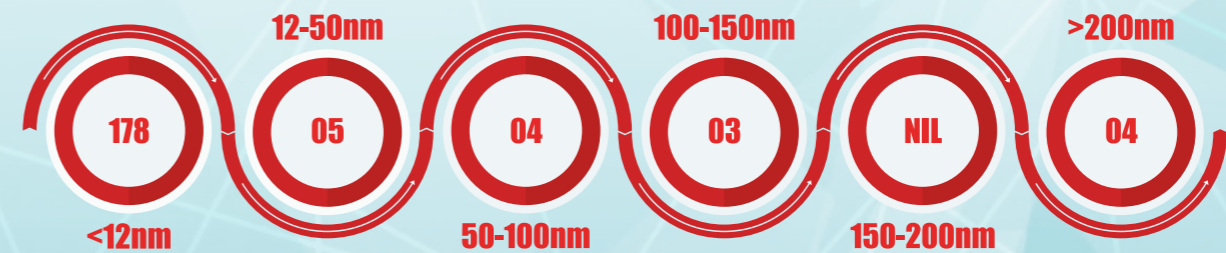
### TIME OF INCIDENTS



## Distance from Coast

92% of the incidents recorded occurred in proximity of nearest land (<12 nm). The majority (102) of these incidents were reported in South East Asia. Traffic Separation Scheme (TSS) in the Strait of Singapore accounted for 63% of the incidents recorded in

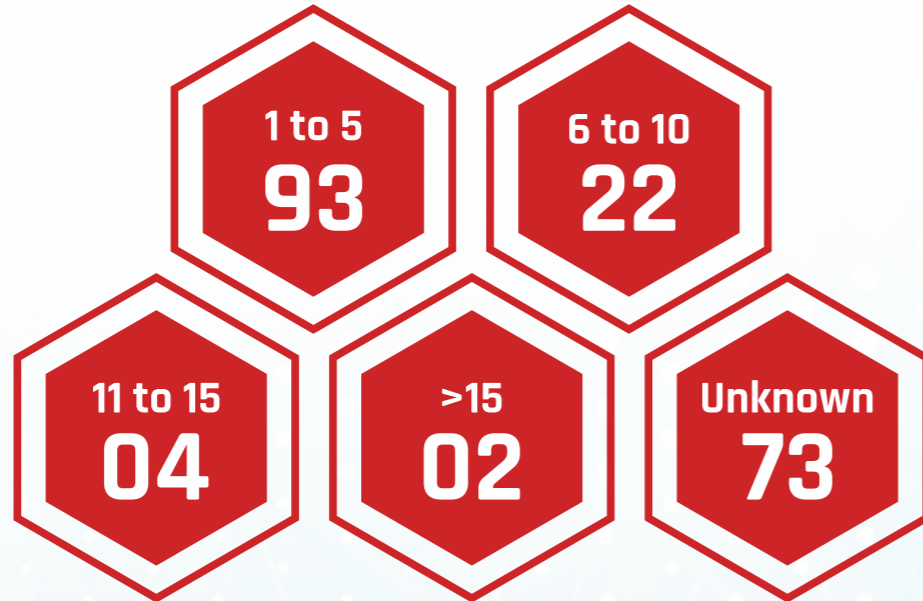
proximity of the nearest land. The incidents declined with increasing distance from the coast. Three incidents were recorded in the Arabian Sea and one incident in the Gulf of Guinea beyond 200 nm.





## Number of Perpetrators

The majority of incidents were orchestrated by small groups of perpetrators. The Centre has information with respect to perpetrators in 62% of the recorded incidents. Out of these, 77% involved 1-5 perpetrators and 18% incidents involved 6-10 perpetrators. A few incidents involving a group of 11-15 perpetrators were also recorded by the Centre.



## Use of Skiffs and Dhows

The Centre has information with respect to the number of skiffs in 18% (35) of the recorded incidents. number of boats used in a single incident was four during an illegal boarding incident in the TSS of Singapore Strait.

77% (27) of these incidents involved the presence of one skiff, 14 of which were recorded in South East Asia, six in the Gulf of Guinea, five in East Africa and two in South Asia. The highest number of boats used in a single incident was four during an illegal boarding incident in the TSS of Singapore Strait.

Towards the end of the year, the Centre also monitored six incidents of hijacking of dhows by an unknown number of perpetrators off Somalia.



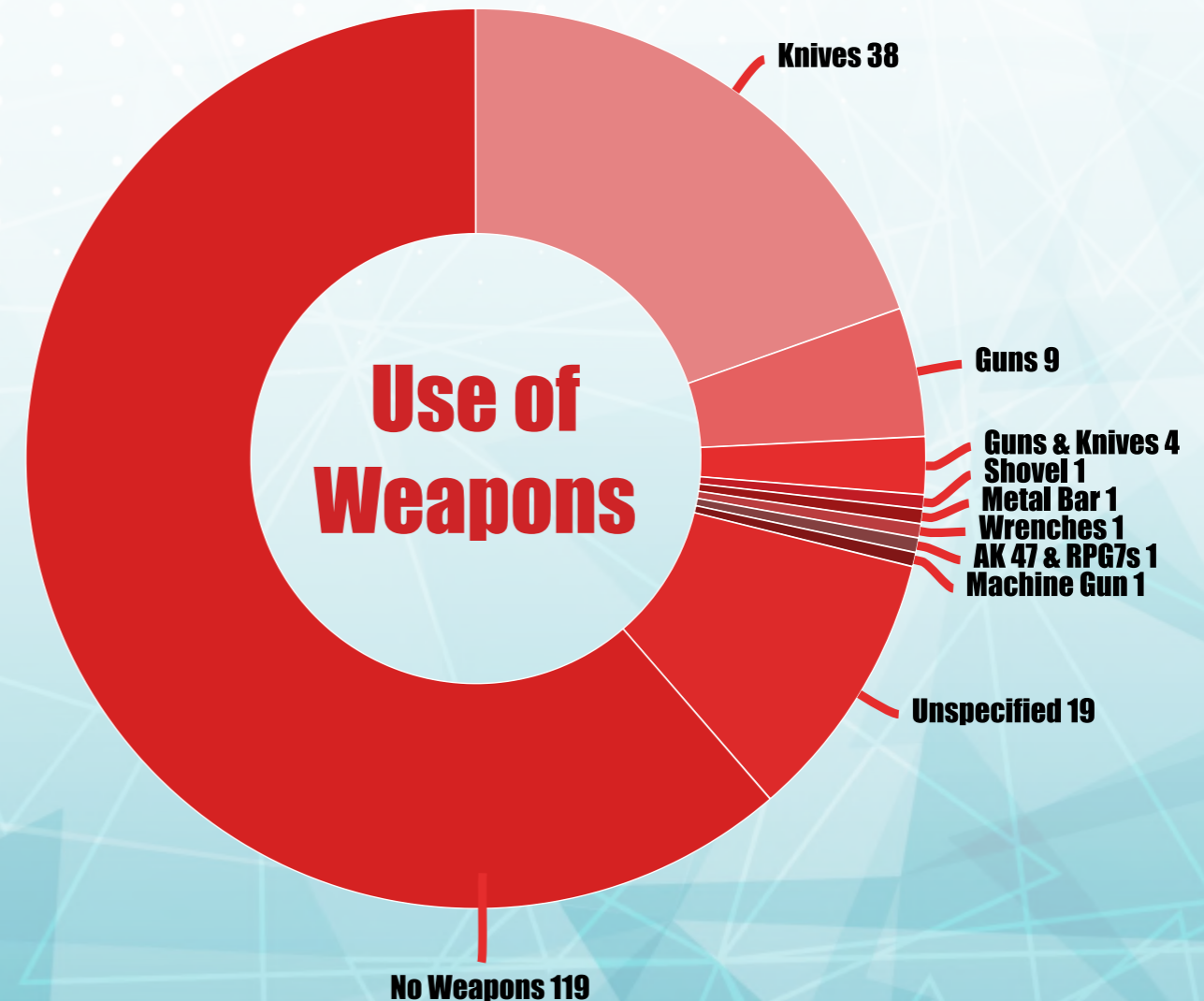
## Use of Weapons and Violence Against Crew

In 2023, sighting or usage of weapons was reported in 39% (75) of the recorded incidents of piracy and armed robbery. 55% (41) of the incidents with weapons involved different types of knives or similar weapons (knives, shovel, metal bars and wrenches), 15% (11) of incidents involved guns and similar weapons, 5% of incidents involved guns and knives while the type of weapons was not specified in 25% of the incidents involving armed perpetrators.

In South East Asia, knives were the most frequently used weapons (33 incidents), followed by guns (02 incidents) and 01 incident each of guns and knives, shovels, wrenches, metal bar and unspecified weapons. 32 incidents involving the use of knives (including 01 incident of both guns &

knives) were recorded off Indonesia and two incidents were recorded off Malaysia. Reportedly, four incidents in the Gulf of Guinea, two incidents each in South East Asia and West Asia and one incident in East Africa involved the use of guns by the perpetrators.

Perpetrators carrying guns are likely to possess knives that may go unnoticed by crew members. One fisherman lost his life in the Gulf of Guinea during an attack on a fishing boat by an unknown number of perpetrators and seven crew members were severely injured in 2023. In one of the incidents reported onboard a Marshall Islands-flagged bulk carrier Merchia in South East Asia, the master of the ship was stabbed in the chest by the perpetrators.





## Analysis of Incidents

### Sea Theft/ Sea Robbery

Sea thefts (108) and robberies (53) (actual/ attempted) were the most frequently reported incidents in 2023 and accounted for 83% of the overall piracy and armed robbery incidents - 16% and 43% increase, respectively, compared to 2022. In most of these incidents, the perpetrators targeted opportune vessels and stole ship's items. However, 41 out of 161 incidents were those without any loss of stores. This may be attributable to alert crew raising timely alarms. The analysis of these incidents indicates that the perpetrators were non-confrontational in most of the incidents and escaped empty-handed immediately after being noticed by the crew.



### Hijack and Kidnapping

In 2023, the Centre monitored nine incidents involving the hijacking of vessels compared to five incidents in 2022. Five fishing dhows, one each bulk carrier, tanker, cargo vessel and passenger boat were hijacked in 2023. The perpetrators may likely use the hijacked dhows as motherships in attacking/hijacking other vessels. Further, the analysis of incidents has revealed that **the mothership (dhow) remains in the proximity of MV after boarding till the pirates establish control over the vessel as a possible means for a quick exit in case of intervention by naval forces.**



### Illegal Boarding/ Attack

The Centre monitored nine incidents of illegal boarding (actual/ attempted) and attack in 2023 compared to five incidents in 2022. All incidents of attack and illegal boarding were recorded in the Gulf of Guinea except for one incident each which was reported in South East Asia and East Africa. Fishing vessels were the most targeted vessels in the Gulf of Guinea in these incidents. All incidents of attacks and attempted boardings were reported within 12 nm from the coast and during night time except for one incident each of illegal boarding (beyond 12 nm) in the Gulf of Guinea and East Africa, which was monitored during the day time. The incident of illegal boarding reported in South East Asia involved a tug and barge, which was boarded twice by an unknown number of perpetrators from four boats in the eastbound lane of the Singapore Strait TSS.



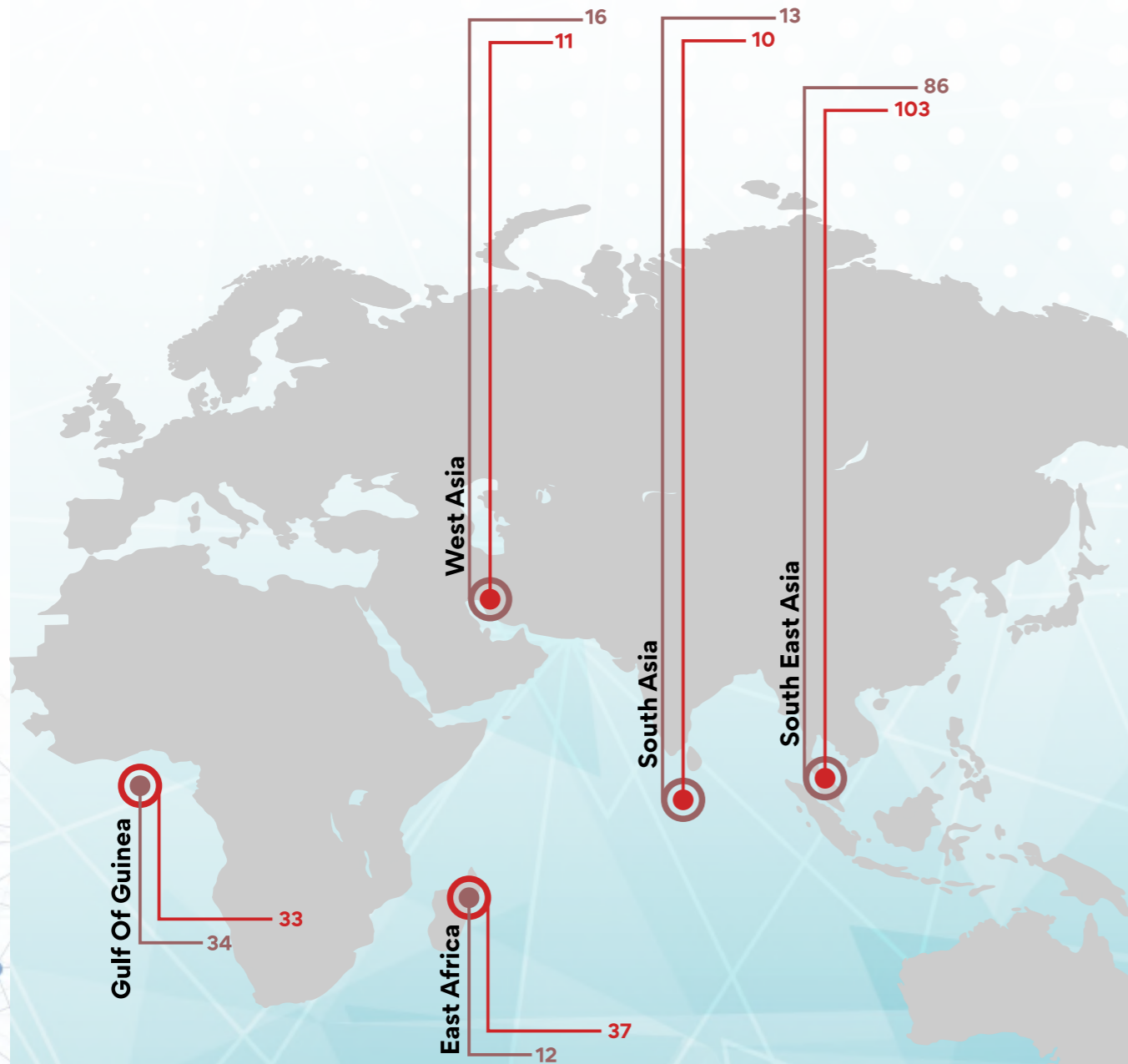


## Regional Analysis

The Centre has compiled, monitored and analysed piracy and armed robbery incidents in five regions: South East Asia, South Asia, West Asia, East Africa and Gulf of Guinea. South East Asia (103) continues to account for the highest number of incidents, followed by East Africa (37), Gulf of Guinea (33), West Asia (11) and South Asia (10). The regional analysis

of the incidents indicates a surge in the incidents recorded in East Africa. West Asia and South Asia have witnessed a slight decrease in the number of incidents, while, the Gulf of Guinea has reflected almost a similar trend compared to 2022. Detailed region-wise analysis is enumerated in the subsequent paragraphs.

Year ● 2022 ● 2023





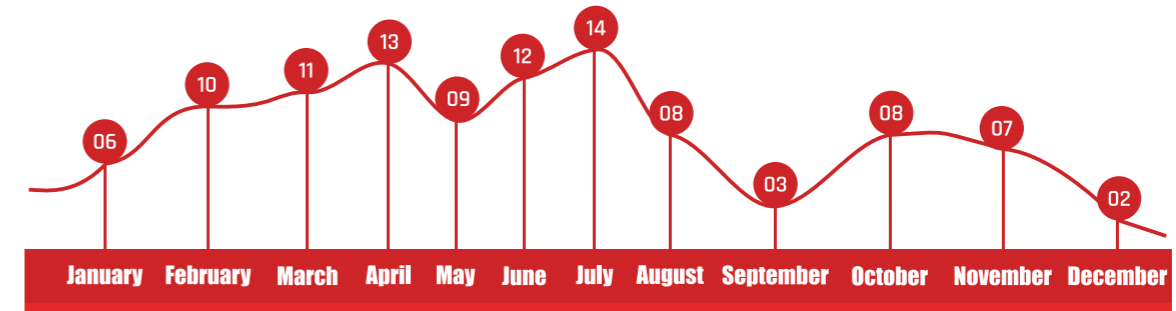
# South East Asia

In 2023, South East Asia accounted for 103 incidents, a 20% increase compared to 2022. A greater number of these incidents recorded in this sub-region primarily involved petty thefts. Sea thefts/ robberies (67) accounted for 65% of the incidents reported in this region. 65 incidents were reported in the Straits of Malacca and Singapore, an increase of 18% compared to 2022 (55 incidents). 47 incidents were reported in the eastbound lane of the TSS of Singapore Strait, 11 incidents were reported in the precautionary area of the TSS, six incidents were reported in the westbound lane of the TSS and one incident was reported outside the TSS.

The rise in reported incidents within the east-bound lane could be attributed to vessels substantially reducing their speed while altering course within the TSS, rendering them more vulnerable to boarding by perpetrators. Moreover, this area is also a traditional fishing area, making it easy for perpetrators to blend-in amongst the numerous fishing boats to avoid detection. Majority (67) of the incidents involved vessels underway (65%) and occurred during the period of darkness (86%).

Due to their low freeboard and slow speed, bulk carriers (47) and tugs & barges (15) remain the most targeted vessel types. The other frequently targeted vessels included tankers (26) and container ships (10). The perpetrators were monitored to operate in groups of a maximum of six and a minimum of one to two. In most incidents, the perpetrators escaped upon being sighted by the crew members. Knives (33) and guns (03) were the preferred choice of weapons used by the perpetrators. In addition, the perpetrators were observed carrying weapons like shovels, matchets (jungle bolo), wrenches, etc.

Regional law enforcement agencies have intensified surveillance efforts in the Singapore Strait, resulting in increased apprehensions of perpetrators. Investigations during one such apprehension revealed an increased technological proficiency among the perpetrators, who utilised online tools/ applications to access merchant vessel details and identify suitable targets, reportedly increasing their success rate.<sup>4</sup>



### Time of Incidents

Day - 13  
Night - 89  
Unknown - 1

### Number of Perpetrators

1 to 5 - 73  
6 to 10 - 13  
>20 - 1  
Unknown - 16

### Distance from Coast

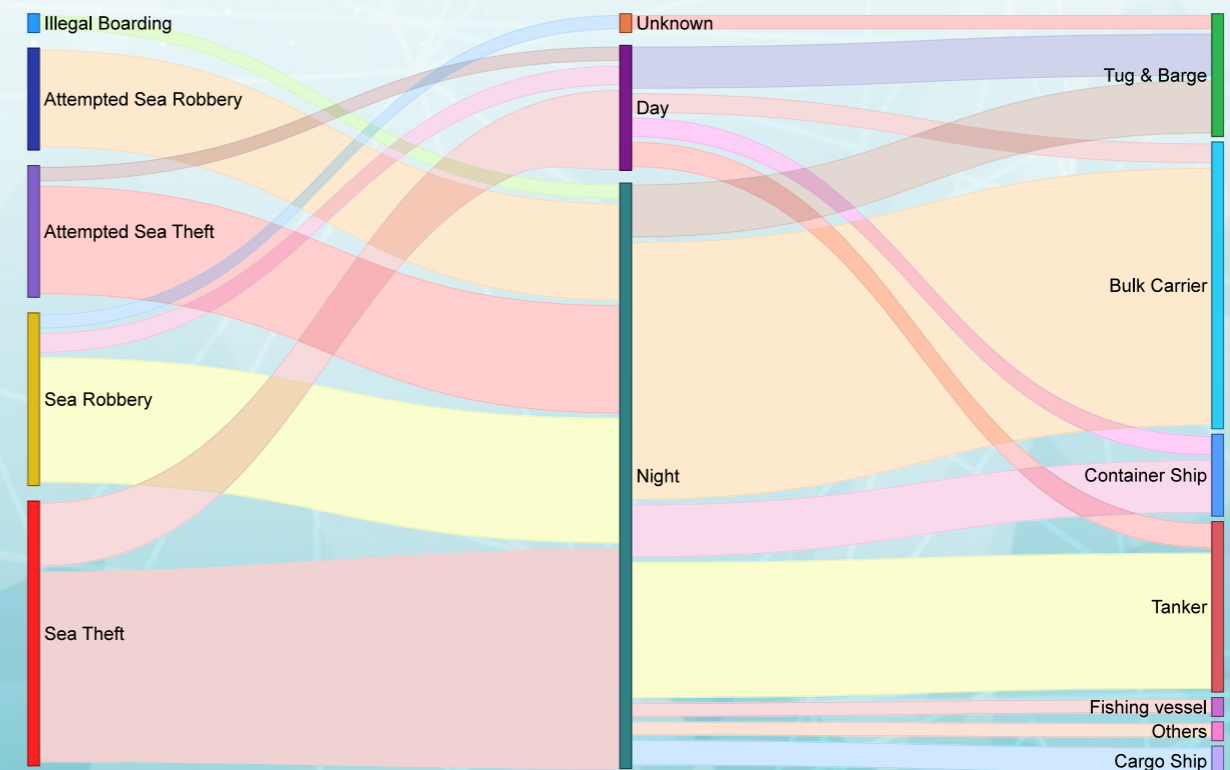
Unknown - 1  
<12nm - 102

### Status of Vessel

Alongside - 2  
Anchored - 34  
Underway - 67

### Number of Skiffs

One - 14  
Two - 2  
Three - 1  
> Three - 1



<sup>4</sup>In Oct 23, Indonesian authorities apprehended three perpetrators suspected for perpetrating sea theft and robbery. Source - [https://www.intertanko.com/images/topics-issues/Security/Piracy/2023/ReCAAP\\_7\\_Nov\\_2023](https://www.intertanko.com/images/topics-issues/Security/Piracy/2023/ReCAAP_7_Nov_2023)







# West Asia

In 2023, West Asia accounted for 11 incidents, a 31% decrease compared to 2022 (16 incidents). This decrease is attributable to the continued presence/ efforts of international forces, collaborative efforts of information fusion and MARSEC centers and adoption of heightened security measures by transiting merchant shipping. **A major development in this context has been the removal of the HRA by industry bodies w.e.f. 01 Jan 23.**

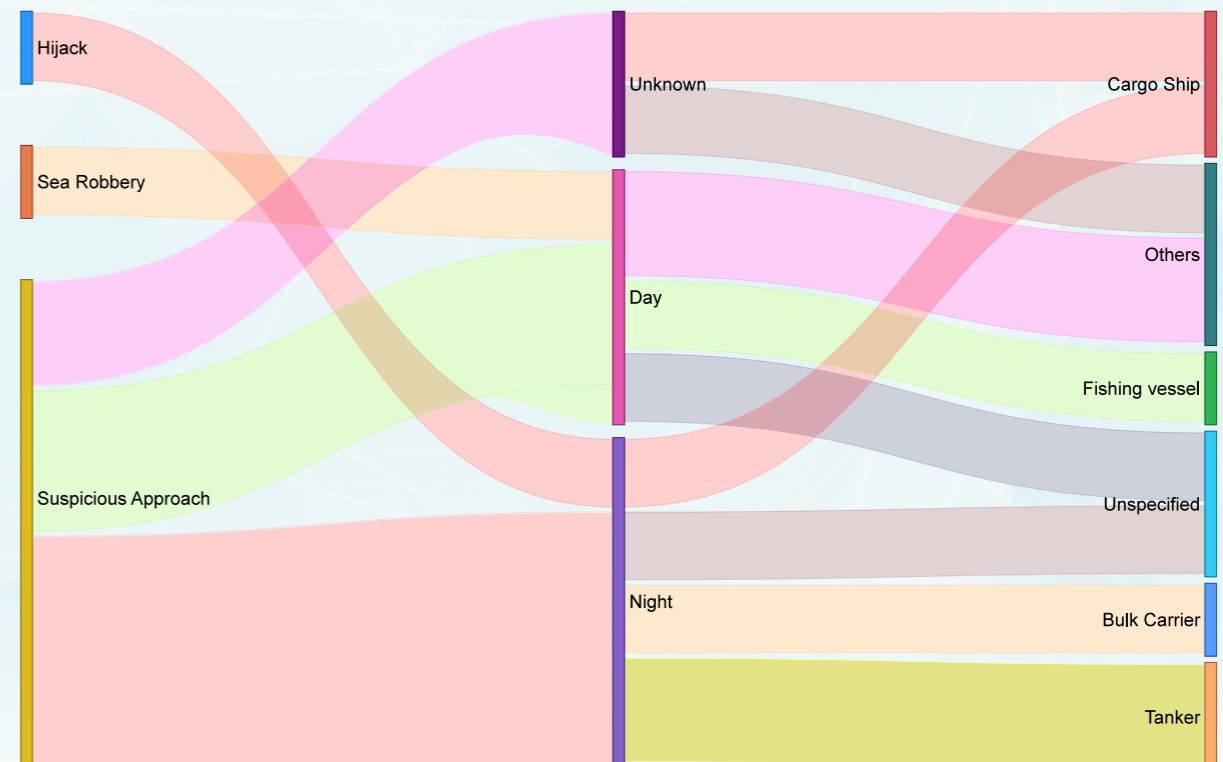
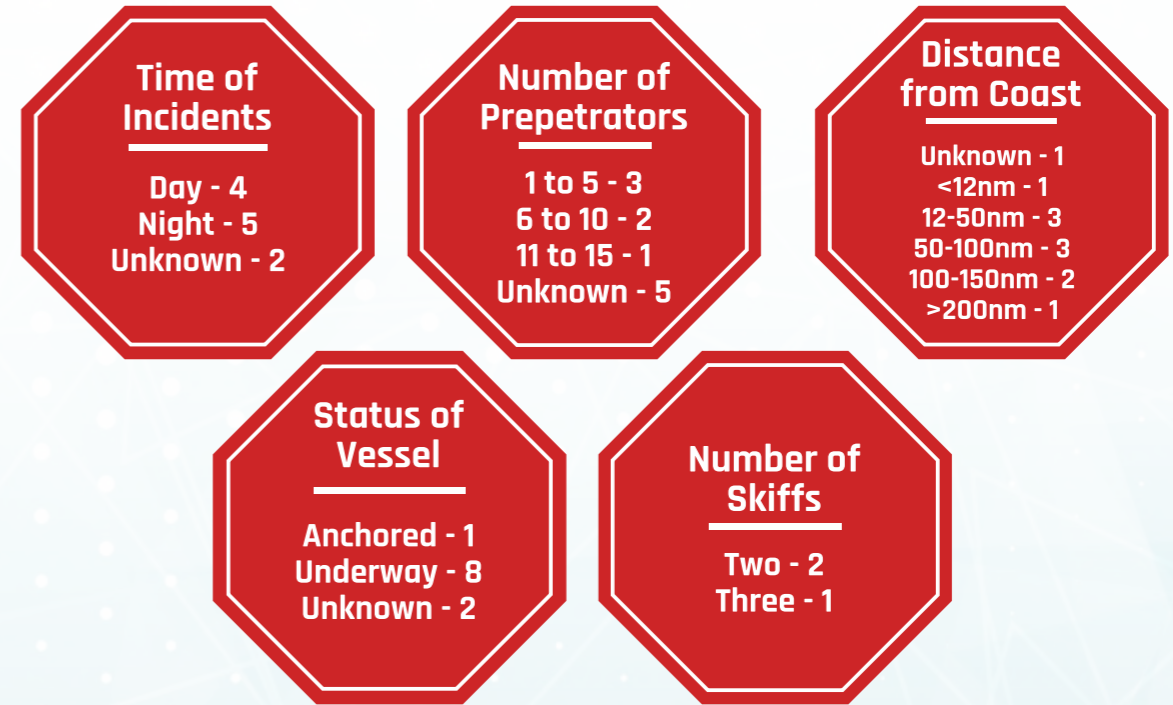
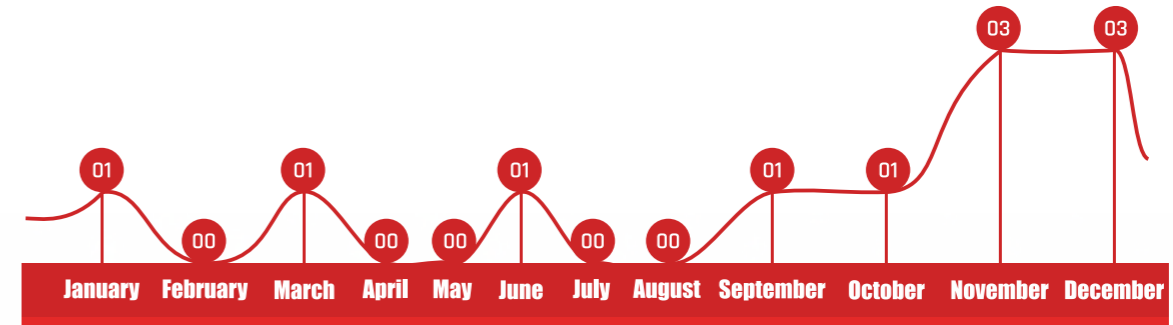
Suspicious approaches (09) followed by one incident each of sea robbery and hijack were reported in 2023. Incidents were predominantly reported on vessels underway during the dark hours. Notably, the region's pattern of life also includes a significant number of small/medium-sized fishing vessels operating as a group. These fishermen may approach vessels transiting primarily to protect their fishing nets. While the suspicious approaches remain the most frequently reported incident in West Asia, the recent hijacking of Malta-flagged bulk carrier, MV RUEN may indicate the re-emergence of piracy in this area. The detailed analysis of MV RUEN, hijack incident is mentioned below.

**Significant Incident** - On the night of 14/ 15 Dec 23, a Malta flagged bulk carrier MV RUEN was hijacked by an unknown number of perpetrators in the Central Arabian Sea, approximately 450 nm E of

Socotra Island. The vessel with 18 crew members was boarded by six armed perpetrators while enroute to Türkiye from Korea. Based on the inputs provided by IFC-IOR, the Indian Navy diverted its maritime patrol aircraft, undertaking surveillance in the area and a warship on anti-piracy patrol in the Gulf of Aden to locate & assist the vessel. The aircraft overflew the hijacked vessel on 15 Dec 23 and established communication with the vessel. All 18 crew members were reported to be safe in the citadel and one small boat was found adrift in the proximity of MV RUEN, Indian Navy and JMSDF warships intercepted MV RUEN in the early hours of 16 Dec 23. A helicopter was launched by the Indian Navy ship to assess the situation. It was ascertained that the citadel/ safe house had been breached during the dark hours of 15/ 16 Dec 23 and the crew were held hostage. One crew member (Chief mate) had sustained injuries. However, his condition was reported to be stable. The warship remained in the vicinity of MV RUEN, negotiated with the perpetrators and ensured the safe evacuation of the injured crew member on 18 Dec 23. **This was one of the major hijack incidents in the region over a period of last six years and may indicate the resurgence of piracy and armed robbery in the Gulf of Aden.**<sup>5</sup>



<sup>5</sup>The last hijack incident in Gulf of Aden was reported on 13 Mar 17, onboard a Sri Lanka flagged chemical tanker Aris 13. Reportedly, the vessel was approached by two skiffs with 24 armed perpetrators who boarded and hijacked the vessel. Source- <https://www.reuters.com/article/idUSKBN16LDFZ/>





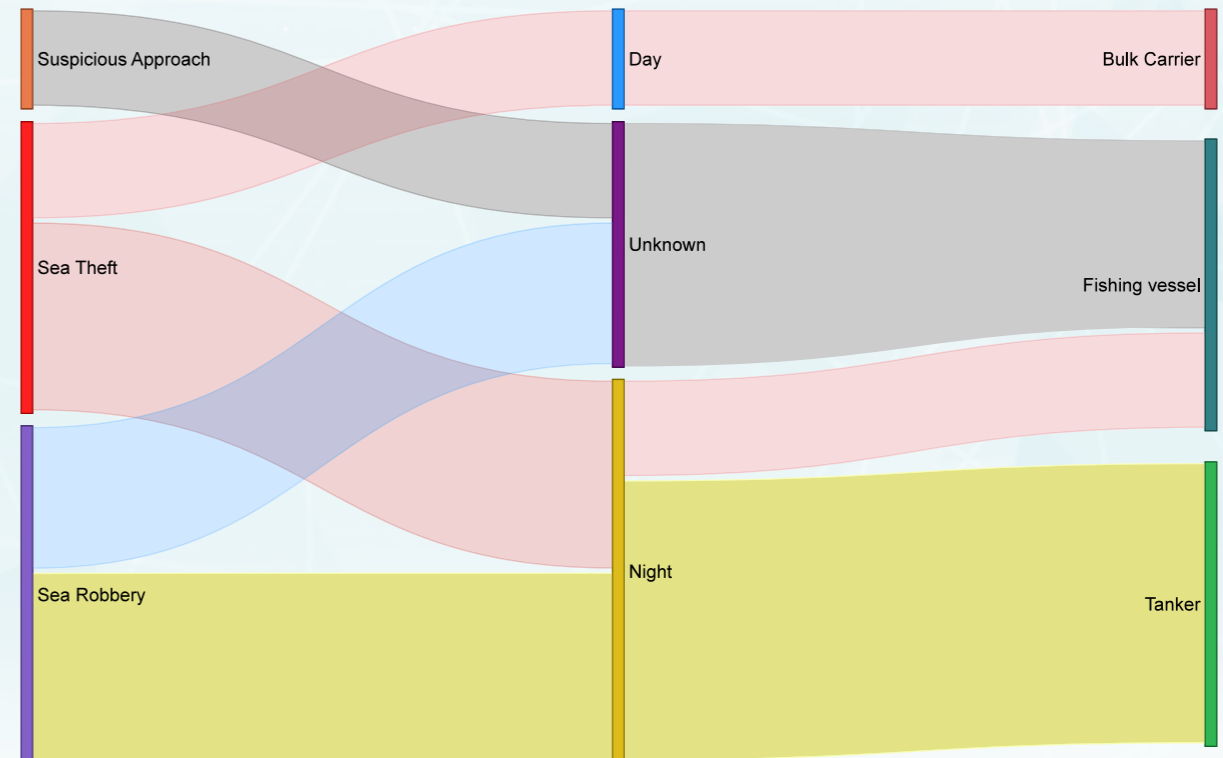
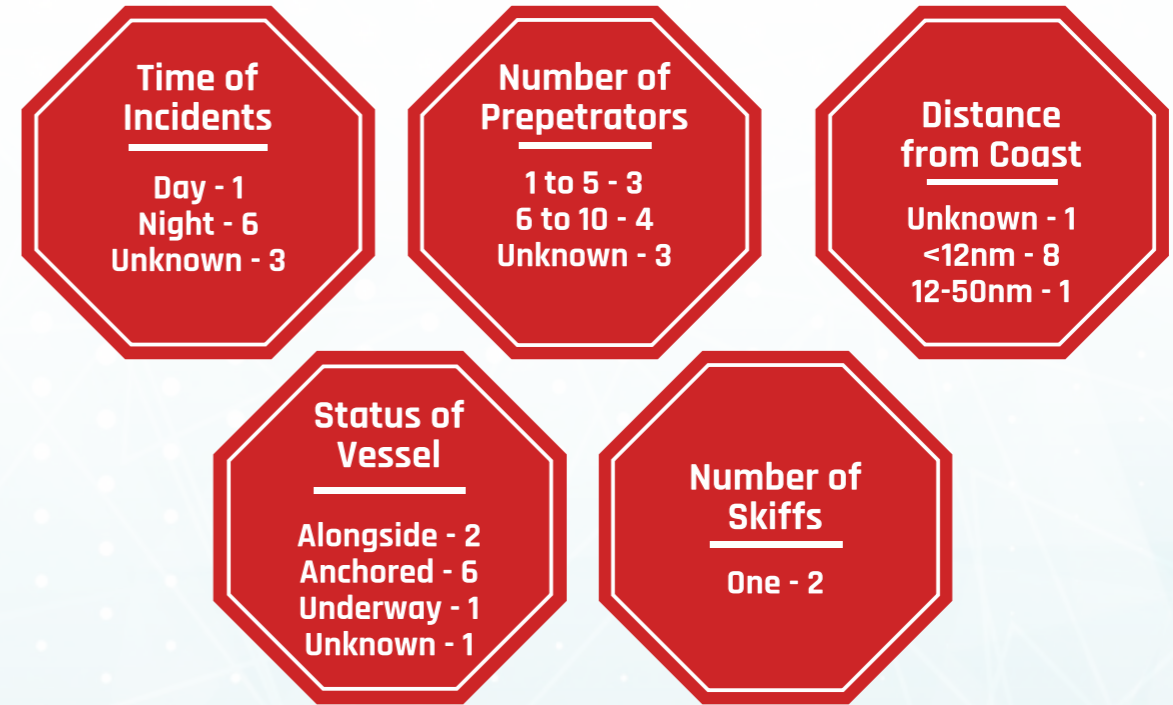
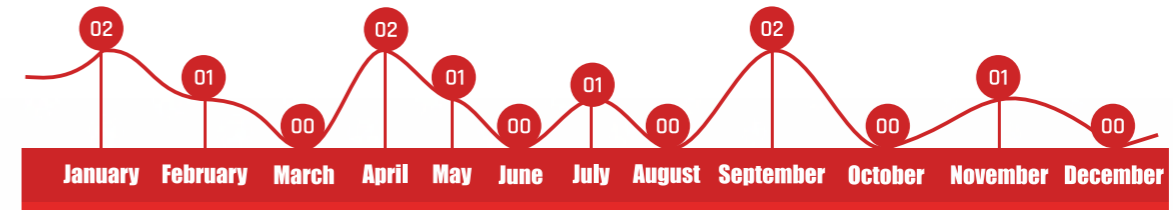
# South Asia

In 2023, South Asia accounted for 10 incidents, a 23% decrease compared to 2022 (13 incidents). Sea robbery (05), sea theft (04) and suspicious approach (01) were reported in this region, primarily at/ near ports and anchorages. Tankers, fishing vessels and bulk carriers, constituted the targeted vessels in this region. 60% of the incidents were reported during the period of darkness. Since this region is home to three of the biggest shipbreaking yards in the world, perpetrators sometimes board vessels on their final journey to steal ships' stores.

On 13 Nov 23, the chemical tanker MT GINGA KITE, anchored at Kandla Anchorage, India, reported a sea robbery. While anchored, eight

to ten perpetrators boarded the tanker from the starboard side using a dinghy. Armed with long knives, axes and steel rods, they stole the ship's stores. The bridge was alerted promptly by a crew member, leading to immediate response from the master and crew. Fortunately, there were no injuries to the crew or damage to the vessel. The incident was investigated by Indian Coast Guard and other law enforcement agencies, resulting in the prompt apprehension of four perpetrators and the recovery of stolen items.

No altercation between the crew and perpetrators was reported in the remaining eight sea robberies and sea thefts.





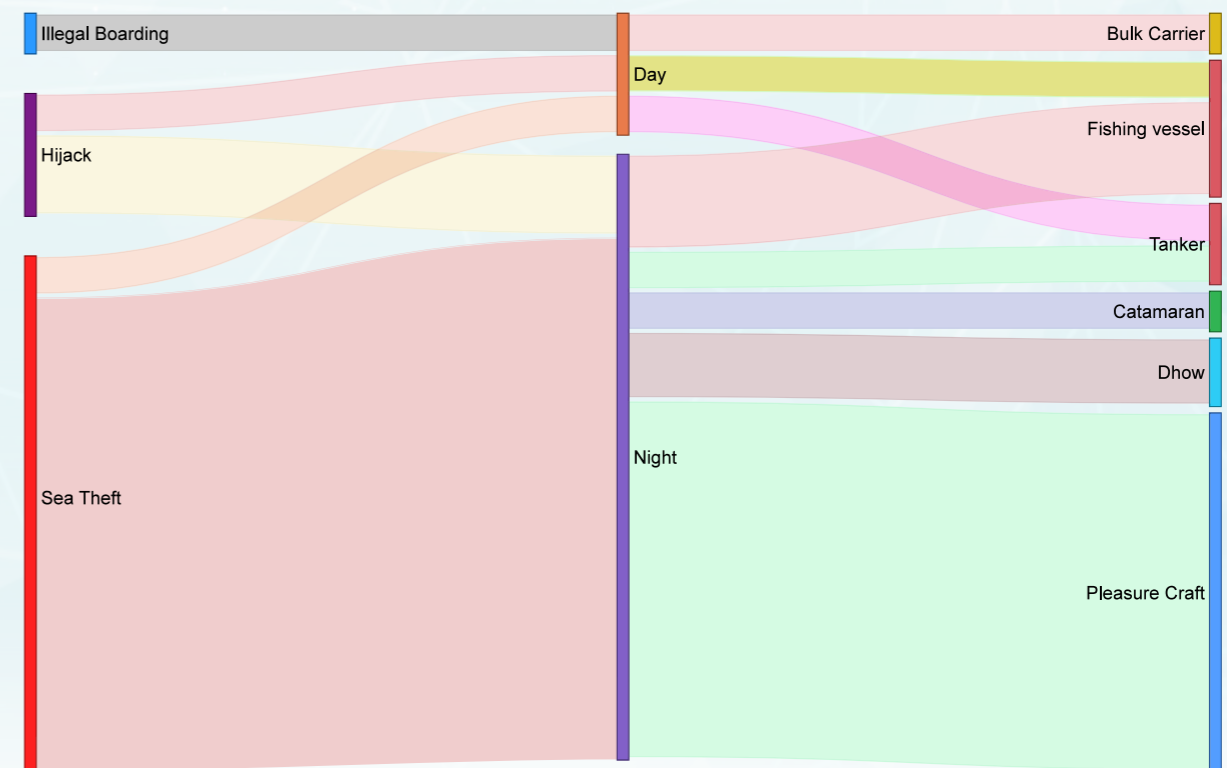
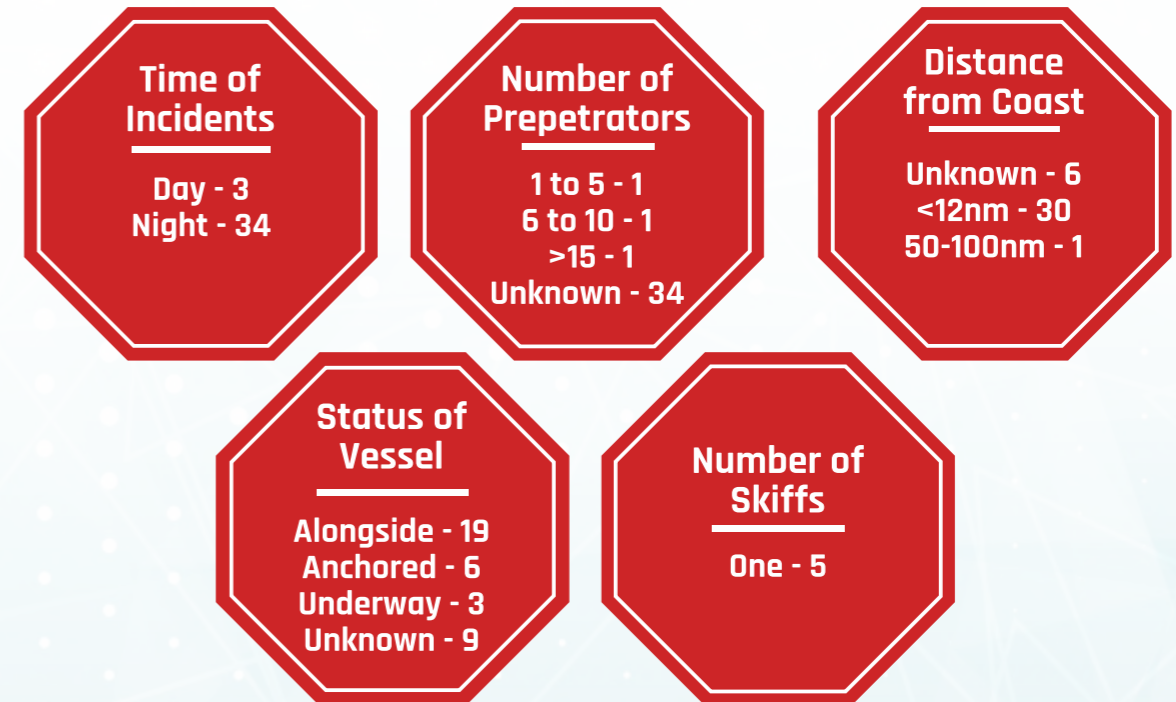
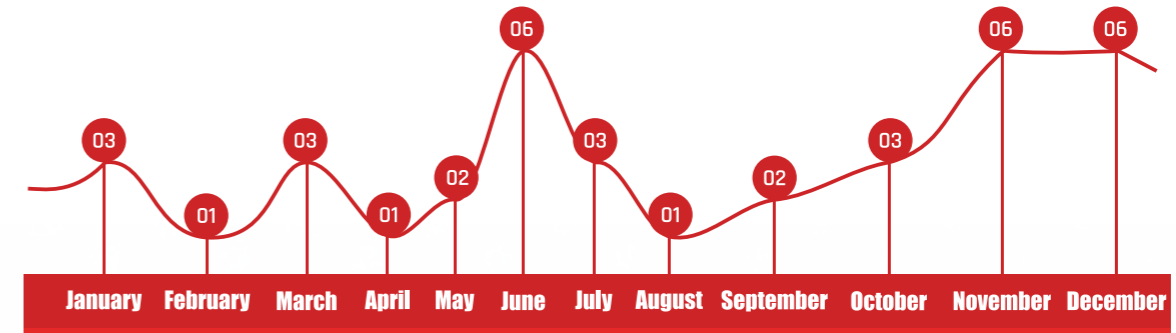
# East Africa

In 2023, East Africa accounted for 37 incidents, a significant increase compared to 2022 (12 incidents). The increase in incidents is due to enhanced reporting by Mauritius and recent hijacking of dhows off the coast of Somalia.

78% of the incidents were reported off Mauritius. These incidents involved unmanned pleasure crafts (83%) moored inside a lagoon during the period of darkness. A few (08) incidents involved perpetrators stealing small pleasure crafts during dark hours. Further, the perpetrators were also observed stealing the ship's stores viz., DBMs, batteries, accessories,

fuel, electronic devices, GPS, ropes and engine spares. Two incidents of sea theft were recorded off Mozambique and five hijacking incidents of dhows were recorded off Somalia.

The classical incidents of piracy off the Somali coast have been suppressed for the last five years. However, recent incidents of hijacking of dhows indicate resurgence of piracy in the region. The ongoing conflict and recent developments in the Red Sea area, removal of HRA w.e.f. 01 Jan 23 and increased IUU fishing activities are likely to pose challenges in East Africa.<sup>6</sup>



<sup>6</sup>The Centre monitored 86 incidents in East Africa, a 69% increase as compared to 2022 (51 incidents). In 2023, 11 foreign fishing boats were seized and 144 foreign fishermen apprehended compared to six fishing boats and 57 foreign fishermen in 2022



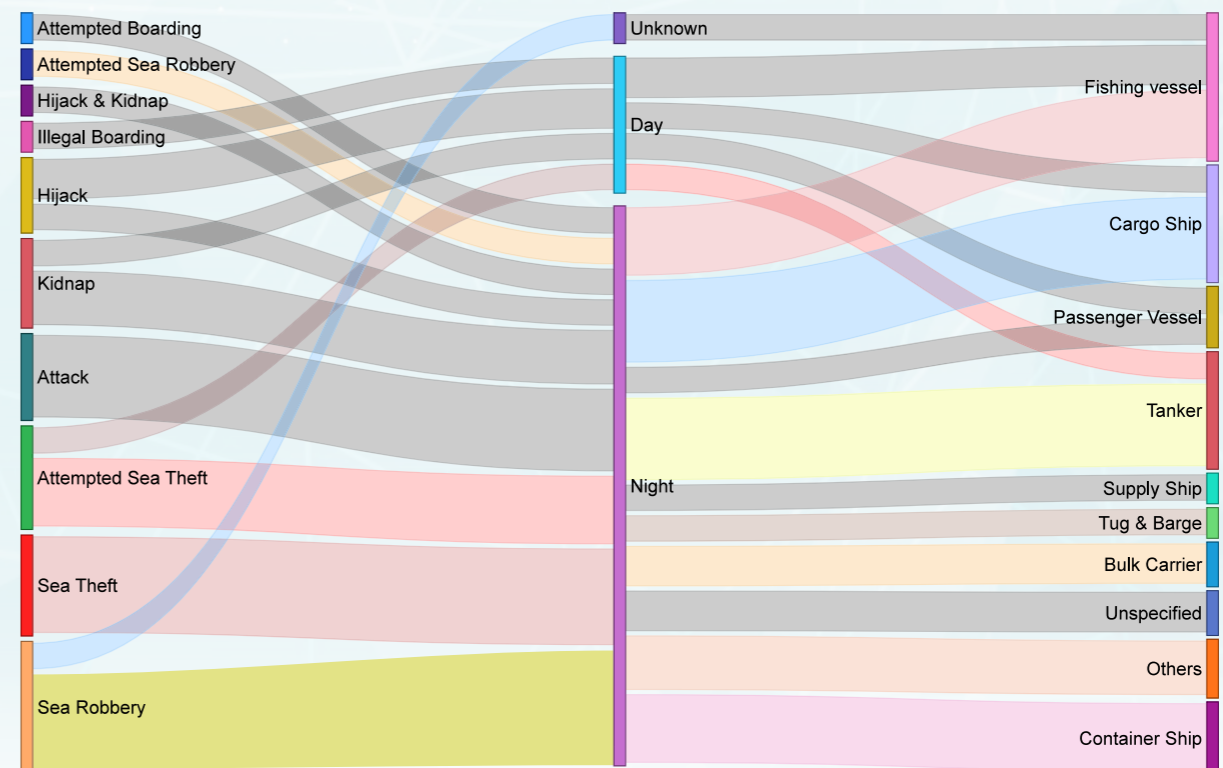
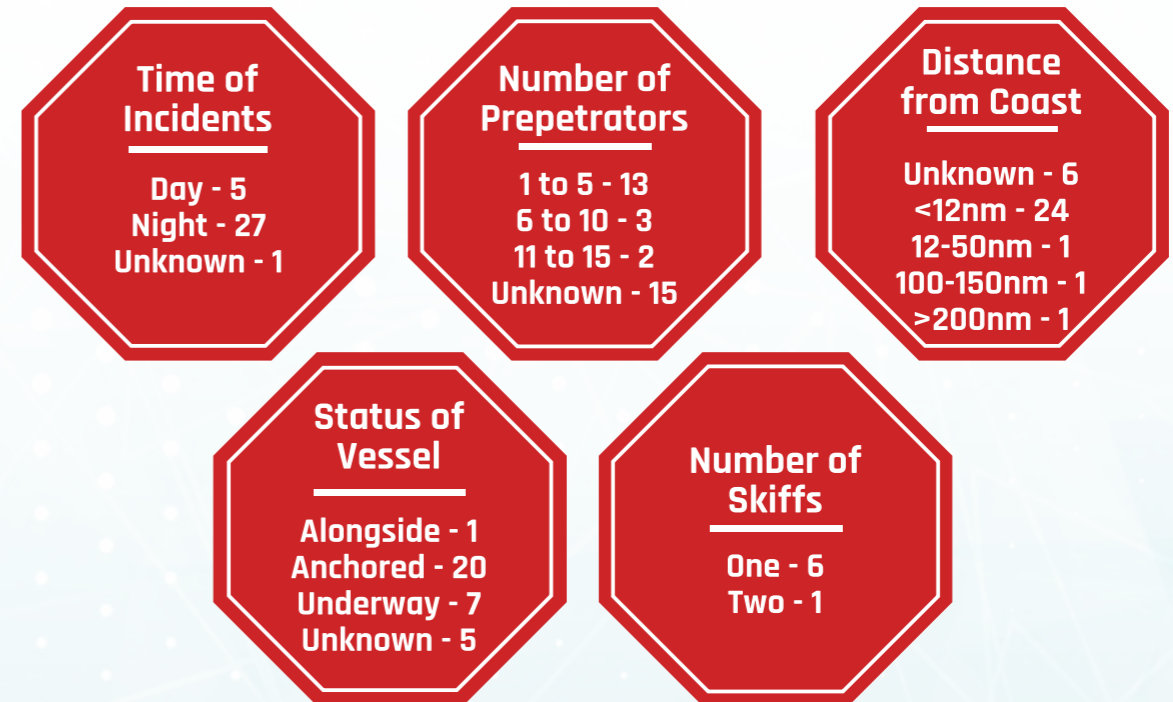
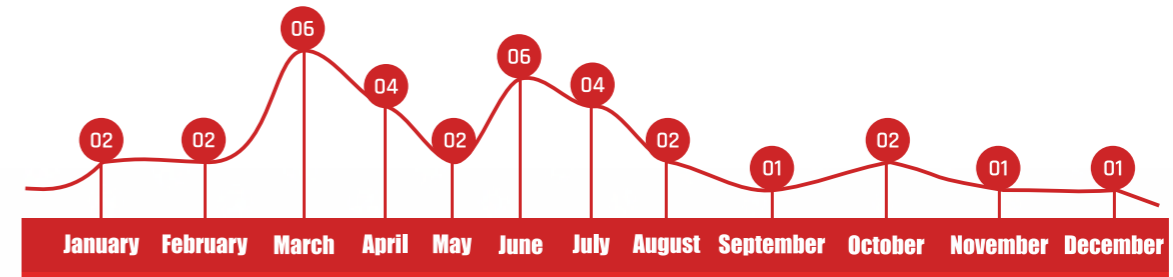
# Gulf of Guinea (GoG)

In 2023, the Centre monitored 33 incidents of piracy and armed robbery, similar to incidents in 2022 (34 incidents). Sea thefts/ robberies (attempted and actual both) accounted for 55% of the incidents and incidents involving attacks, hijack and kidnap accounted for 39% in 2023. Four incidents of kidnaping were recorded compared to one incident in 2022. Fishing vessels (21%), tankers (18%), cargo ships (15%) were the most targeted vessels. A few incidents were also reported onboard bulk carriers, supply ships, tugs and barges. 82% of the incidents were reported during the dark hours.

The perpetrators were armed in nearly 60% (20) of the overall incidents. Four of the armed incidents involved the usage/carriage of guns by the perpetrators. In addition to the high probability of carriage of weapons, the propensity of perpetrators to fire at the vessels is considered a major challenge as it directly affects safety of seafarers. The region

continues to witness violence associated with piracy and armed robbery incidents resulting in one fisherman losing his life and two crew members sustaining severe injuries. Majority (73%) of the incidents were reported within territorial waters. However, one incident was also reported beyond 200nm.

**Significant Incident** - On 25 Mar 23, a Liberian-flagged product tanker, MT MONJASA REFORMER was approached, boarded and hijacked by pirates while underway around 135 nm WSW of Pointe Noire, Congo. The pirates managed to break into the citadel, took all crew members hostage and control of the vessel. All communication with the tanker was lost as the pirates had destroyed the navigational and communication equipment. A missing tanker message was broadcast to ships at sea. On 30 Mar 23, a French Navy warship intercepted the tanker off Bonny, Nigeria. Six out of 16 crew members were reported kidnapped. All six crew members were recovered safely from an undisclosed location in Nigeria in May 23.<sup>7</sup>



<sup>7</sup><https://www.premar-atlantique.gouv.fr/communiqués-presse/le-phm-pm-l-her-localise-et-porte-assistance-au-monjasa-reformer> (Accessed on 26 Dec 23)  
See also: Danish oil tanker crew rescued after hijack off West Africa coast. Al Jazeera. <https://www.aljazeera.com/news/2023/5/8/danish-oil-tanker-crew-rescued-after-hijack-off-west-africa-coast> (Accessed on 26 Dec 23)



## EXCERPTS OF DG SHIPPING CIRCULAR No. 27 OF 2023 DATED 29 DEC 23

Due to the escalation in the number of maritime security-related incidents in the Gulf of Aden, Bab el-Mandeb Strait, Red Sea, Somali Basin and Arabian Sea regions, the Director General of Shipping (DGS), India had issued a Maritime Security Advisory (DGS Circular No. 27 of 2023 dated 29 Dec 23). The Circular is intended for vessels transiting through Persian Gulf, Strait of Hormuz, Gulf of Oman, Arabian Sea, Gulf of Aden, Bab el-Mandeb Strait, Red Sea and Somali Basin regions. The excerpts of the Circular are appended below: -

“In the event of any incidents or security escalation due to incidents stated in this advisory, the communication protocol to be followed generally is as follows: -

- » Contact the nearest coalition warship and Indian Navy vessel using VHF Channel 16, provide the current location, describe the situation, communicate the intended course of action, and seek further guidance.
- » Inform the United Kingdom Maritime Trade Operations (UKMTO), the vessel's Company Security Officer, DGComm Centre (dgcommcentre-dgs@nic.in) with a copy to IFC-IOR (ifc-ior.gurugram@navy.gov.in).
- » Inform other applicable agencies/organisations as relevant based on the region and type of occurrence (such as MRCC, etc).”

“As the conflict in Yemen poses further risks, particularly in the Red Sea and Gulf of Aden, Indian flagged vessels are advised to avoid the country's ports and exercise increased caution in adjacent waters (MS Notice 12 of 2022 dated 02.12.2022). All vessels transiting Persian Gulf, Strait of Hormuz, Gulf of Oman, Arabian Sea, Gulf of Aden, Bab al Mandeb Strait, Red Sea, Somali Basin and Arabian Sea region are advised to share by email the details of the vessel, date/time of transit and Satcom email and telephone details to DGComm Centre (dgcommcentre-dgs@nic.in) with a copy to IFC-IOR (ifc-ior.gurugram@navy.gov.in) in the appended format. Furthermore, all CSOs, Vessels and Masters must consider the heightened security risks given the current scenario. They must adhere to the practices and precautionary measures specified in DGS Circular No. 25 of 2023 dated 05.12.2023 and the SOPs/advisories/Best Management Practices therein. Weekly Maritime Security Updates, as available on the IFC-IOR website, must also be referred to obtain the weekly list of security incidents occurring worldwide.”

Read More:  
<https://www.dgshipping.gov.in/writereaddata/ShippingNotices/202312290232380355393MSBDGSCircular27of2023dated29dec2023approved.pdf>



भारत सरकार / GOVERNMENT OF INDIA  
पत्तन, पोत परिवहन और जलमार्ग मंत्रालय  
MINISTRY OF PORTS, SHIPPING AND WATERWAYS  
नौवहन महानिदेशालय, मुंबई  
DIRECTORATE GENERAL OF SHIPPING,  
MUMBAI



भारत सरकार  
भारत गुरुग्राम

F.No. File No: 28-11/3/2023-MSB

Date -29.12.2023

### DGS Circular No. 27 of 2023

Sub.: Maritime Security Advisory on the security situation in the Persian Gulf, Strait of Hormuz, Gulf of Oman, Arabian Sea, Gulf of Aden, Bab al Mandeb Strait, Red Sea, Somali Basin and Arabian Sea region - reg.

For the attention of Ship Owners, Ship Managers, Shipping Agents, RPSL Agents, Ship Masters, Seafarers, Charterers, Recognised Organisation & Recognised Security Organisation, Coastal Indian States including Administrations of Union territories and State Maritime Boards.

1. This advisory is issued given further developments due to the escalation in the number of security-related incidents in the Gulf of Aden, Bab al Mandeb Strait, Red Sea, Somali Basin and Arabian Sea region. The Indian government consistently monitors the maritime security environment to ensure the safe and secure passage of vessels, maintain uninterrupted trade flows, and safeguard Indian ships, crew, and maritime interests.
2. In the event of any incidents or security escalation due to incidents stated in this advisory, the communication protocol to be followed generally is as follows:
  - 2.1. Contact the nearest coalition warship and Indian Navy vessel using VHF Channel 16, provide the current location, describe the situation, communicate the intended course of action, and seek further guidance.
  - 2.2. Inform the United Kingdom Maritime Trade Operations (UKMTO), the vessel's Company Security Officer, DGComm Centre ([dgcommcentre-dgs@nic.in](mailto:dgcommcentre-dgs@nic.in)) with a copy to IFC-IOR ([ifc-ior.gurugram@navy.gov.in](mailto:ifc-ior.gurugram@navy.gov.in)).
  - 2.3. Inform other applicable agencies/organisations as relevant based on the region and type of occurrence (such as MRCC, etc).
3. **Gulf of Aden:** In the event any vessel receives a VHF communication from entities claiming to be the "Yemeni Navy" directing them to change course towards Al Hudaydah or another location on the northwest coast of Yemen, the following steps should be taken.



## IFC-IOR Recommendations

- » Action by crew in case of pirate attack, as elucidated in the Best Management Practices (BMP5, BMP WA).<sup>8,9</sup>
- » Ensure citadel(s) onboard MVs are fully functional and adequately equipped.
- » Need to remain in the citadel in case of a pirate attack till communicated by a naval/ law-enforcement unit to exit.
- » In some instances, the perpetrators were observed carrying knives, guns, rods or similar weapons. It is likely that the perpetrators may cause harm while attempting to escape from the vessel or may turn violent upon being provoked. The Centre advises seafarers to avoid confrontation with the perpetrators especially when armed.
- » Vessels are advised of the possibility of mis-identification of small/ fishing vessels, which sometimes operate as a cluster. Accordingly, adequate caution is to be exercised by vessels with Privately Contracted Armed Security Personnel (PCASP) embarked.
- » Proactive and timely reporting to relevant agencies as per established procedures is critical to ensure appropriate and timely assistance to vessels under attack.<sup>10</sup>
- » As Pirate Action Groups (PAG) have displayed capabilities to attack vessels more than 200 nm from the coast in the Gulf of Guinea and East Africa, unescorted vessels are advised to remain vigilant at distances less than 250 nm from the coast and avoid drifting.
- » Utilisation of short-range and long-range scales in radar watchkeeping with relative motion (trails on) will enable ship's crew to detect non-AIS contacts approaching the vessels, especially in restricted waters which might alert the crew to an actual/ attempted attack.
- » Vessels are recommended to maintain a sharp look out using all available means and look out for small crafts closing at high speeds. If small boats continuously follow or close the vessel, increase speed to maximum and clear the area.
- » Adherence to respective flag state, IMO and coastal state guidance is strongly recommended.

<sup>8</sup>BMP5 - Best Management Practices To Deter Piracy And Enhance Maritime Security in the Red Sea, Gulf Of Aden, Indian Ocean and Arabian Sea, Version 5-2018.

<sup>9</sup>BMP WA - Best Management Practices to Deter Piracy and Enhance Maritime Security for Vessels & Mariners Operating Off the Coast of West Africa including the Gulf of Guinea consolidates and enhances existing guidance for specific threats in this region. First Edition - 2020.

<sup>10</sup>Indian Maritime Safety and Security Chart. Available at [https://www.indiannavy.nic.in/ifc-ior/static/data/reports/others/5.%20Indian\\_Maritime\\_Safety\\_and\\_Security\\_Chart\\_2021.pdf](https://www.indiannavy.nic.in/ifc-ior/static/data/reports/others/5.%20Indian_Maritime_Safety_and_Security_Chart_2021.pdf)





# CONTRABAND SMUGGLING





# CONTRABAND SMUGGLING

## Overview

Contraband smuggling involves the unauthorised transportation and distribution of prohibited goods, evading legal and regulatory frameworks through both land and maritime routes. Of particular concern is the smuggling of drugs, which has emerged as a grave menace, fuelling addiction, crime and adversely affecting well-being, employment and health. Several regional law enforcement agencies have observed and highlighted a sharp increase in contraband smuggling through sea routes in recent years, particularly masquerading as legitimate cargo.

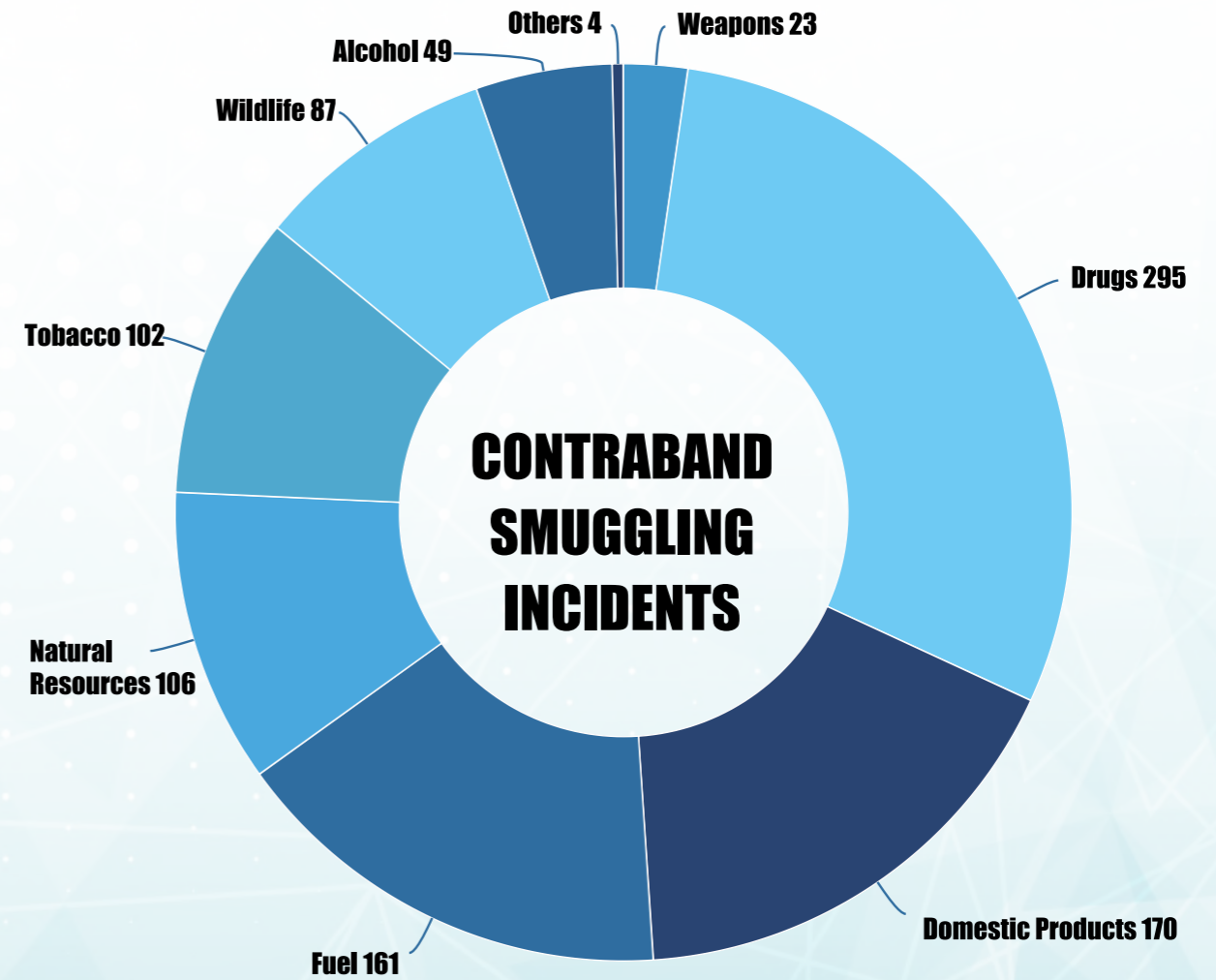
The Indian Ocean Region (IOR) continues to witness high volumes of narcotics smuggling and associated maritime crimes, along the Hash Highway and Smack Track, as also concentrated in the Golden Triangle and Golden Crescent.<sup>1</sup>

In 2023, the Centre recorded 958 instances/seizures of contraband smuggling which constituted 997 incidents, as some of the recorded instances had multiple categories of contraband being smuggled. An upsurge of 18% was recorded as compared to 811 instances in 2022.



The recorded incidents have been classified into nine categories: Drugs, Domestic Products, Natural Resources, Fuel, Tobacco, Alcohol, Weapons, Wildlife and Others<sup>2</sup>. This rise in overall numbers is attributable to an increase in incidents involving smuggling of natural resources and wildlife. Smuggling of narcotics

remains the most frequently reported type of contraband incident in 2023, akin to 2022, representing 30% of the total incidents. Domestic products and fuel smuggling, each accounting for 16% of the recorded incidents, were the second most prevalent contraband types.



<sup>1</sup>World Drug Report 2023 - UNODC

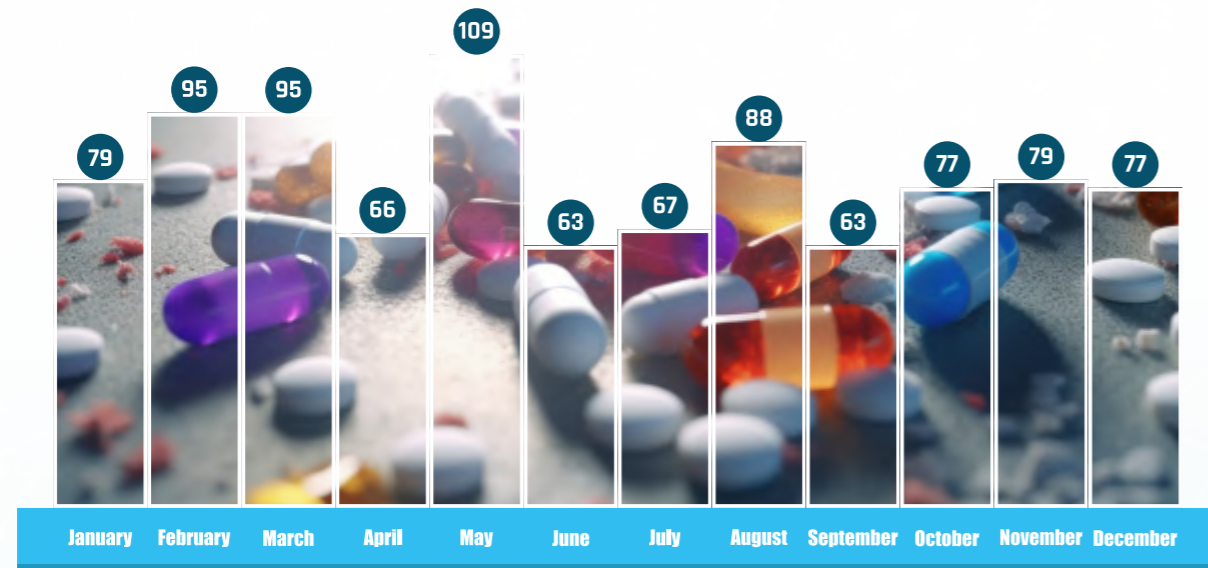
<sup>2</sup>Four incidents related to seizures of electrical/ electronic waste, scrap metals, counterfeit currency and fertilizers smuggling.





## Month Wise Breakdown

The Centre recorded a monthly average of 80 instances/ seizures in 2023. May 23 saw a spike in the number of incidents recorded, driven by an increase in the number of drug smuggling incidents.



Some of the key findings of the UNODC Research Brief of November 2023, titled 'Afghanistan Opium Survey 2023 Cultivation and Production after the Ban: Effects and Implications' are reproduced below:-

Opium production saw a 95% decline from 6,200 tonnes produced in 2022 to 333 tons in 2023.

The decline in opium cultivation was met by an increase in cultivation of wheat, as farmers sought out alternatives. Wheat shares a similar crop cycle with opium; both are sown around the same times. Consequently, farmers that previously cultivated opium opted at the beginning of the season to cultivate wheat.

The loss of opium income from the sharp reduction in production puts many rural households at greater economic risk. Reduced incomes along the Afghan opiate supply chain could stimulate alternative illicit activities, potentially leading to increased trafficking in other substances such as synthetic drugs like methamphetamine, or expansion of other organized criminal activities in the broader regions. These could include expansion of illicit arms trafficking, human trafficking and smuggling of migrants, illegal mining or trafficking in cultural property.

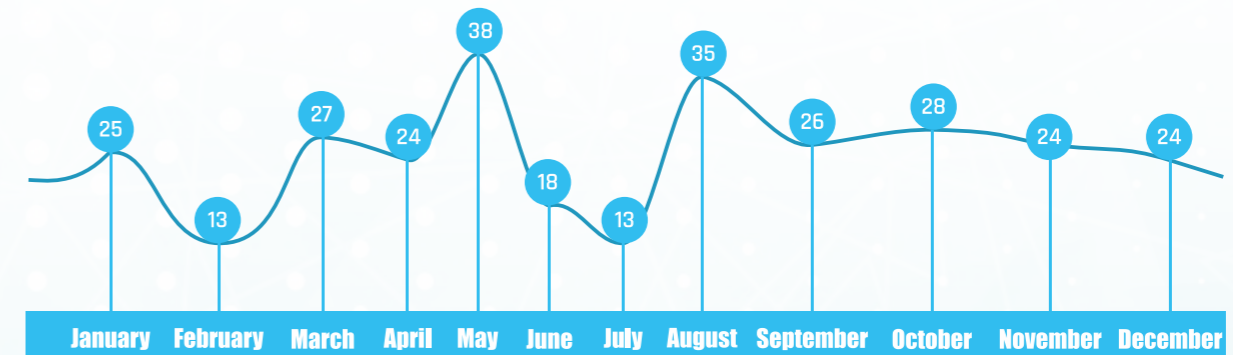
Data on seizures in and around Afghanistan indicate that following the ban, opium inventories from past recorded harvest are being sold off, while heroin processing has decreased. Meanwhile, methamphetamine trafficking continues to surge in the region.

Source: UNODC

## Drugs

The Centre recorded 295 instances of drug seizures in the wider IOR in 2023, a decrease of 7% compared to 2022 (318 instances).<sup>3</sup> As some of the recorded instances involved multiple types of drugs being seized, hence taken individually, there were 351 incidents in 2023, as compared to 398 in 2022. Cumulatively, 132 tonnes of various drugs estimated to be worth over USD 306 billion were seized. The decrease in the number of drug seizures from the last

year, may be attributable to strict law enforcement by regional authorities, enhanced screening/ risk profiling at ports, efforts of multinational forces (especially in the Western Indian Ocean) and international collaboration across IOR and adjoining seas. Major drug seizures in the IOR centred mainly around large shipments of Amphetamine Type Stimulants (ATS) such as methamphetamine, cannabinoids and opioids such as heroin.



The monitored seizures follow a smuggling lifecycle that highlights regional manufacturing hubs and seaborne routes. In 2023, in two instances both drugs and weapons were seized, hence it is likely that drug smuggling networks are also exploited for smuggling of weapons. One of these seizures was made by Bangladeshi authorities and another by Kuwait authorities. The inadequate regulation of

weapons in certain drug production regions within the IOR poses a risk of similar incidents occurring in the future. The relatively low number of cases involving the seizure of both drugs and weapons may be attributed, in part, to the modus-operandi of smugglers, who are likely to ditch weapons as soon as authorities approach them for investigation.

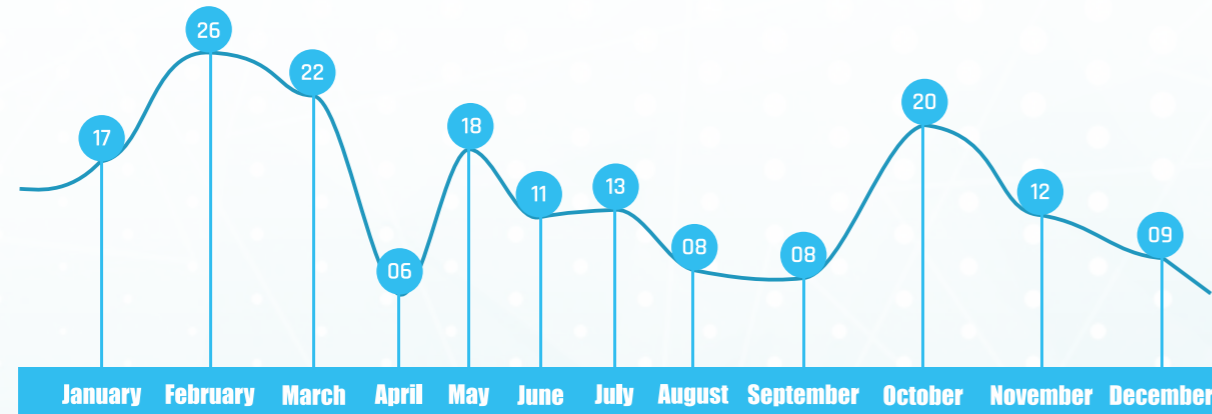
<sup>3</sup>Drugs encompasses narcotics and psychotropic substances such as Amphetamine Type Stimulants (ATS including amphetamine, amphetamine pills, meth or crystal meth syabu, captagon pills and yaba pills), Cannabinoids (hashish, cannabis, marijuana), Opioids (heroin, methadone tablets, morphine and opium), Ecstasy (ecstasy pills) and Others (cocaine, khat, kratom juice, synthetic drugs, ketum leaves and unspecified).



## Domestic Products

Smuggled domestic products included a wide range of common household products or manufactured items. The Centre monitored 170 instances of domestic products smuggling in 2023 as compared to 127 instances in 2022. A significant portion of the incidents involved employment of small vessels and may be attributable to the pattern of life in the region and the disparity in prices amongst neighbouring countries. The Centre also observed the smuggling of food products (both fresh and processed),

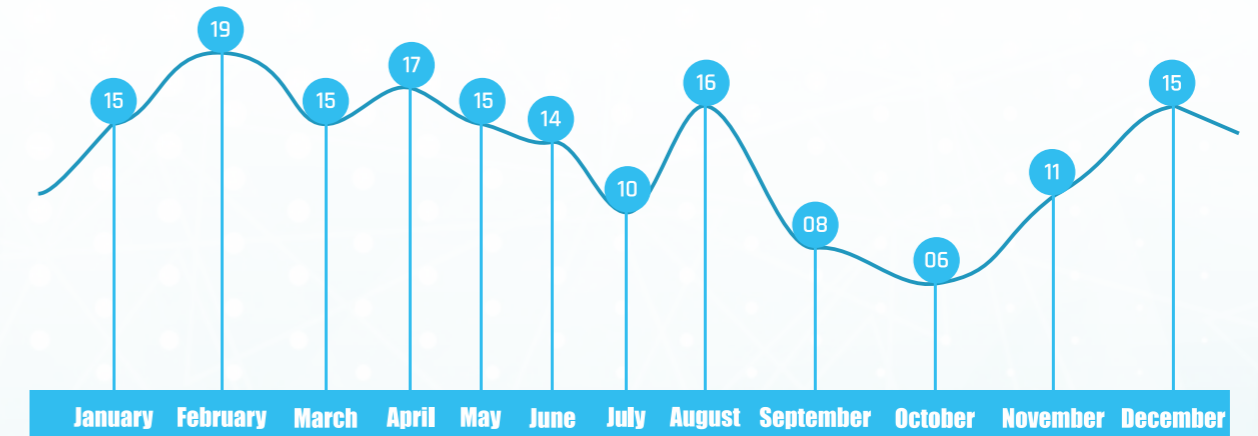
cosmetics, garments, electronic items, etc in containers. Further, the early period of 2023 saw an increase in onion smuggling incidents in the Philippines. The combination of a nationwide shortage and vast domestic consumption resulted in skyrocketing onion prices. The perpetrators' effort to circumvent import duties/ restrictions that the destination country imposed to safeguard respective agricultural sectors continues to fuel domestic product smuggling incidents.



## Fuel

In 2023, the Centre monitored 161 instances of fuel smuggling as compared to 133 instances in 2022. The recorded incidents generally include smuggling of subsidised fuel using small tankers and modified cargo/ fishing vessels. These vessels are utilised for unauthorised ship-to-ship fuel transfers especially in anchorage areas. Such incidents in the Straits of Malacca and Singapore are likely to be driven by economic considerations

that enable vessels to stay at sea for longer durations. Incidents recorded also reveal a pattern of small vessels coming close either to bigger vessels at anchor or close to the coast to obtain fuel, which is further landed in an adjoining country. Such incidents involve the exchange of money or other goods and are unlikely to be possible without the involvement of atleast some members of the crew of the supplying vessel.

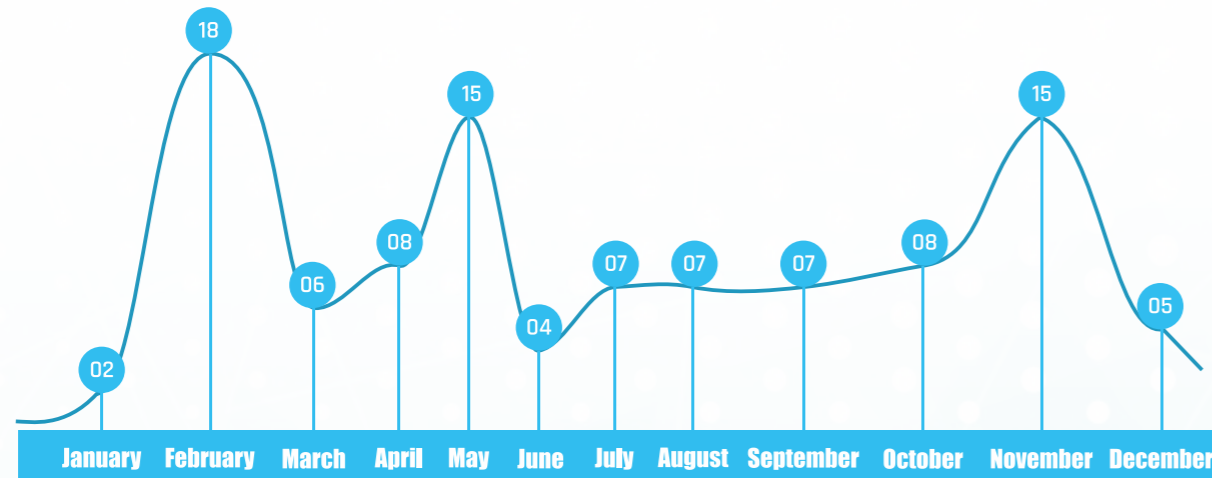




# Tobacco

A total of 102 instances of tobacco smuggling were recorded in 2023, a minor decrease, as compared to 111 instances in 2022. Large scale seizures were observed from both containerised cargo and small cargo boats.

76% of the tobacco smuggling incidents were recorded in South East Asia, followed by South Asia, East Africa and West Asia. Illicit tobacco products are smuggled due to the demand for cheaper products and disparate pricing in adjacent countries.



# Weapons

23 instances involving smuggling of weapons were recorded in 2023, a 64% increase compared to 2022 (14 instances). Two of the recorded incidents involved relatively small quantities of weapons seized along with drugs and/ or other contraband. The details of major seizures of weapons recorded in the region are as follows: -

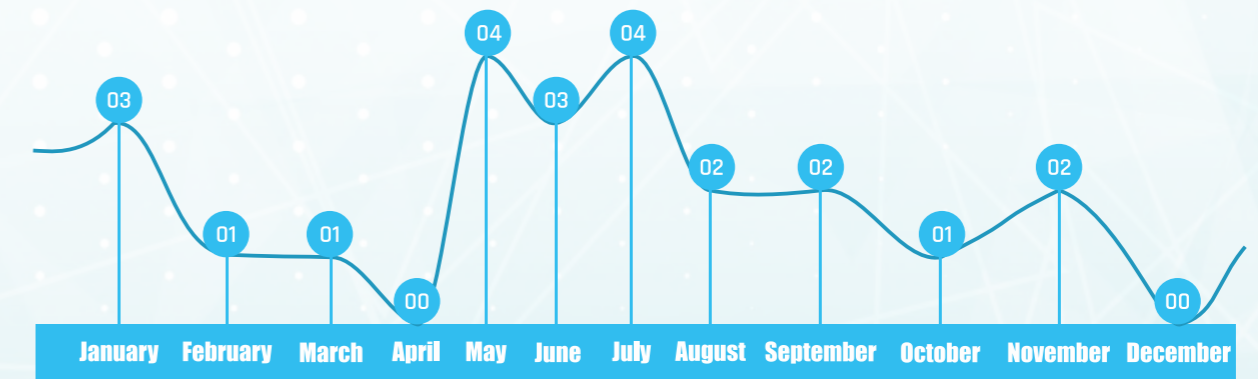
**In Jan 23,** US CENTCOM reported a seizure of 5,100 assault rifles, 578,000 rounds of ammunition and 23 advanced anti-tank guided missiles from a fishing vessel in the Gulf of Oman in two separate incidents.<sup>4</sup> The seized weapons were likely destined to Yemen.

**In Feb 23,** Royal Navy Frigate HMS LANCASTER seized a consignment of anti-tank guided missiles and medium-range ballistic missile

components from a small boat in the Gulf of Oman.<sup>5</sup>

The integral helicopter tracked the boat. The smugglers initially ignored hails from the Royal Navy and attempted to navigate into the territorial waters of Iran. The Royal Marines boarded the vessel, seized suspicious packages containing the contraband and apprehended two smugglers.

**In May 23,** Somali authorities seized various types of weapons and ammunition (explosives, drones, IEDs, etc.) at Mogadishu Port, Somalia in two separate incidents. These weapons were concealed inside commercial goods. 20 suspects were apprehended in these incidents.



<sup>4</sup>U.S. Central Command supports partner forces in major Iranian weapons seizure (2023) U.S. Central Command. Available at: <https://www.centcom.mil/MEDIA/PRESS-RELEASES/Press-Release-View/Article/3285024/us-central-command-supports-partner-forces-in-major-iranian-weapons-seizure/>

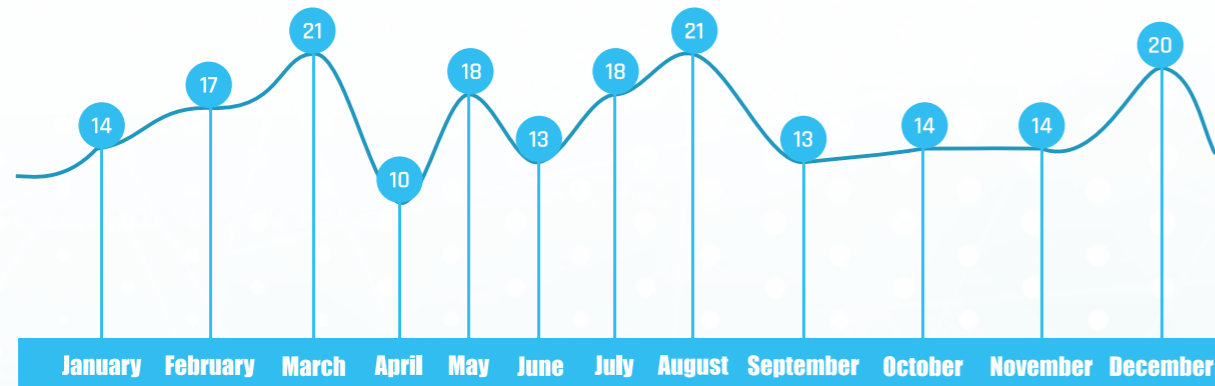
<sup>5</sup>Si, M. (2023) HMS Lancaster seizes anti-tank missiles after high-speed chase in Gulf of Oman. Available at: <https://www.royalnavy.mod.uk/news-and-latest-activity/news/2023/march/02/20230302-hms-lancaster-arms-haul>



## Wildlife and Natural Resources

The Centre monitored 87 wildlife smuggling instances in 2023 compared to 49 instances in 2022, with 45% seizures recorded in South Asia. Sea cucumbers, turtle products, birds and shark fins were observed to be the most smuggled wildlife products. This increase in overall numbers is primarily attributable to increased incidents involving sea cucumber

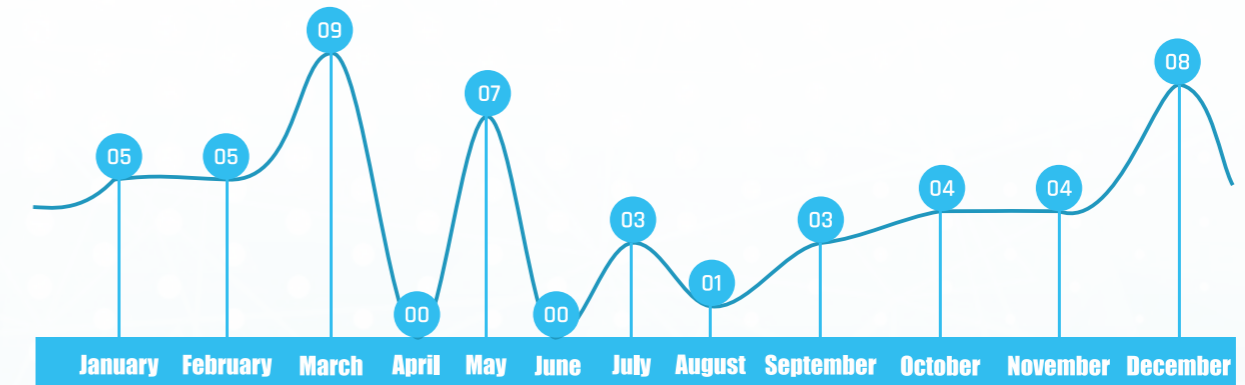
seizures. A total of 106 instances of natural resource smuggling were recorded in 2023, as compared to 48 incidents in 2022. The majority of these incidents were recorded in South Asia (60 out of 106 incidents). Amongst the natural resources seized, the most common were wood, precious metals and kendu leaves used in rolling tobacco into low-cost cigarettes (beedi).



## Alcohol

Alcohol smuggling incidents in the region were mainly driven by attempts to evade duties, bans or restrictions on consumption, providing a lucrative market for smuggling. Of the 49 instances reported in 2023 (as compared to 42 instances reported in 2022), 73% were monitored in South East Asia, where the

archipelagic nature of the area allows for illicit transfers to be conducted with relative ease using sea routes. Some of the incidents recorded illegal transport of domestically produced liquor via sea routes between different parts of the same country.

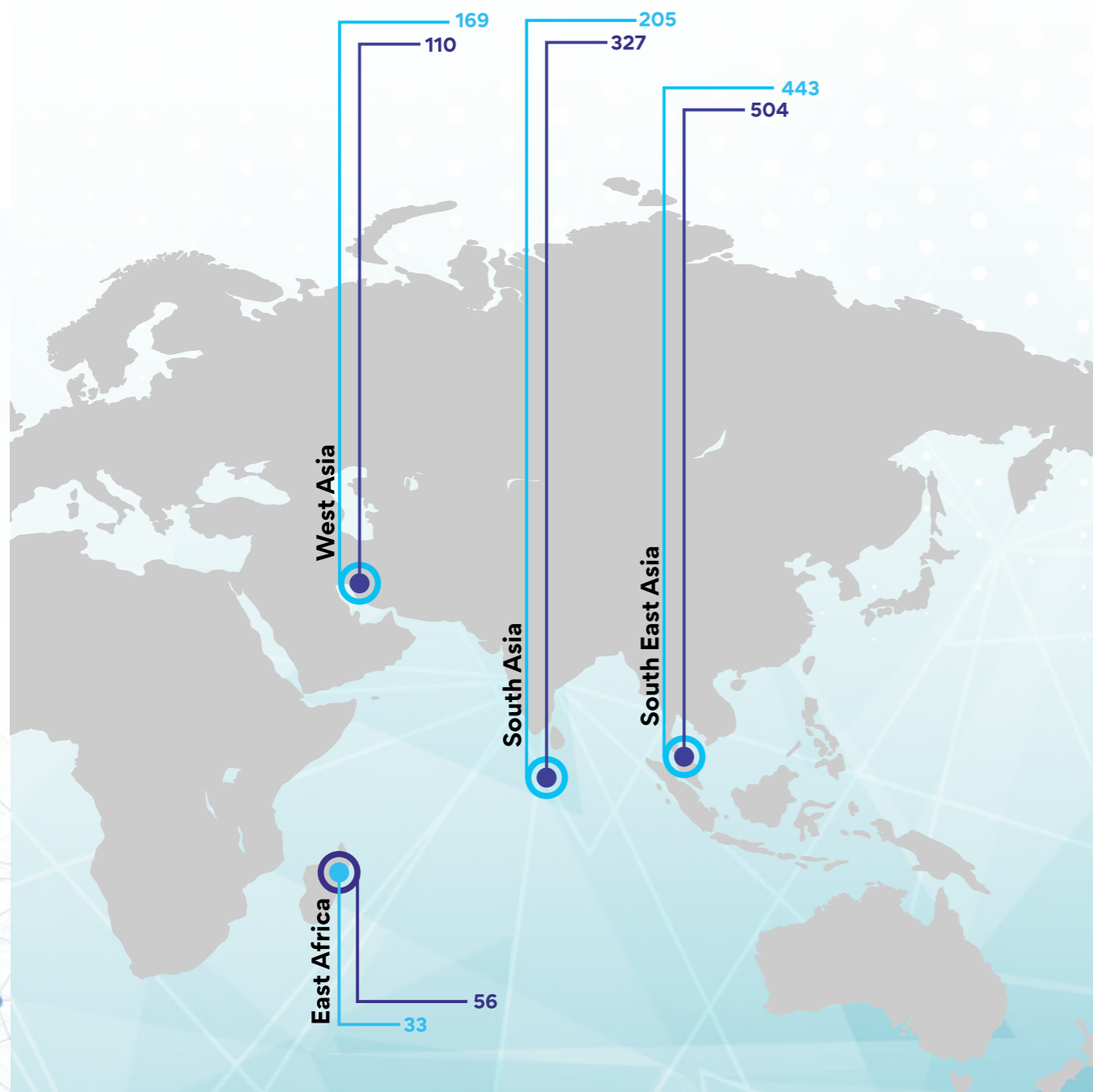




## Regional Analysis

The instances recorded by the Centre have been geographically grouped under four regions namely, East Africa, West Asia, South Asia and South East Asia to delve into region-specific dynamics and trends.

Year ● 2022 ● 2023

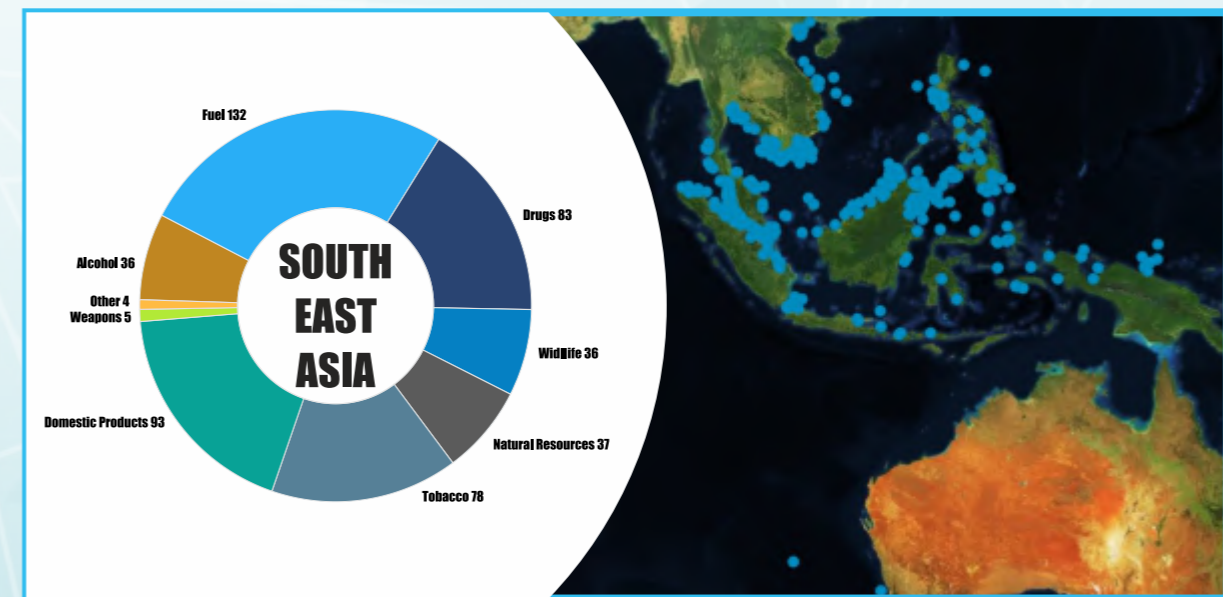
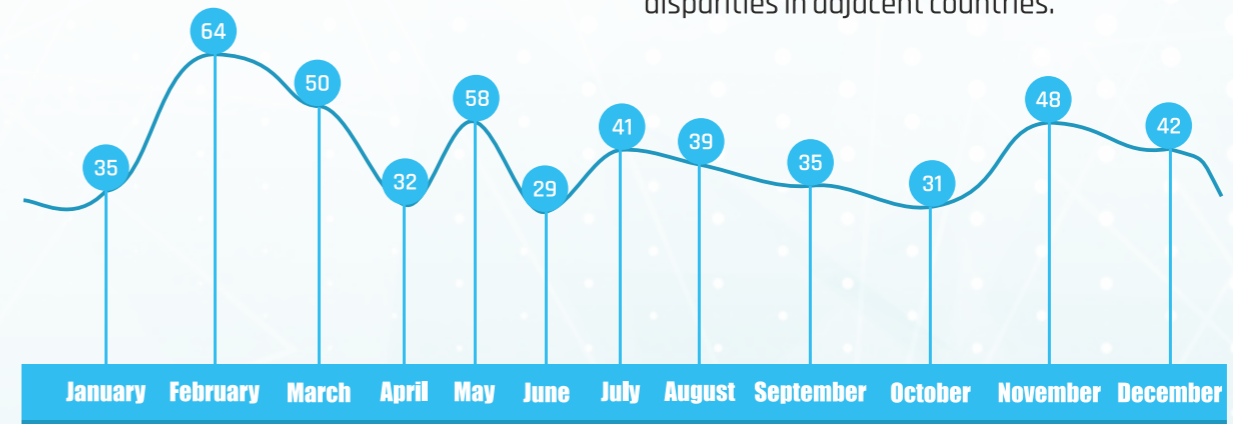


## South East Asia

South East Asia recorded a 14% increase in 2023, totalling 504 instances compared to the previous year's 443. Fuel smuggling (132) led the list, followed by domestic products (93), drugs (83), tobacco (78), natural resources (37), wildlife (36), alcohol (36), weapons (05) and others (04). The availability of lower-priced fuel in Vietnam and Malaysia compared to neighbouring countries is the major cause of the large number of reported cases of fuel smuggling. Smugglers, often utilising tugs and fishing trawlers fitted with concealed extra tanks, engaged in ship-to-ship transfers at sea, employing barrels and jerry cans for

fuel transfer. This modus operandi has evolved into a lucrative business for fishing trawler operators, providing them with cost-effective fuel and saving significantly the time required for bunkering in a port. Heightened opium production in the Golden Triangle has contributed to increased drug seizures in the region. Methamphetamine seizures, the most prevalent among drugs, experienced a 41% decrease compared to 2022.

Tobacco and alcohol smuggling incidents accounted for 23% (114) of the reported incidents in this region and were driven by the demand for cheaper products by consumers seeking to evade high taxes and pricing disparities in adjacent countries.

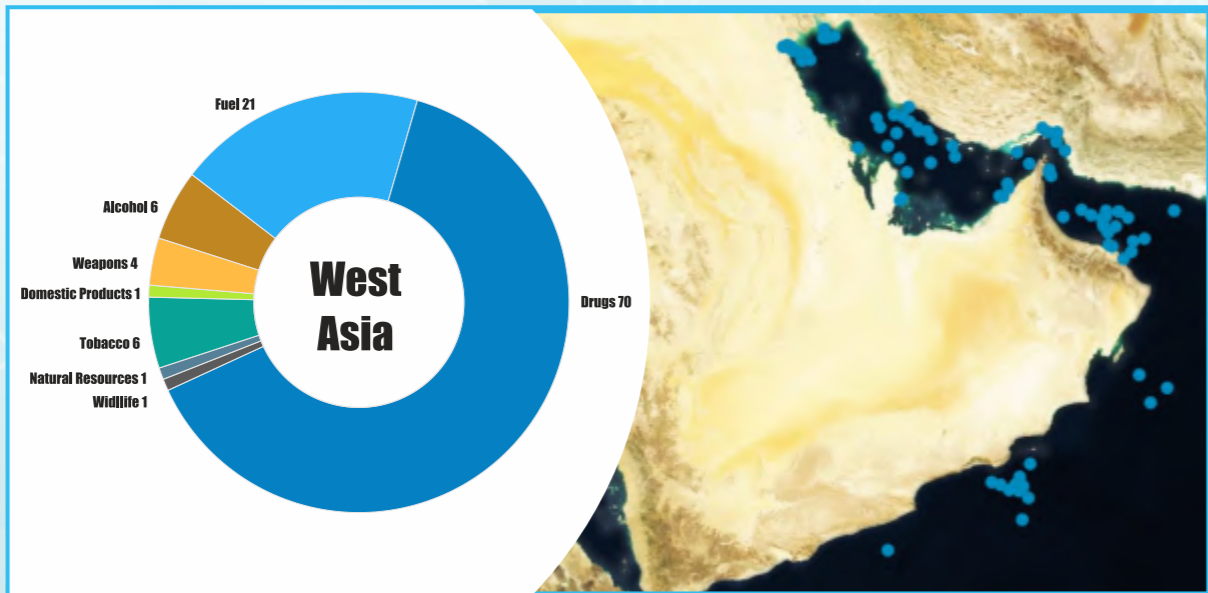
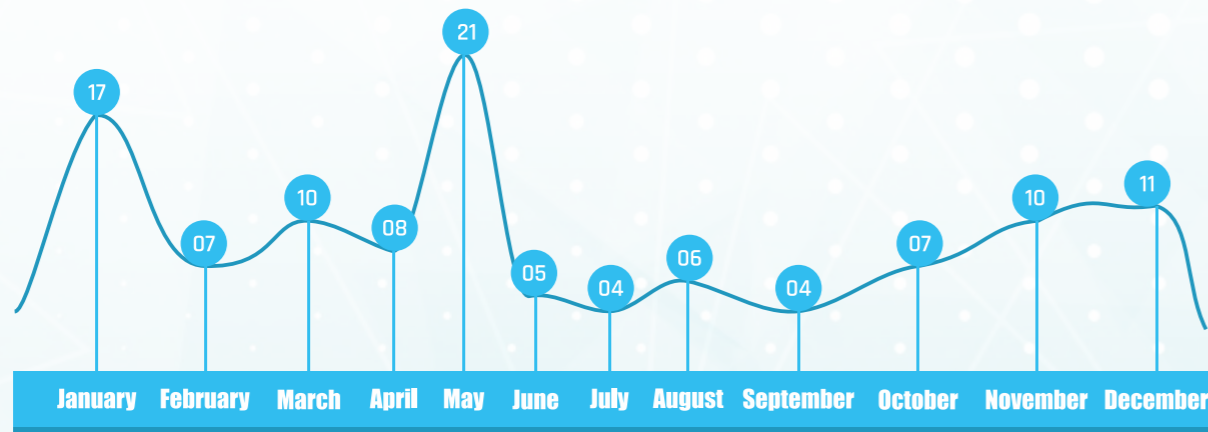




## West Asia

In 2023, West Asia experienced a notable 35% decrease, recording 110 instances compared to the previous year's 169. Drugs (70) topped the list, followed by fuel (21), tobacco (06), alcohol (06), weapons (04), domestic products (01), wildlife (01) and natural resources (01). Among drug-related cases, predominant seizures included ATS (32 incidents), cannabinoids (16 incidents), opioids (05 incidents) and others (17). Notably, small boats and dhows emerged as the primary modes of transportation for drug shipments in West Asia.

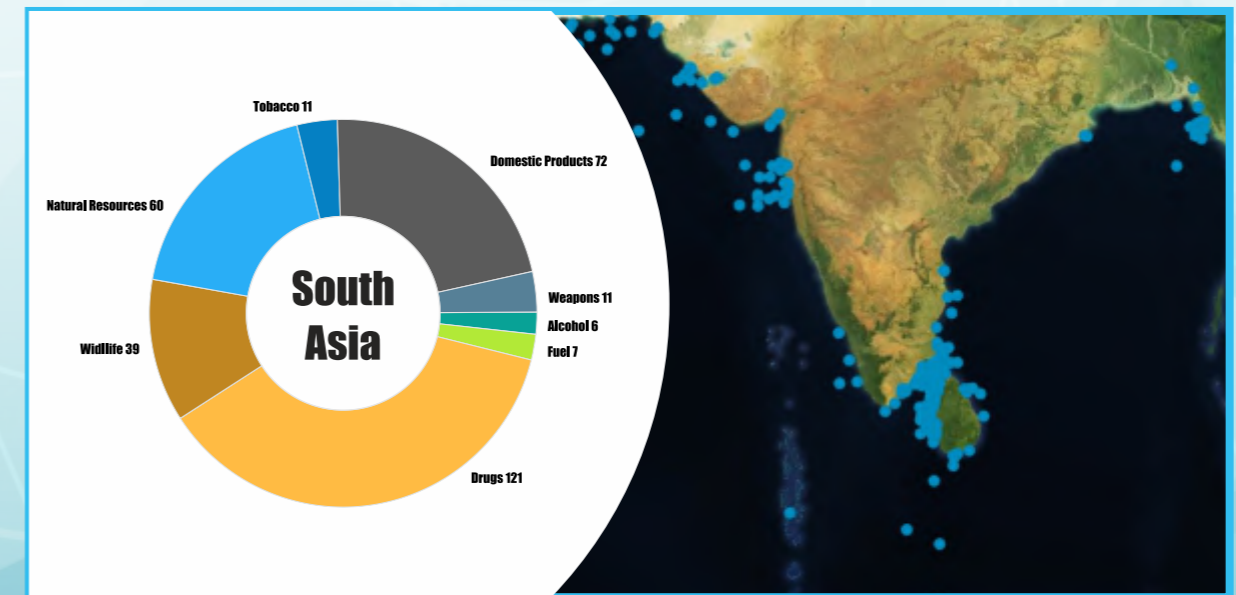
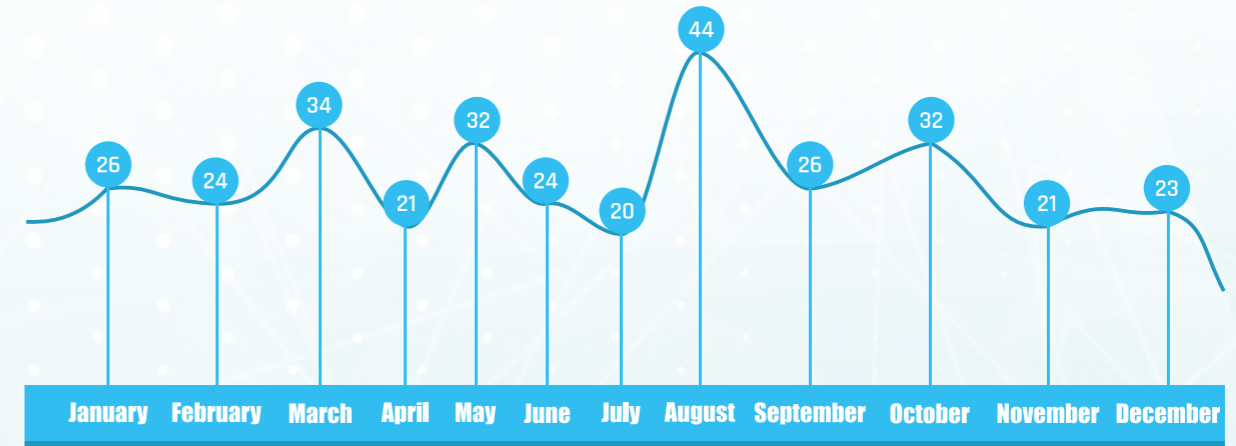
The region also ranked as the second-highest contributor of fuel smuggling incidents, mainly concentrated in the Persian Gulf, where a total of 15.4 million litres of fuel were confiscated. Fuel subsidies in certain Persian Gulf countries is a key driver of fuel smuggling in this region. Additionally, West Asia faces significant challenges related to weapon smuggling, with international forces recovering over 5,100 assault rifles, 578,000 rounds of ammunition, and 23 modern anti-tank guided missiles from small boats and dhows operating in the area.



## South Asia

In 2023, South Asia saw a significant 60% increase, recording 327 instances compared to the previous year's 205. The reported incidents spanned a range of contraband, with drugs (121) leading the tally, followed by domestic products (72), natural resources (60), wildlife (39), weapons (11), tobacco (11), fuel (07) and alcohol (06). Notably, the majority of drug smuggling incidents in South Asia involved the seizure of cannabis. Additionally, the confiscation of kendu leaves, utilised in the local production of cigarettes (beedi), contributed to numerous reported instances.

A considerable portion of these seizures occurred at sea or washed ashore, indicating potential smuggling routes or disposal tactics aimed at evading detection and taxes. Further analysis and investigations by law enforcement agencies revealed the involvement of the local population, particularly from India and Sri Lanka, in transshipping kendu leaves mid-sea. The Centre also observed a few instances of wildlife smuggling, including the seizure of sea cucumbers, shark fins, turtle eggs, etc. in 2023.





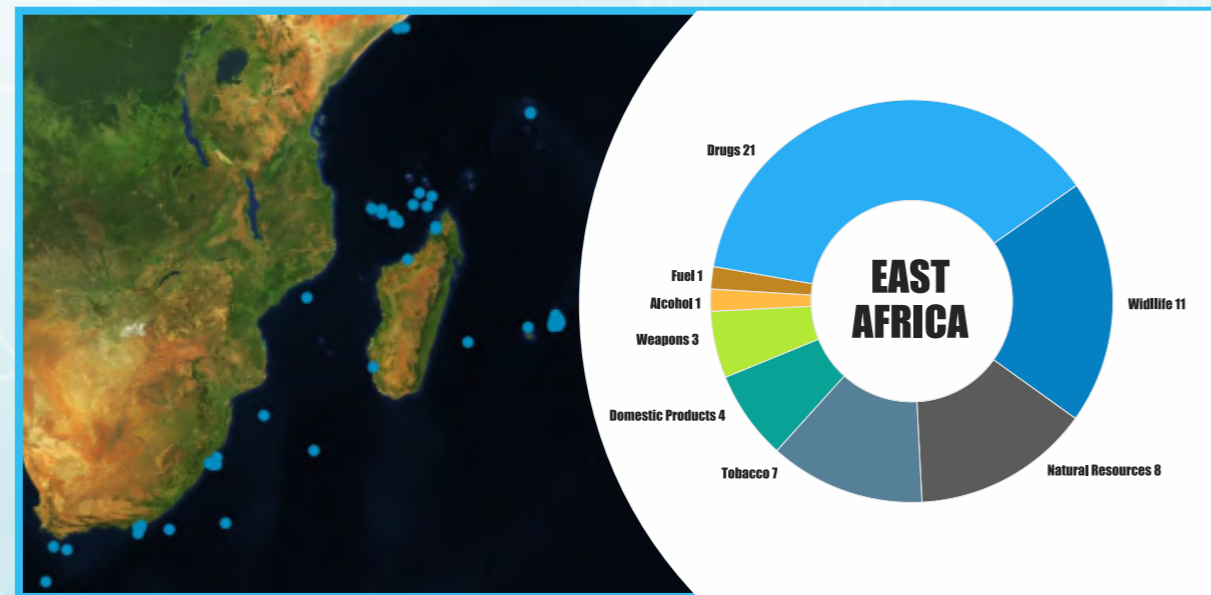
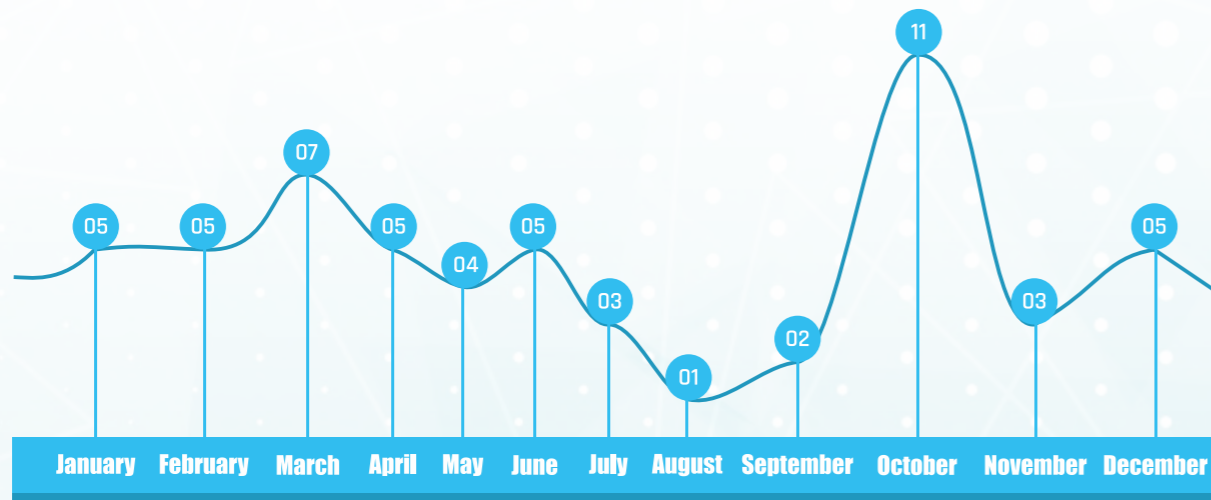
## East Africa

In 2023, the East Africa region witnessed a substantial 70% increase in reported instances, rising from 33 in 2022 to 56. The reported instances encompassed a variety of contraband, with drugs (21) leading the list, followed by wildlife (11), natural resources (08), tobacco (07), domestic products (04), weapons (03), fuel (01), and alcohol (01).

The proliferation of transit ports in close proximity of East African countries has significantly contributed to the surge in drug flow into the region. Notably, there is a

discernible pattern of cocaine being frequently shipped from Latin America to the African coast.

In the year 2023, law enforcement efforts resulted in the seizure of a total of 1309.5 kg of cocaine valued at USD 25.6 million in Eastern and Southern Africa. Additionally, other illicit substances confiscated in this region include 643.8 kg of methamphetamine and 165 kg of cannabis. Further analysis of these incidents suggests that drugs arriving at transit ports are subsequently distributed in markets located in Europe and Australia.



## Analysis - Drug Smuggling Methodology

### Major Drug Smuggling Routes

The production of drugs stemming from the Golden Crescent can be comprehensively examined by scrutinizing two prominent drug smuggling routes: **Hash Highway and Smack Track**. The Hash Highway and Smack Track refer to hashish and heroin smuggling routes that originate from the Makran Coast or North Arabian Sea, destined to Middle East and East Africa respectively. This is also referred to as the Southern Route, in contrast with the Northern and Central routes, both of which are land-based and have become increasingly dangerous for traffickers. Recent observations suggest a shift in contraband traffic from traditional direct routes to more intricate pathways, possibly extending into the middle of the Indian Ocean for transshipment, avoiding the scrutiny of warships patrolling the region<sup>6</sup>. Furthermore, the drugs manufactured in the Golden Crescent reach small island nations in the IOR. The apprehension of a foreign fishing vessel carrying both drugs and weapons by the Indian Coast Guard in May 23 is one such instance.

On 11 May 23, in a joint operation, the Narcotics Control Bureau (NCB) and Indian Navy seized 2,500 kg of methamphetamine packed in 134 rice bags from a foreign dhow off Kerala, India. The seizure was a part of 'Operation

Samudragupt', targeting drug trafficking through maritime routes with the aim of making the IOR free of narcotics. **The modus operandi of the drug peddlers is to halt the mother ship at a particular location at which the crew in the ship receives a message about the boat and timing to which a shipment is to be offloaded.** The consignment seized during this incident was reportedly destined for India, Maldives and Sri Lanka. A foreign suspect was apprehended by the Indian authorities. The estimated value of the seizure was USD 304 billion.

Despite a decline in opium production in Afghanistan, drug seizures in the mid and northern Arabian Sea by the Indian Navy, Combined Maritime Forces (CMF), and international forces jointly and individually highlight the persistent challenge of the drug trade. As the movement of narcotics by air/ road has become more challenging, sea routes are becoming more lucrative for smugglers. The economic conditions of vulnerable communities also present opportunities for the smugglers, for e.g., exploitation of locals/ fishermen as mules for the transportation of narcotics. This phenomenon is also referred to as **narco-fish**.

<sup>6</sup>Various international forces are deployed as part of multiple initiatives to fight maritime crimes.





## Trends/ Patterns/ Modus Operandi of Contraband Smuggling

Drug traffickers continue to display ingenuity in their improvised methods of trafficking drugs across international borders, establishing routes for narcotics and other contraband to infiltrate countries. Smuggling of drugs commences over the land routes and inland waterways, spanning from their production sites to the nearest or preferred debarkation ports. Occasionally, bulk shipments are economically transported with minimal packaging to distribution hubs, facilitating direct supply to markets while evading security checkpoints equipped with modern detection capabilities. Two predominant methods observed in this illicit trade involve transshipment using dhows or small boats and concealing within legitimate containerised cargo. Traffickers employ a range of vessels, from large cargo ships that can carry a large number of containers to dhows and dugout canoes. While seizures often reveal drug movement on smaller vessels, a growing concern revolves around the utilisation of containers aboard legitimate ships for drug transportation, posing risks and escalating costs for lawful cargo originating from frequently targeted traffickers' ports. **There is no evidence of drones being utilised in the maritime industry to transport narcotics from the coast to vessels at present.** Additional delivery methods and observations related to modus operandi followed by the drug traffickers are elucidated below: -

» **Rip-On/ Rip-Off Tactic:** The "gancho ciego" or "rip-on rip-off" technique has commonly been used to send cocaine across the Atlantic, meaning smugglers regularly attempt to conceal drugs in containers which have already undergone checks by customs officials. This tactic involves exploiting authorized shipments, where traffickers collaborate with port employees to load illicit substances into legitimate cargo containers without the knowledge of the shipper. They may break the original customs seal, replace it with a replica and then unload the drugs at a desired destination during the shipping process.

» **Concealment in Ship Structures:** Drugs are sometimes attached to the exterior of a ship's hull or other structural elements. This method allows traffickers to retrieve the narcotics later, either through port workers or divers who take advantage of security vulnerabilities in ports. The Centre has monitored specific incidents where contraband was affixed to the vessel's hull and later retrieved by divers at major ports, exploiting legal security gaps.

» **Maritime Corridor Selection:** Traffickers strategically choose routes through less patrolled or monitored maritime corridors to reduce the risk of interception. This may involve navigating through regions with limited presence of maritime law enforcement agencies.

» **Corruption and Bribery:** Corruption amongst various stakeholders and bribing officials enable the traffickers to move drugs easily, facilitating the passage of illicit shipments through ports without inspection.

» **Use of Unmanned Vessels:** While not yet widespread, there is a concern about the potential use of unmanned vessels, including drones or autonomous boats, for transporting drugs across sea routes.

A few other observed methodologies of shipment of contraband in 2023 include the following: -

» "Dead drops" in remote locations especially isolated beaches and shallow waters.

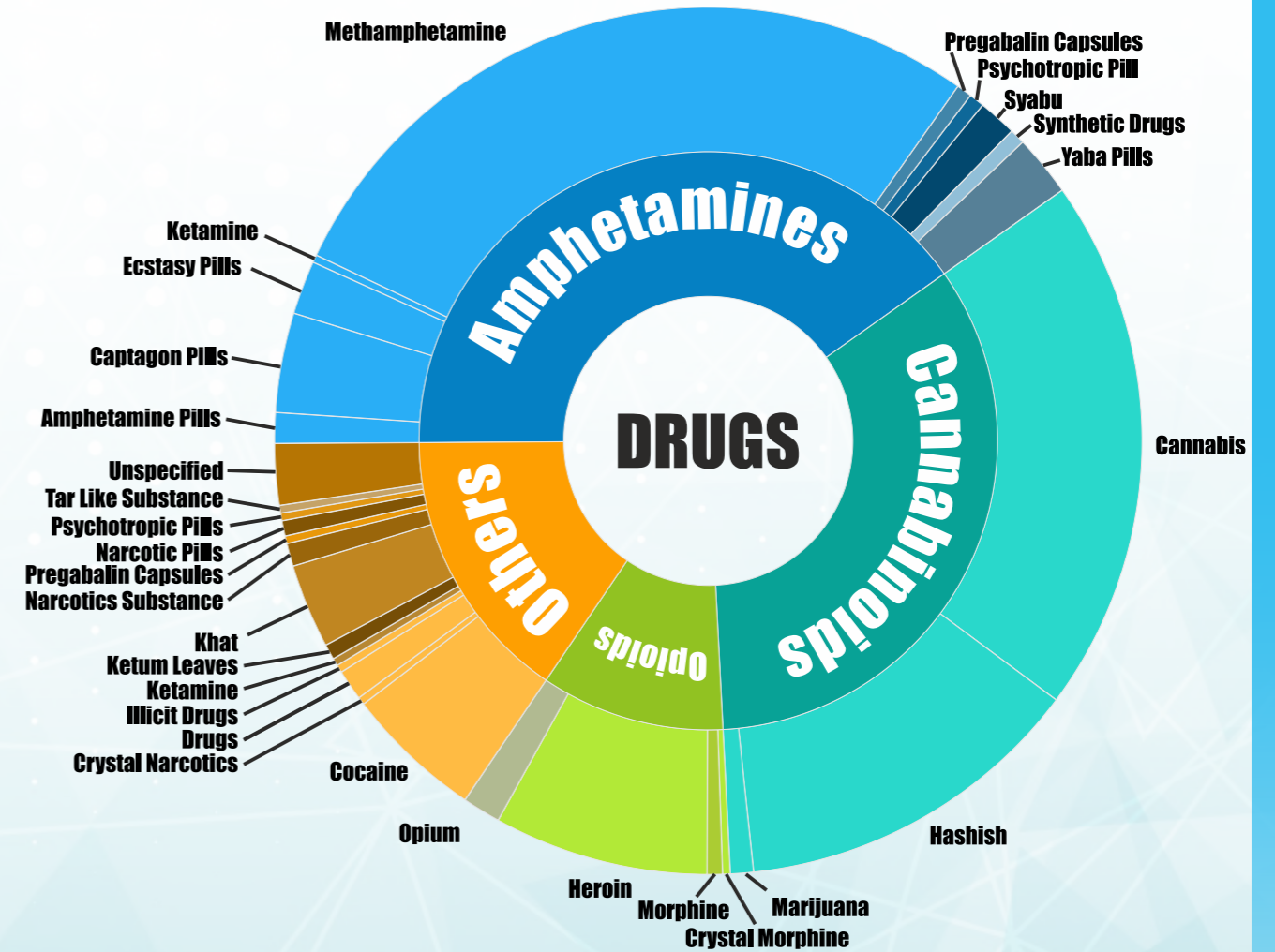
» Dropped by vessel, with an attached floating device to drift ashore.

» Concealment of contraband under thick paint containers.

» Carriage by the crew onboard merchant vessels and ferries.

- » Carriage by passengers or concealment in vehicles being transported by ferries.
- » Hidden inside void spaces in containers.
- » Hidden inside domestic products such as fresh fruits and vegetables, tea bags, etc.

- » Narcotic substance turned into liquid form (mixed with water).
- » Hidden inside consignments of mis-declared goods.
- » Concealed in shipment of frozen meat and fresh fish.



### Packaging

In 2023, no significant changes were observed in the packaging methods employed for the transportation of drugs in the region. The prevailing trend involves the use of 01 kg packets, often wrapped in an additional watertight cover. Notably, these packages bear distinct markings that serve to identify their origin and product in the market.

Instances of similar markings have been observed on packets found along the coasts of few states, featuring the label "Afghani Product". The drug shipments intercepted in South East Asia have been discovered wrapped in tea bags with a label indicating "Chinese Tea".





# Cross-Border Kendu Leaf Smuggling: An IFC-IOR Perspective on India and Sri Lanka's Illicit Trade

- Mr. Geeandeo Cheetamun, ASP, Mauritius ILO at IFC-IOR

## Introduction

The smuggling network revolving around kendu leaves between India and Sri Lanka has remained operational for years, eluding the radar of law enforcement agencies. This underground industry significantly impacts both nations, affecting their economies, environments and legitimate kendu leaf cultivation.<sup>7</sup> The increase in incidents recorded at Information Fusion Centre-Indian Ocean Region (IFC-IOR) highlight the urgency of addressing this issue, emphasizing its unidirectional flow from India to Sri Lanka. This article comprehensively explores this illicit trade, delving into its historical roots, implications and suggested solutions.

## Historical Background

Kendu leaves, known as 'Coromandel Ebony' or 'East India Ebony' (scientific name: *Diospyros Melanoxylon*), boast a rich historical legacy deeply embedded in South Asia's cultural, economic, and ecological history. Native to the Indian subcontinent and parts of South East Asia, kendu leaves have been treasured by diverse communities for centuries. Depending on the region, kendu leaves go by various names, including the '**green gold of Odisha**'. Their adaptability and durability<sup>8</sup> made them significant in traditional Ayurvedic medicine, religious rituals and even the making of sports equipment like hockey sticks. During the colonial era, the British administration recognized the economic potential of kendu leaves, leading to a controlled trade system that turned them into a source of substantial revenue.<sup>9</sup>

## India Context

Kendu leaves hold profound cultural and economic significance in India, especially in Odisha and neighbouring states like Bihar, Jharkhand and Chhattisgarh. These leaves are a lifeline for rural and tribal communities, utilised for natural packaging, beedi production and crafting eco-friendly biodegradable products, offering a sustainable alternative to plastic. Post India's independence, the kendu leaf trade transformed with government-controlled trading systems in several states, aiming to regulate collection and trade while supporting forest communities.<sup>10</sup> This regulated trade continued to be a source of significant revenue and a means of employment and taxation for local communities.

## Sri Lanka Context

In Sri Lanka, kendu leaves, locally known as Tendu, have limited cultural use and are not integrated into rituals or daily life as in India. Though they play a minor role in Sri Lanka's beedi industry due to stringent regulations, beedi smoking remains prevalent. Import tariffs on kendu leaves increased over time in Sri Lanka, fuelling a parallel illicit supply for beedi manufacturing.<sup>11</sup>

## IFC-IOR Analysis

Kendu leaves are categorised as natural resources contraband, and data compiled by the Centre from the period between Jan 20 and Dec 23 has been analysed. The number of incidents was notably low in 2020, with only four recorded, and five in 2021, possibly due to the impact of the COVID-19 pandemic and associated border closures.

However, from Jan 22 to Dec 23, a significant surge in incidents was observed, with 56 seizures (12 seizures in 2022 and 44 seizures in 2023). From Jan 20 to Dec 23, 65 seizures were recorded in total, accounting for 64.7 tonnes valued at USD 2,601,767. Most seizures occurred at sea or washed ashore, hinting at potential smuggling routes or disposal tactics to evade detection. Smuggling incidents peak between June and August, likely exploiting unfavourable weather conditions.

Few seizures were made during the official plucking season. The plucking season for kendu leaves generally lasts about six weeks, starting from mid-April and extending to the last week of May, with some regional variations. The collection phase concludes about ten to fifteen days before the onset of the monsoon season<sup>11</sup>. Most seizures, however, occurred between June and August. It suggests smugglers may take advantage of unfavourable weather conditions during this period. Sri Lankan authorities conducted most of the enforcement efforts leading to these seizures, with only a few involving Indian authorities. This pattern may indicate increased vigilance in the south-western maritime region of Sri Lanka. Records indicate three incidents where fishing trawlers with significant quantities of kendu leaf were apprehended and one instance involving a seized vehicle. Notably, all suspects and boats apprehended in Sri Lanka were local, suggesting involvement of the local population.

## Way Forward

Economic incentives, price differences, regulatory challenges and weak enforcement drive the illicit trade kendu leaf between India and Sri Lanka. This illicit trade leads to economic losses, environmental threats, health risks, and social issues linked to organized crime.

## Salient Observations

» **Temporal Fluctuations:** Data on kendu leaf seizures shows temporal fluctuations with a notable decline in 2020 (04 incidents) and 2021 (05 incidents) due to COVID-19 and border closures but a remarkable upswing from Jan 22 to Dec 23 with 56 seizures documented. External factors can influence the illicit trade of kendu leaves.

» **Economic Significance:** Authorities seized 64.7 tonnes of kendu leaves worth USD 2,601,767. This highlights the economic significance and financial incentive behind this illegal trade.

» **Sea-Based Smuggling:** 60% of kendu leaf seizures were found at sea or on the shore, indicating potential smuggling or disposal at sea to evade authorities. Small boats or dinghies were frequently used for transportation via sea routes.

» **Seasonal Patterns:** Kendu leaves are mainly harvested during a specific season, with low smuggling during this time. Seizures occur mostly from June to August, possibly due to unfavourable weather.

» **Enforcement and Geography:** Enhanced patrolling and operations by Sri Lankan authorities contributed to increase in the number of seizures.

A multifaceted approach is necessary to counteract this, including enhanced border security, regulatory reforms, public awareness, alternative livelihoods, and more robust law enforcement. Addressing this issue requires collaborative efforts, regulations, awareness, and enforcement to ensure sustainable and ethical trade practices.

<sup>7</sup>Rai, R. and Nath, V. (no date) The role of ethnic and indigenous people of India and their culture in the conservation of Biodiversity. Available at: <https://www.fao.org/3/xii/0186-a1.htm> (Accessed on 18 Dec 23).

<sup>8</sup>Guha, R. (1983) Forestry in British and Post-British India - JSTOR. Available at: <https://www.jstor.org/stable/4372653> (Accessed on 18 Dec 23).

<sup>9</sup>[www.ETLegalWorld.com](https://www.ETLegalWorld.com) (2023) Odisha again requests GST Council to withdraw tax on tendu leaves, cm writes to Sitharaman - et LegalWorld, ETLegalWorld.com. Available at: <https://legal.economicstimes.indiatimes.com/news/law-policy/odisha-again-requests-gst-council-to-withdraw-tax-on-tendu-leaves-cm-writes-to-sitharaman/101319016> (Accessed on 18 Dec 23).

<sup>10</sup>lithic\_admin (2023) The Leafy Plate, Explore Sri Lanka. Available at: <https://exploresrilanka.lk/the-leafy-plate/#:~:text=The%20most%20famous%20of%20such,on%20this%20local%20serving%20tradition> (Accessed on 18 Dec 23)

<sup>11</sup>Minor forest produce federation - Tendu Patta. Available at: <http://www.mfpfederation.org/content/tendupatta.html> (Accessed on 20 Dec 23).



# **ILLEGAL, UNREPORTED AND UNREGULATED (IUU) FISHING**



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# ILLEGAL, UNREPORTED AND UNREGULATED (IUU) FISHING

## Overview

Illegal, Unreported and Unregulated (IUU) fishing is a global challenge, posing severe threats to marine ecosystems, economic stability and the livelihoods of millions of people worldwide. IUU fishing weakens the sustainable management of marine resources, leading to significant losses for coastal states, reliant on fisheries as a crucial source of income and employment. Further, illegal fishing is also associated with other maritime crimes, such as contraband smuggling, human trafficking and piracy-related incidents.

In 2023, the Centre monitored 800 reported incidents of IUU fishing, a 33% increase compared to 603 incidents in 2022. IUU fishing encompasses a wide variety of illicit fishing activity and occurs both, on the high seas and in areas within national jurisdiction. While analysing the reported incidents, the Centre observed that it is challenging to categorise incidents distinctly as 'illegal', 'unreported' or 'unregulated' fishing. Therefore, to avoid inaccurate representation of data, the reported incidents have been categorised as 'Local IUU' and 'Poaching'. Local IUU involves violations by a

state's own vessels within its jurisdiction, while poaching refers to foreign vessels acting in violation of another state's laws in an area under that state's jurisdiction.

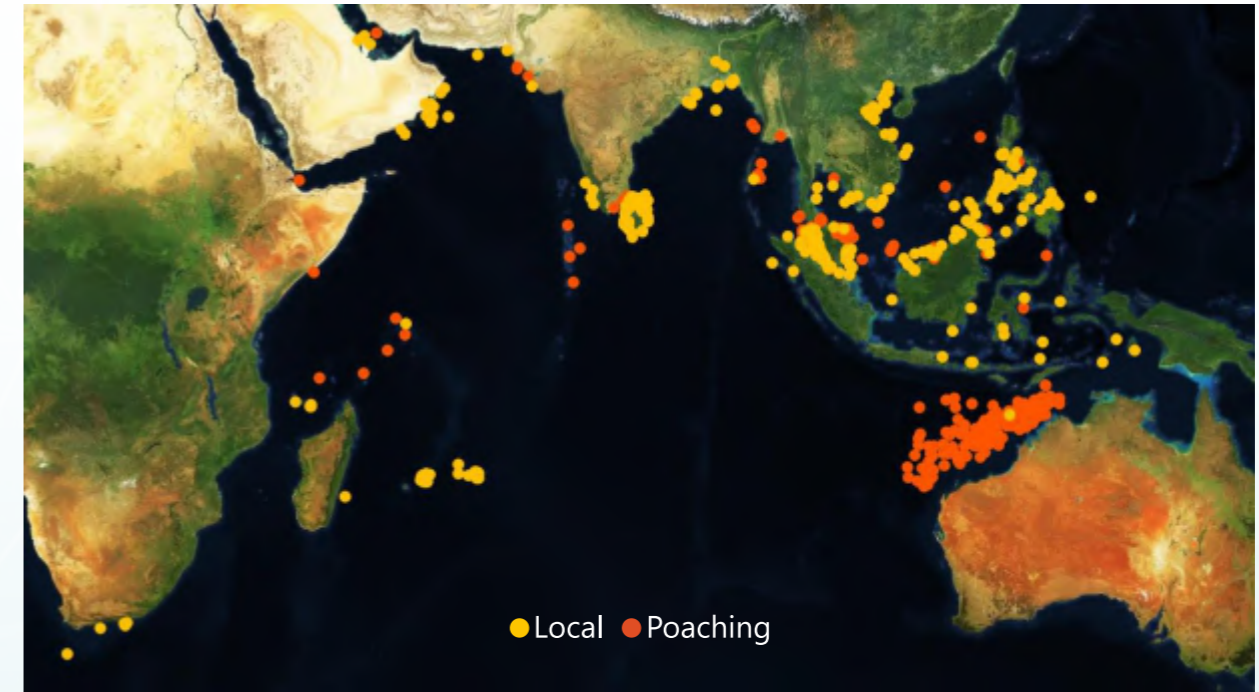
A predominant number of reported incidents pertain to infringements committed by fishing vessels close to coastal areas, contravening established fisheries laws. Due to lack of adequate monitoring, reporting and law enforcement mechanisms, the analysis of the unreported and unregulated aspects of fishing, including human exploitation on board fishing vessels, remains a challenge. Disagreement linked to pending EEZ delimitations and competition between coastal artisanal fishing and foreign industrial fishing fleets remains a potential flashpoint.

The legal gaps, areas not regulated by RFMOs, violations of local regulations, fishing in banned periods, usage of illegal fishing methods and presence of extra-regional/distant water fishing fleets were found to be the major contributors towards IUU fishing incidents throughout the region.

**Implementing and reinforcing regulatory measures, data compilation and information sharing are key to combating IUU fishing.**

Collecting data is crucial to combat IUU fishing. Contemporary technology tools, such as artificial intelligence, dedicated satellites, AIS tracking, infrared and drones are currently under development and in use by both

governmental and non-governmental agencies. Furthermore, as climate change and global warming pose challenges to the protection of planetary biodiversity, addressing IUU fishing becomes intertwined with broader environmental concerns. Governments are increasingly taking an active role in enforcing IUU fishing laws, reflecting a growing commitment to safeguarding both marine life and the overall health of the planet.



● Local ● Poaching



## Month Wise Breakdown

The Centre recorded an average of 67 incidents per month during 2023. The regions monitored by the Centre for IUU fishing broadly experience two major monsoon seasons. South Asia, West Asia and parts of South East Asia are impacted by the Southwest monsoon from late May to early October. The North East monsoon is active from November to early February, typically peaking in December, impacting South East

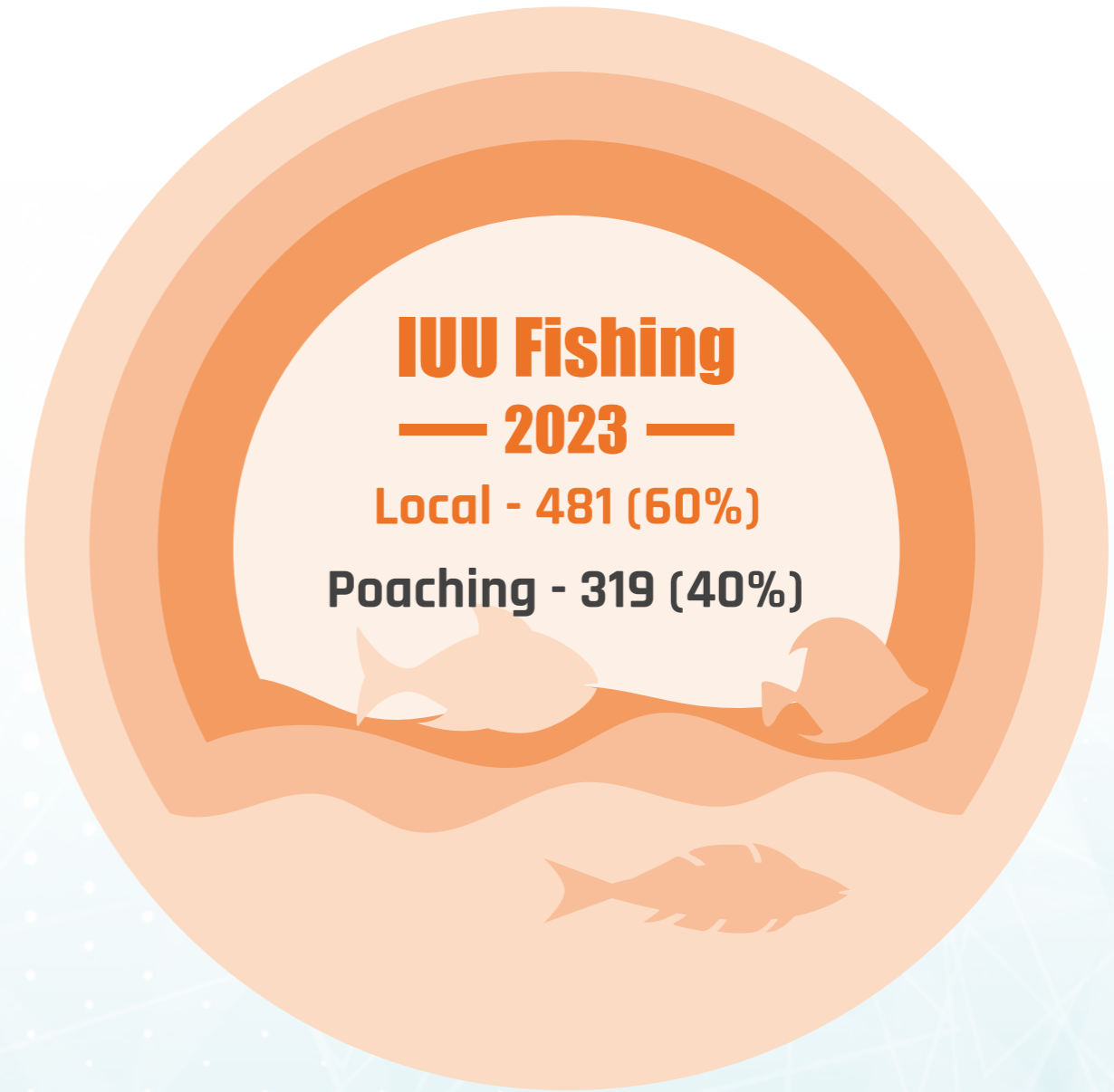
Asia and some parts of South Asia. Incidents of IUU fishing recorded by the Centre usually dip during the peak periods of the two monsoons. The decrease in IUU fishing incidents during Dec 2023 is attributed to the decline in the number of poaching incidents in North West Australia and the seasonal weather, especially the North East monsoon, affecting fishing yields in South East Asia. Similar dip in IUU incidents was also observed during previous years.



## Type of Incidents

60% (481) of recorded IUU incidents were of local IUU fishing and 40% (319) were categorised as poaching. A 24% and 48% increase in local IUU fishing and poaching incidents respectively has been observed as compared

to 2022. Most of these incidents were related to license violations by local and foreign fishermen, illegal fishing techniques and fishing of banned species.



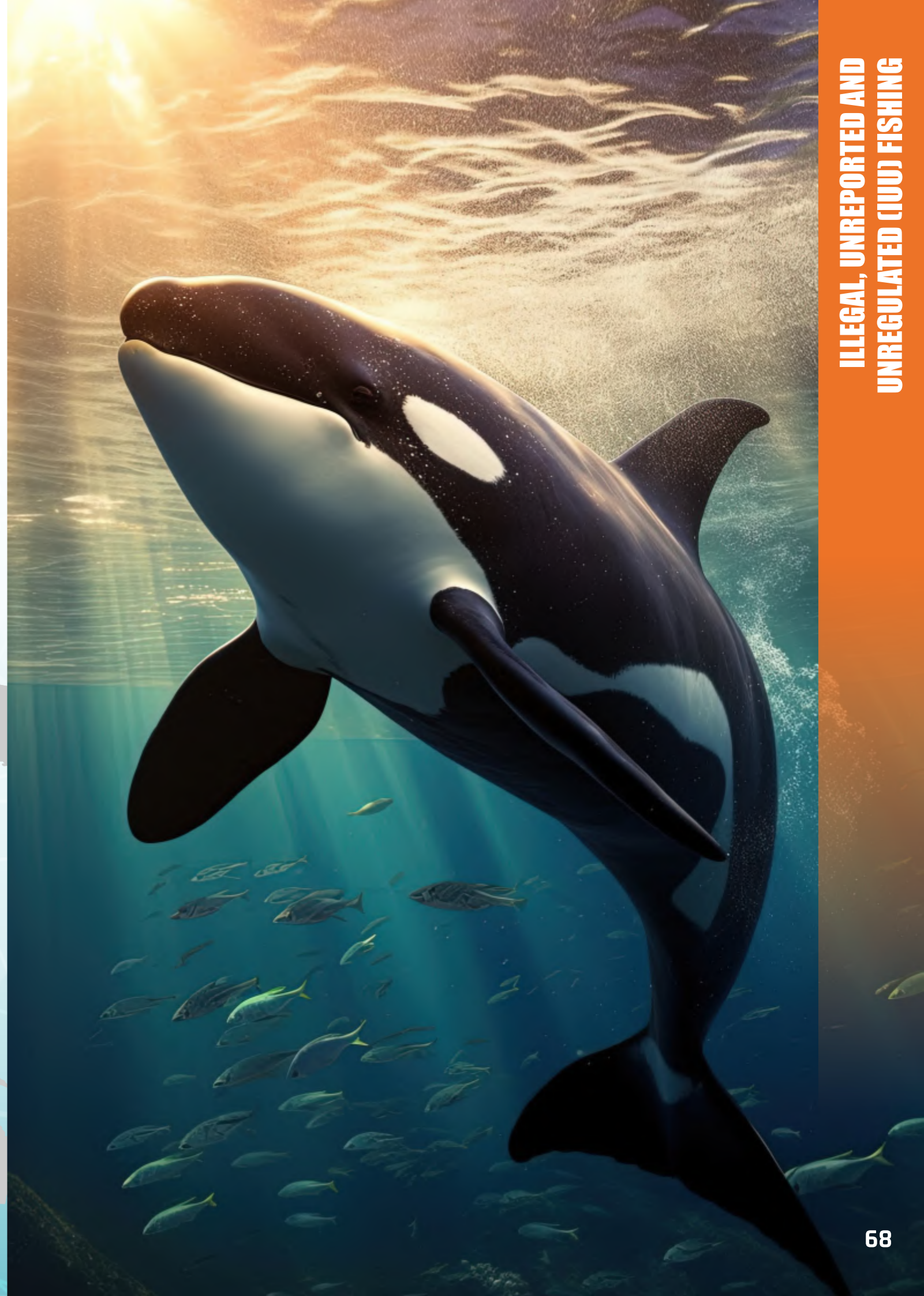
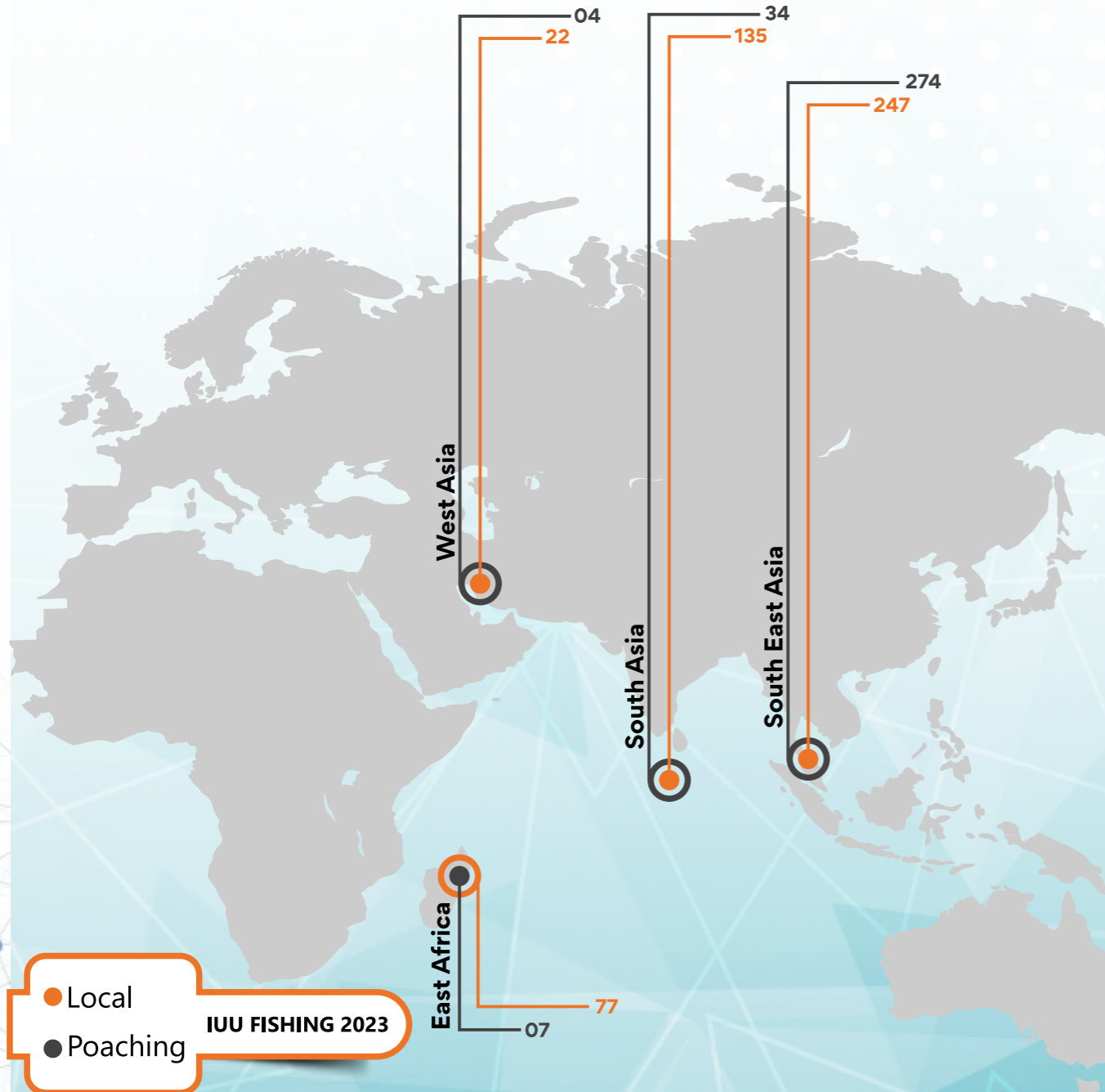


## Regional Distribution

The incidents of IUU fishing recorded by the Centre have been geographically grouped under four regions: South Asia, West Asia, East Africa and South East Asia.

About 65% (521) of the reported total IUU incidents were recorded across the waters of South East Asian countries, mainly off Australia, Malaysia, Philippines, Indonesia, Vietnam and Thailand, a 34% increase compared to 2022 (389 incidents).

Nearly 21% (169) of the total reported IUU incidents were monitored in South Asia, a 34% increase compared to 2022 (126). 80% (135) of these incidents were local IUU and 20% were poaching. About 11% (84) of the total reported IUU incidents were monitored in East Africa, a 65% increase compared to 2022 (51). 92% (77) of these incidents were local IUU and 8% (07) were poaching. Reported incidents in West Asia accounted for 3% (26) of overall incidents.

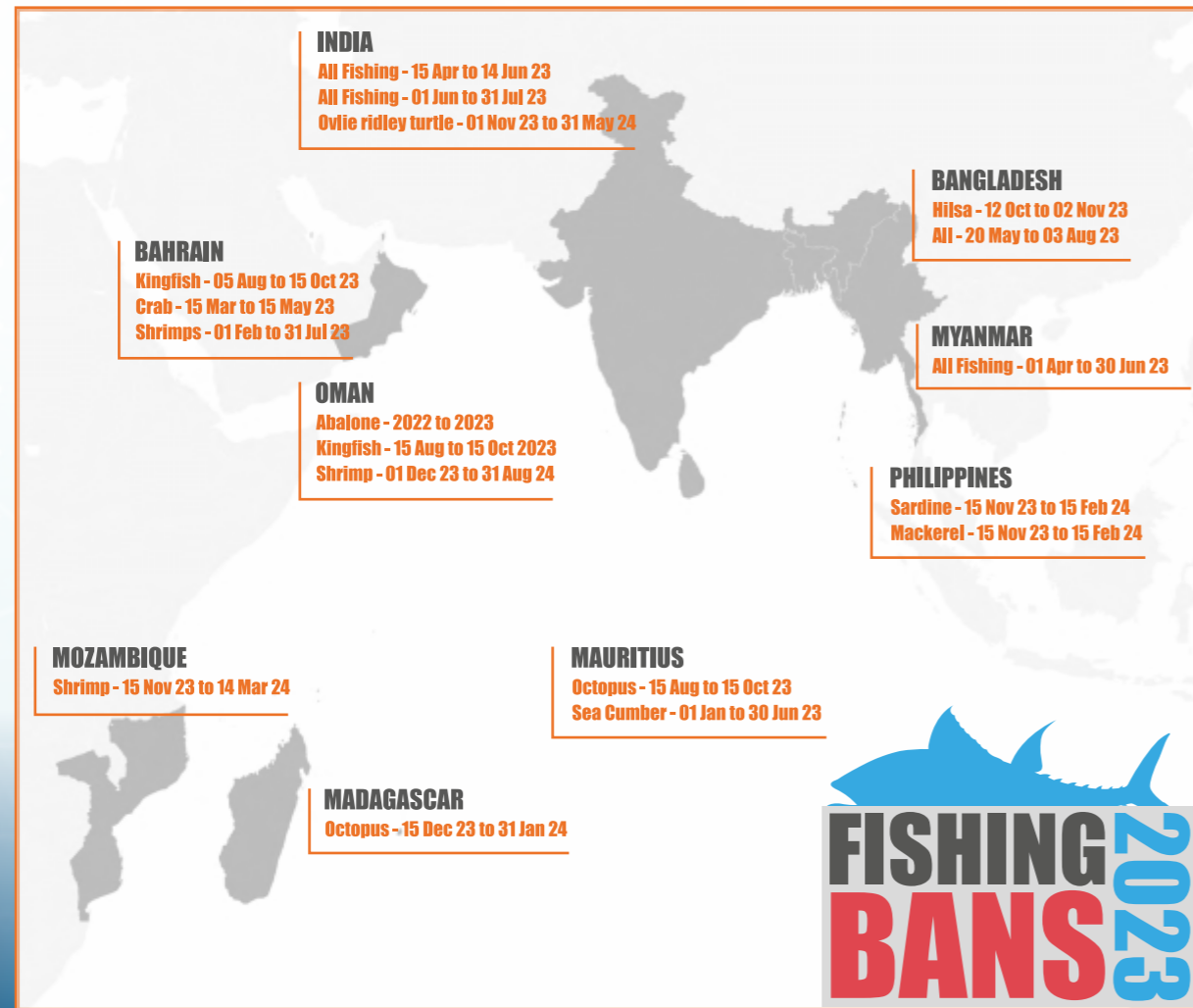




# Fishing Bans

During the year, the Centre monitored various bans on fishing activity imposed by coastal states broadly aimed at protecting species from uncontrolled exploitation during breeding seasons. Fishing bans are typically implemented on a seasonal basis, with specific dates announced by coastal states to raise awareness.

These seasonal restrictions serve various purposes, such as safeguarding endangered or protected species like the olive ridley turtle and sea cucumber. Additionally, some bans apply to all species within a designated geographical area, emphasizing a broader conservation effort. Some bans are also enforced for non-fish species which are in danger of being caught as bycatch.

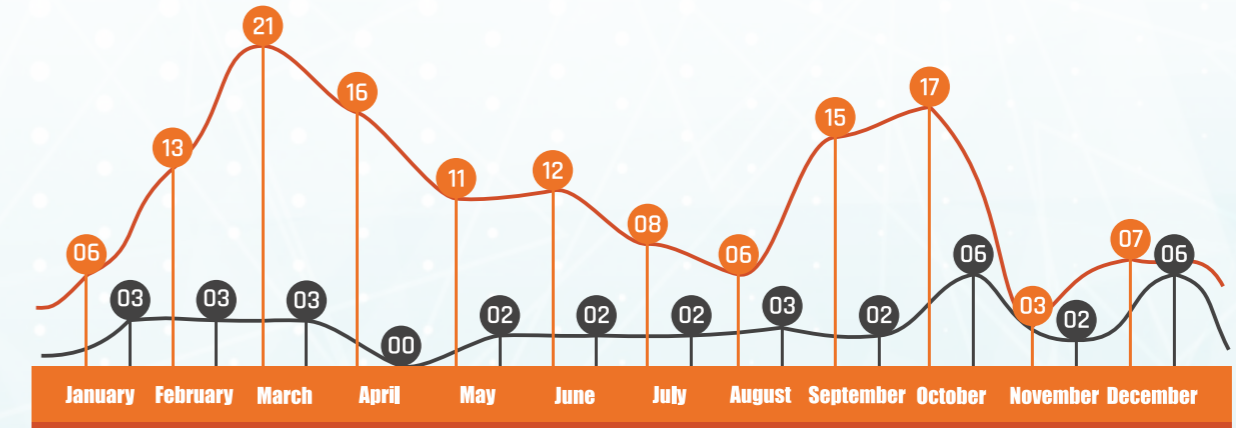


# South Asia

The Centre monitored 21% (169) of IUU fishing incidents in South Asia, a 34% increase as compared to 2022 (126). Of the 169 IUU incidents in South Asia, 80% (135) were local IUU and 20% (34) were poaching IUU incidents. Local and poaching IUU incidents averaged 14 monthly incidents, compared to 11 in 2022. Sri Lanka (111 incidents of local IUU fishing and 18 incidents of poaching) continues to account for the highest number of IUU fishing incidents in South Asia. There was an 84% increase compared to 2022 in Sri Lanka. This increase is likely due to enhanced enforcement operations, fishermen using banned fishing methods (blast fishing) and gear, increased reporting of IUU fishing incidents and better data capturing.

An increase in seizures of shark catch was recorded and may be attributable to the rise in demand and value of shark fins in South East Asia as well as strict law enforcement by Sri Lankan authorities. IUU fishing incidents were also monitored off the coast of India (18), Bangladesh (13), Maldives (4), Myanmar (01) and Pakistan (02).

A significant decrease of 62% in the number of foreign fishing boats in the EEZ of coastal countries was observed in 2023 (56) compared to 2022 (146). 1459 fishermen were caught engaged in IUU fishing, a 16% increase compared to 2022 (1,253), by law enforcement agencies in South Asia in 2023.





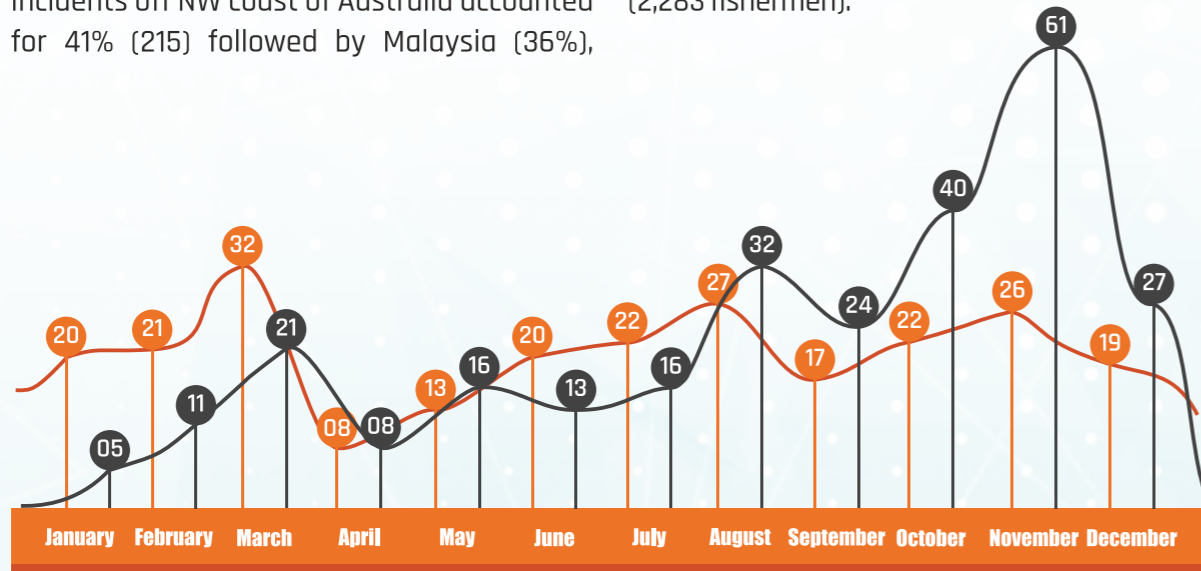
## South East Asia

65% (521) of IUU fishing activity recorded by the Centre in 2023 occurred in South East Asia, a 34% increase compared to 2022 incidents (389). Incidents in South East Asia comprised of 47% (247) of local IUU fishing and 53% (274) of poaching, collectively averaging 43 monthly incidents, an increase from 32 monthly incidents in 2022. This increase is primarily attributable to enhanced surveillance by law enforcement agencies, collaboration between various stakeholders and better data capture by the Centre.

Incidents off NW coast of Australia accounted for 41% (215) followed by Malaysia (36%),

Philippines (7%), Indonesia (7%) and Vietnam (6%). A few incidents were also reported off Thailand.

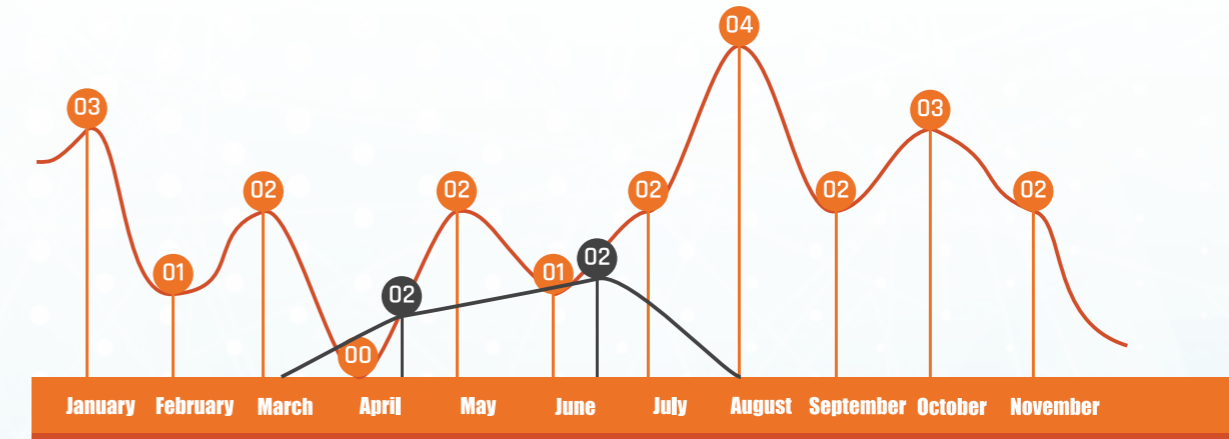
661 fishing boats, a 29% increase compared to 2022 (513) were reported to be involved in IUU fishing. A 65% increase was reported in the number of foreign fishing boats involved in poaching in the EEZ of coastal countries in 2023 (319 foreign fishing boats) compared to 2022 (193). 3,599 fishermen were apprehended by law enforcement agencies for engaging in IUU fishing, a 58% increase compared to 2022 (2,283 fishermen).



## West Asia

The Centre monitored 26 incidents in West Asia, accounting for 3% of the total incidents recorded and a 30% decrease as compared to 2022 (37 incidents). 85% (22) of these were instances of local IUU fishing and four of poaching. 77% (17) of these local IUU fishing incidents were reported off Oman and a few incidents of local IUU fishing were also reported off Bahrain (03), Qatar (02) and poaching incidents off Djibouti (01), Iran (01) and Somalia (02), most of which were fishing

incidents during closed seasons and in prohibited areas. 72 fishing boats, a 10% decrease compared to 2022 (80 fishing boats) were reported to be involved in IUU fishing, 269 fishermen engaged in IUU fishing, a similar trend as compared to 2022 (271 fishermen) and were apprehended by law enforcement agencies.

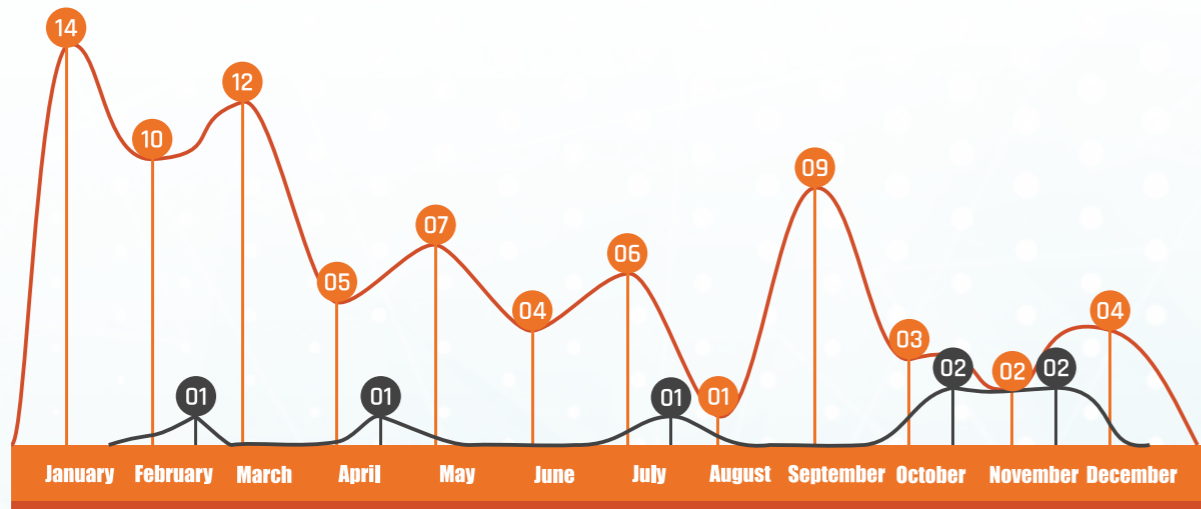




## East Africa

The Centre monitored 84 incidents in the region, a 65% increase as compared to 2022 (51), which accounted for 11% of the overall IUU incidents. Local IUU fishing accounted for 92% of these, with most incidents reported off Mauritius. Most of the incidents reported off Mauritius continue to involve the seizure of illegal fishing nets, which do not meet the requirements specified by the fisheries regulations of Mauritius.

Poaching incidents were observed to have increased with seven incidents reported in the region as compared to four incidents in 2022. Nine foreign fishing boats were seized compared to six fishing boats in 2022 and 88 foreign fishermen were apprehended by the law enforcement agencies in this region, as compared to 57 foreign fishermen in 2022.



## Addressing IUU Fishing

The key to combating IUU fishing is locating/ detecting vessels involved in IUU fishing and understanding the modus operandi by which IUU-caught fish enter local markets. The following additional measures may be implemented to counter IUU fishing threat in the IOR: -

- » Strengthening and supporting RFMOs to enforce laws strictly.
- » Monitoring of unregulated areas (not regulated by any RFMOs) in the Northern IOR.
- » Investing in advanced technologies for real-time monitoring of fishing activities and enabling timely response to suspicious activities especially in coastal waters.

- » Strengthening legal frameworks for effective fisheries management and penalising IUU fishing.
- » Empowering local communities to actively participate in the conservation of marine resources and adopt sustainable fishing practices.
- » Capacity building and technology transfer for littoral states with a focus on effective maritime surveillance and law enforcement.
- » International and regional collaboration on initiatives to address IUU fishing including agreements, joint patrols and information sharing.







## Recent Regulatory Initiatives

### IOTC Resolutions in 2023

#### Initiative

#### Observations and Links

**23/01:**  
**Management of Anchored Fish Aggregating Devices (AFADs)**

The resolution recognises that there are differences between anchored and drifting devices used in fishing, suggesting that the rules for managing drifting devices might not work well for the usual operation of anchored ones. This resolution applies to all Contracting Parties and Cooperating Non-Contracting Parties (CPCs) that deploy Anchored Fish Aggregating Devices (AFADs) for the purpose of fishing for tuna and tuna like species under the IOTC mandate with the exception of recreational fisheries, and without prejudice or undermining the sovereign right of the coastal states and existing national regulations. This resolution is in force since 01 Jan 24.

Link:[https://iotc.org/sites/default/files/documents/2023/09/IOTC\\_-\\_Compendium\\_of\\_ACTIVE\\_CMMs\\_16\\_September\\_2023.pdf](https://iotc.org/sites/default/files/documents/2023/09/IOTC_-_Compendium_of_ACTIVE_CMMs_16_September_2023.pdf)

**23/03:**  
**Establishing a voluntary fishing closure in the Indian Ocean for the conservation of tropical tunas**

The resolution addresses concerns about the increased usage of Fish Aggregating Devices (FADs) and calls for a reduction in juvenile bigeye and yellowfin tuna mortality. It also notes the overfished status of bigeye and skipjack tuna. It applies to all Commission members and fishing vessels in the IOTC area, with measures effective from 01 Jan 24, subject to review in 2025. Scientific advice on fishing closures is mandated and preventive measures include encouraging countries to implement a minimum 31-day fishing closure or voluntary catch reductions.

**23/03:**  
**Establishing a voluntary fishing closure in the Indian Ocean for the conservation of tropical tunas**

Artisanal fisheries are exempt from the closure period unless decided otherwise by the Commission. This resolution shall apply to all CPCs, fishing vessels, fishing tuna and tuna-like species within the IOTC area of competence.

Link:[https://iotc.org/sites/default/files/documents/2023/09/IOTC\\_-\\_Compendium\\_of\\_ACTIVE\\_CMMs\\_16\\_September\\_2023.pdf](https://iotc.org/sites/default/files/documents/2023/09/IOTC_-_Compendium_of_ACTIVE_CMMs_16_September_2023.pdf)

**23/04:**  
**Establishing catch limits for bigeye tuna in the IOTC area of competence**

The resolution addresses the overfishing concern of bigeye tuna, adopting a Total Allowable Catch (TAC) of 80,583 tonnes for 2024 and 2025. Specific catch limits are allocated to different countries and measures are in place for catch adjustments, transfers and scientific work to assess the impact of fishing gear. The resolution also prohibits certain agreements and exports based on objections, emphasising adherence to the resolution. Additionally, this resolution supersedes Resolution 05/01 on conservation and management measures for bigeye tuna.

Link:[https://iotc.org/sites/default/files/documents/2023/09/IOTC\\_-\\_Compendium\\_of\\_ACTIVE\\_CMMs\\_16\\_September\\_2023.pdf](https://iotc.org/sites/default/files/documents/2023/09/IOTC_-_Compendium_of_ACTIVE_CMMs_16_September_2023.pdf)

**23/05:**  
**Establishing a programme for transshipment by large-scale fishing vessels**

This resolution focuses on combating illegal, unregulated and unreported (IUU) fishing activities, particularly in the context of transshipment operations. CPCs are required to report annually on transshipments by their flag vessels, validating statistical documents and providing comprehensive reports on observer assessments. The report includes quantities by species transhipped, a list of LargeScale Tuna Longline Vessel (LSTLVs) transshipping,



**23/05:**  
**Establishing a programme for transshipment by large-scale fishing vessels**

and assessments of observer reports. This resolution supersedes Resolution 22/02 on establishing a program for transshipment by large-scale fishing vessels.

Link:[https://iotc.org/sites/default/files/documents/2023/09/IOTC\\_-\\_Compendium\\_of\\_ACTIVE\\_CMMs\\_16\\_September\\_2023.pdf](https://iotc.org/sites/default/files/documents/2023/09/IOTC_-_Compendium_of_ACTIVE_CMMs_16_September_2023.pdf)

**23/06:**  
**Conservation of cetaceans**

The resolution mandates CPCs to prohibit intentional purse seine netting around cetaceans, establish reporting requirements for unintentional interactions, encourage safe releases and promote the use of non-entangling designs for Drifting Fish Aggregating Devices (DFADs). Emphasising the importance of accurate data collection, it tasks the IOTC Scientific Committee with developing best practice guidelines for cetacean release by 2025. CPCs are required to report cetacean interactions promptly, using various data collection methods, and a review of the status of cetaceans in the region is scheduled in 2025. Resolution 13/04 on the conservation of cetaceans is superseded by this resolution.

Link:[https://iotc.org/sites/default/files/documents/2023/09/IOTC\\_-\\_Compendium\\_of\\_ACTIVE\\_CMMs\\_16\\_September\\_2023.pdf](https://iotc.org/sites/default/files/documents/2023/09/IOTC_-_Compendium_of_ACTIVE_CMMs_16_September_2023.pdf)

**23/07:**  
**Reducing the incidental bycatch of seabirds in longline fisheries**

This resolution emphasises the importance of harmonising efforts across tuna Regional Fisheries Management Organisations (RFMOs). It mandates the recording and reporting of incidental seabird bycatch by IOTC Contracting Parties. It outlines mitigation measures, including bird-scaring lines, line weighting and hook-shielding devices.

**23/07:**  
**Reducing the incidental bycatch of seabirds in longline fisheries**

The resolution, effective from 01 Jul 24, supersedes Resolution 12/06 on reducing incidental bycatch of seabirds in longline fisheries and commits to continuous review and improvement of seabird bycatch mitigation practices by the IOTC Scientific Committee.

Link:[https://iotc.org/sites/default/files/documents/2023/09/IOTC\\_-\\_Compendium\\_of\\_ACTIVE\\_CMMs\\_16\\_September\\_2023.pdf](https://iotc.org/sites/default/files/documents/2023/09/IOTC_-_Compendium_of_ACTIVE_CMMs_16_September_2023.pdf)

**23/08:**  
**Electronic monitoring standards**

The resolution establishes Electronic Monitoring (EM) terms and definitions and outlines standards for implementing a Regional Electronic Monitoring Program (REMP). It aims to enhance data collection, improve observer coverage and meet minimum requirements for the Regional Observer Scheme (ROS), recognising the potential of electronic observation in fisheries management.

Link:[https://iotc.org/sites/default/files/documents/2023/09/IOTC\\_-\\_Compendium\\_of\\_ACTIVE\\_CMMs\\_16\\_September\\_2023.pdf](https://iotc.org/sites/default/files/documents/2023/09/IOTC_-_Compendium_of_ACTIVE_CMMs_16_September_2023.pdf)

**23/09:**  
**Fish Aggregating Devices (FADS) working group**

The resolution aims to manage all gears sustainably, with a focus on reducing juvenile tuna mortalities on Fish Aggregating Devices (FADs). In response to scientific recommendations, the IOTC established a technical Working Group on Fish Aggregating Devices (WGFAD) to assess the feasibility and impacts of FAD-related management options.

Link:[https://iotc.org/sites/default/files/documents/2023/09/IOTC\\_-\\_Compendium\\_of\\_ACTIVE\\_CMMs\\_16\\_September\\_2023.pdf](https://iotc.org/sites/default/files/documents/2023/09/IOTC_-_Compendium_of_ACTIVE_CMMs_16_September_2023.pdf)



**23/10:  
Terms of reference for a  
working party on  
socio-economics**

The resolution emphasises the objective of maintaining fish stocks at levels capable of producing maximum sustainable yield, considering environmental and economic factors, particularly the needs of developing states. Acknowledging the precautionary approach and the call for increased reliance on scientific advice, the IOTC established a Working Party on Socio-Economics (WPSE). The WPSE aims to address the limited socio-economic data in many countries by providing advisory support on evidence-based fishery management. The resolution specifies the terms of reference and rules of procedure for the WPSE, which will be incorporated into the IOTC Rules of procedure in the next revision.

Link:[https://iotc.org/sites/default/files/documents/2023/09/IOTC\\_-\\_Compendium\\_of\\_ACTIVE\\_CMMs\\_16\\_September\\_2023.pdf](https://iotc.org/sites/default/files/documents/2023/09/IOTC_-_Compendium_of_ACTIVE_CMMs_16_September_2023.pdf)

**Food and Agriculture Organisation of the United Nations Guidelines**

**Voluntary Guidelines for  
transshipment 2023**

These guidelines address the crucial issue of transshipment in fishing, aiming to combat Illegal, Unreported, and Unregulated (IUU) fishing. The focus is on establishing a robust regulatory framework. Key principles involve adherence to international law, comprehensive documentation of fish movements, vessel authorisation, transparent reporting, a risk-based approach, and encouragement of electronic monitoring. The guidelines apply globally, with flexibility for alternative measures by states.

Link:<https://www.fao.org/3/cc5602t/cc5602t.pdf>

**Blue Transformation -  
Roadmap 2022 - 2030:**

**A Vision for Fao's Work on  
Aquatic Food Systems**

Promote the sustainable management of deep-sea fisheries resources in the Agreement Area, including target fish stocks and non-target species. Applies to all CCPs to the agreement engaging or intending to engage in bottom fishing.

Link:<https://www.fao.org/3/cc0459en/cc0459en.pdf>

**Australian Department of Agriculture, Fisheries and Forestry**

**South East Asia program  
by Australia 2022 - 2026**

Working with government fisheries agencies in South East Asia, the program aims to improve:

- » Monitoring, Control and Surveillance (MCS) capabilities.
- » Regional cooperation in combating IUU fishing.
- » Gender inclusivity in fisheries management.

**The program supports:**

- » Association of South East Asian Nations (ASEAN) countries.
- » Regional Plan of Action to promote responsible fishing practices including combating IUU Fishing (RPOA-IUU) countries.

Link:<https://www.agriculture.gov.au/agriculture-land/fisheries/iuu/combating-iuu-fishing-program>

**US Interagency Working Group on IUU fishing**

**US National 5-Year Strategy  
for Combating IUU Fishing  
2022 - 2026**

US National Strategy for Combating IUU fishing establishes the Working Group's priorities to combat IUU fishing, curtail the global trade in seafood and seafood products derived from IUU fishing and promote global maritime security.

Link:[https://media.fisheries.noaa.gov/2022-d10/2022\\_NationalStrategyReport\\_USIWGonIUUfishing.pdf](https://media.fisheries.noaa.gov/2022-d10/2022_NationalStrategyReport_USIWGonIUUfishing.pdf)



# IRREGULAR HUMAN MIGRATION

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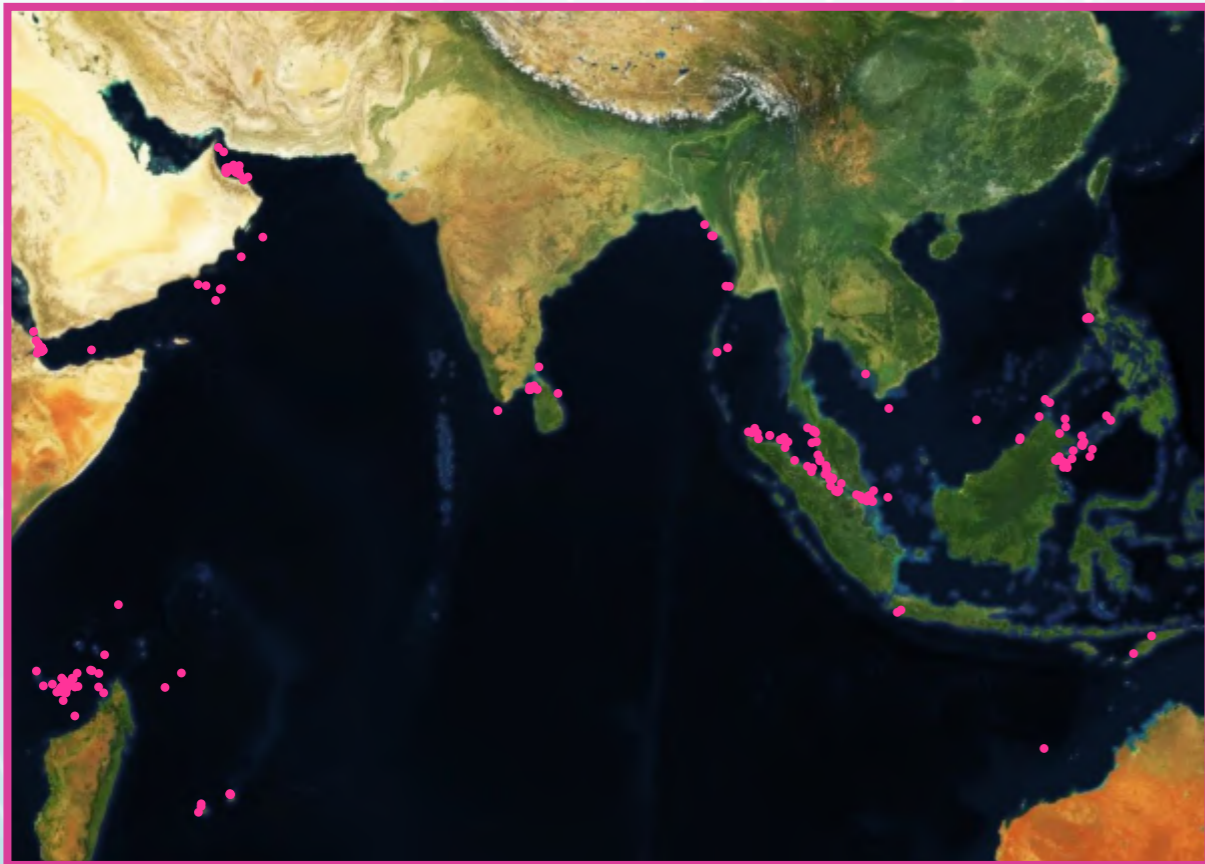


# IRREGULAR HUMAN MIGRATION

## Overview

The Centre recorded 243 incidents of Irregular Human Migration (IHM) in 2023 compared to 300 incidents in 2022. These involved 14,183 migrants and 551 smugglers/ traffickers. The incidents included a total of 66 migrant fatalities and 114 individuals reported missing, compared to 61 deaths and 133 missing persons in 2022.

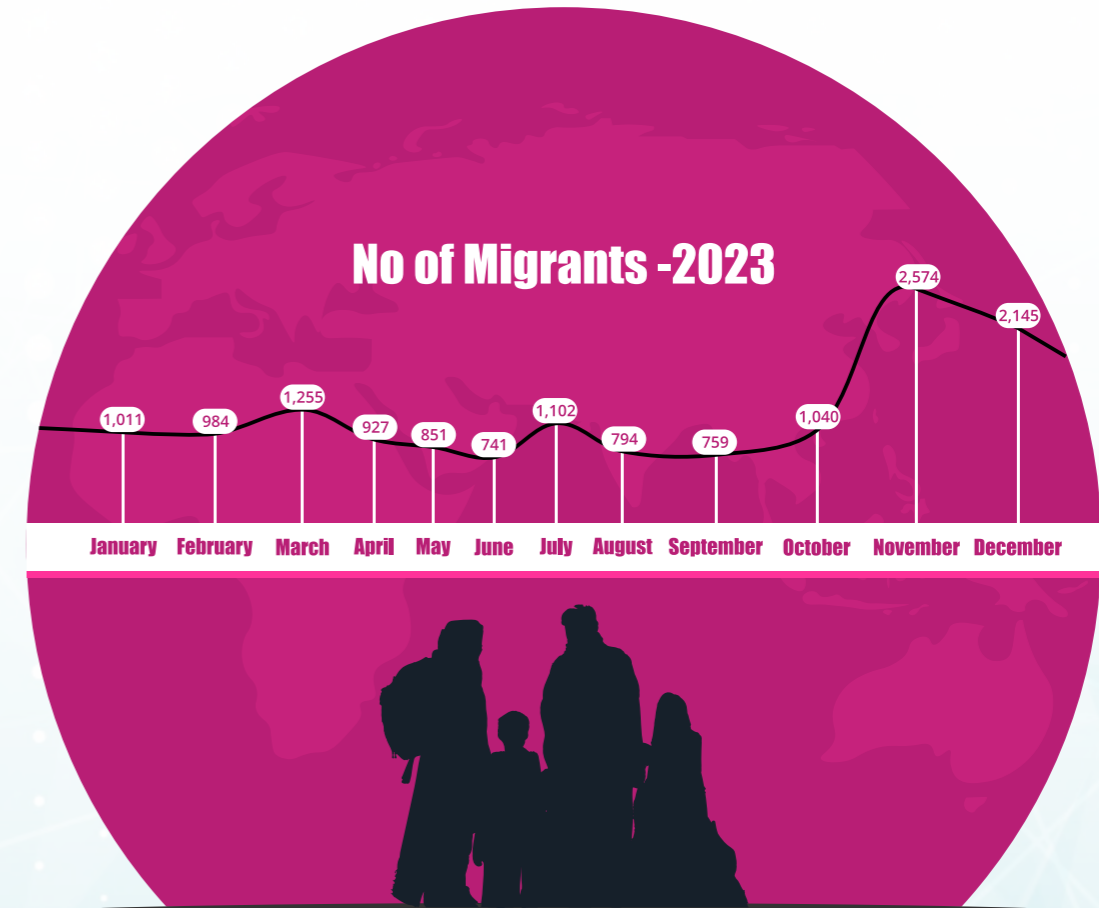
Human migration over the years has been driven by the quest for a better life and security. Migration by sea is highly dependent on the environment, political situation, border enforcement and conducive sea state (conditions for small to medium boat operations). In a trend similar to the previous year, migrants continued to be willing to take significantly higher risks on overcrowded and at times unseaworthy small boats.



## Migrant Movement

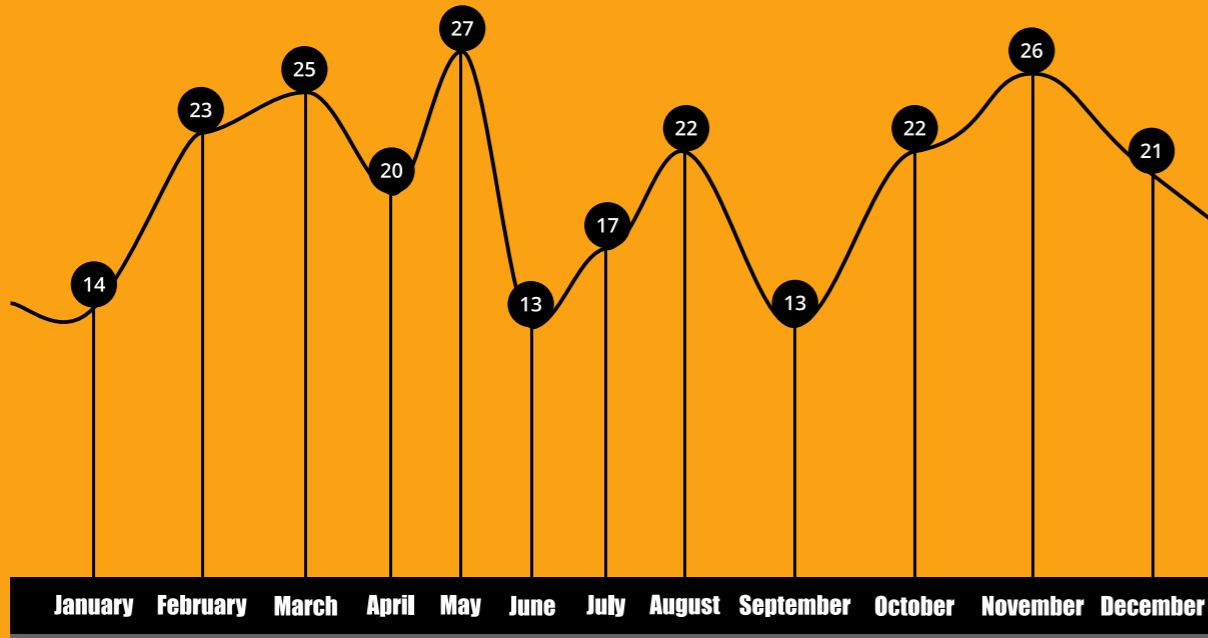
In 2023, the Centre recorded an average of 20 IHM incidents per month, a 20% decline compared to 25 incidents per month in 2022. A total of 14,183 migrants were either rescued or

apprehended compared to 13,119 migrants in 2022. This translates to a monthly average of approximate 1,182 migrants.





## Monthly Distribution of IHM - 2023



## Trend Analysis

The methods employed for IHM in 2023 were as follows:-

- » Use of social media platforms, including WhatsApp by human smugglers and traffickers to persuade innocent migrants.
- » In a few instances of IHM, the migrants were forced to consume drugs/ crystal meth (shabu), to endure hardship.
- » Illegal migrants were observed utilizing small boats to engage in routine economic activities in a neighboring country. This phenomenon was typically noted in areas where the distances involved were relatively shorter.
- » Embarkation of migrants on converted fishing vessels from beach areas, away from ports/ harbours.
- » Transfer by small boats to a relatively large migrant vessel offshore. These vessels stay for prolonged durations at sea, waiting for a suitable landing window.
- » Concealment in scheduled passenger services/ ferries.
- » Stowaways in merchant vessels.<sup>1</sup>
- » Potential candidates for migration have been apprehended ashore waiting to be transferred on board fishing vessels/small boats. In some incidents, the migrants were grouped and lodged separately to avoid mass apprehension by authorities.
- » Chartering of passenger vessels to migrate to distant countries.

<sup>1</sup>The Centre monitored four incidents involving migrants as stowaways onboard bulk carriers. Interestingly, all four of these incidents were monitored in Mauritius.

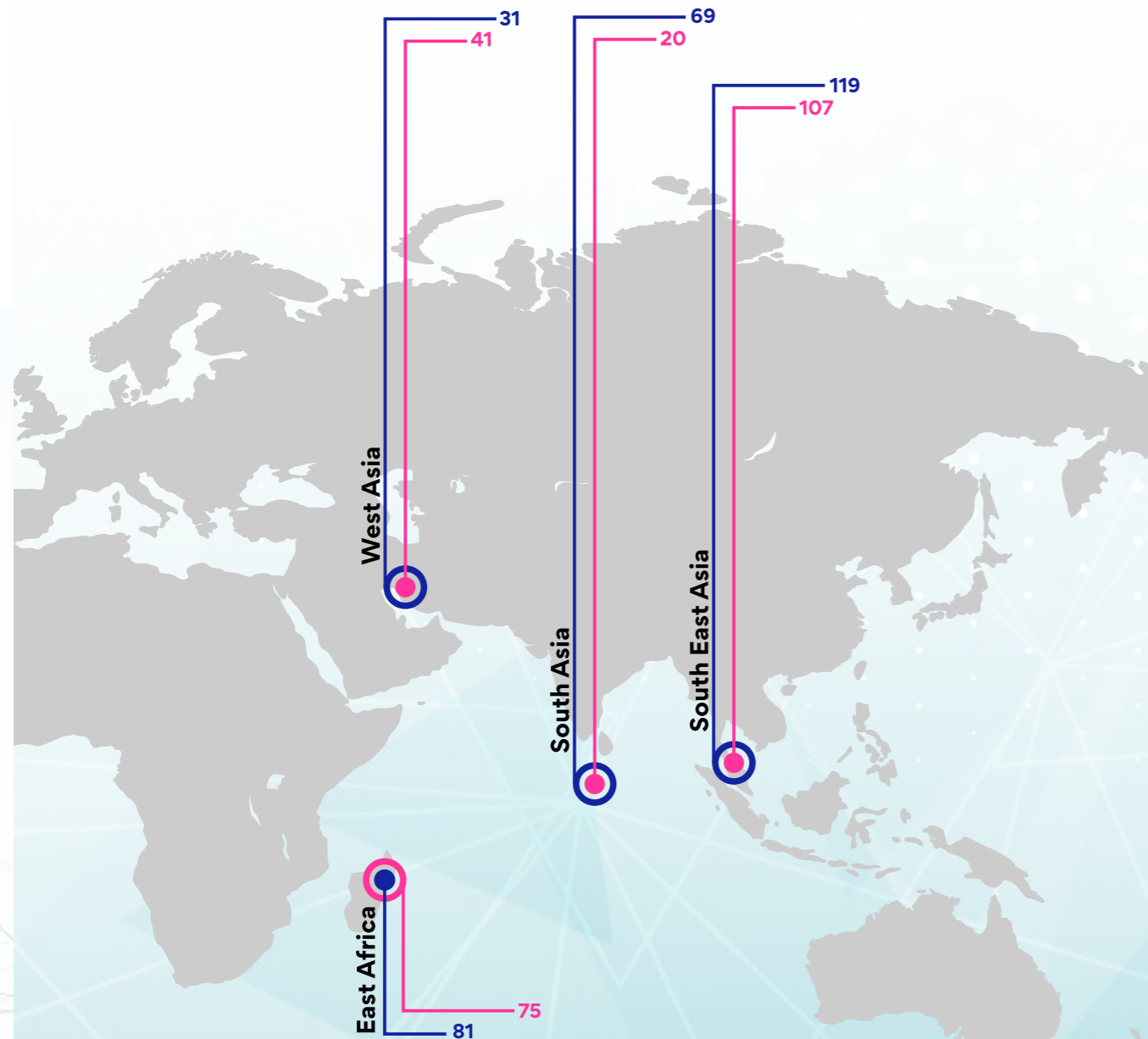




# Regional Analysis

To examine the specific dynamics and trends associated with IHM in different geographical regions, the Centre has grouped incidents into four regions - West Asia, East Africa, South Asia and South East Asia.<sup>2</sup>

Year ● 2022 ● 2023



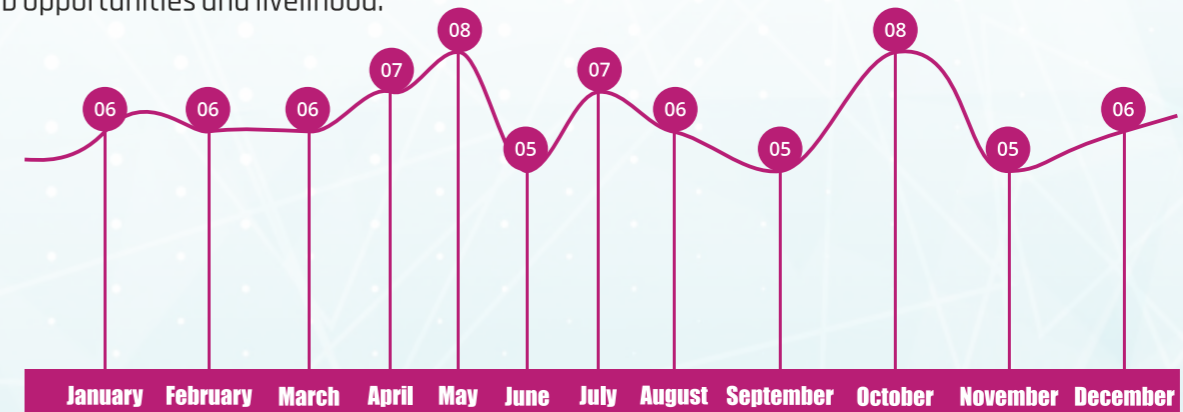
# East Africa

In 2023, the region witnessed 75 recorded incidents, marking a decrease from the 81 incidents documented in 2022. A significant 81% of these incidents occurred off the coast of Mayotte, with four incidents each reported near Mauritius and Comoros and three incidents each off Madagascar and La Réunion.

Beyond migration linked to enduring cultural and familial ties that span generations, the region remains confronted with the persistent challenge of IHM, with Mayotte standing out as particularly susceptible due to deep rooted socio-economic factors. Migrants, originating not only from East African countries but also from regions grappling with economic instability, endeavour to reach Mayotte and La Reunion, in search of better job opportunities and livelihood.

The Kwassa-Kwassa (small boat) remains the chosen mode of transport for migrants in this region. However, these boats are often unseaworthy and vulnerable to adverse weather conditions, especially during the monsoon season.

In the majority of these incidents, migrants were repatriated to their home countries. Law enforcement agencies seized a total of 594 boats, apprehended 454 smugglers and rescued 7,634 migrants in 2023.



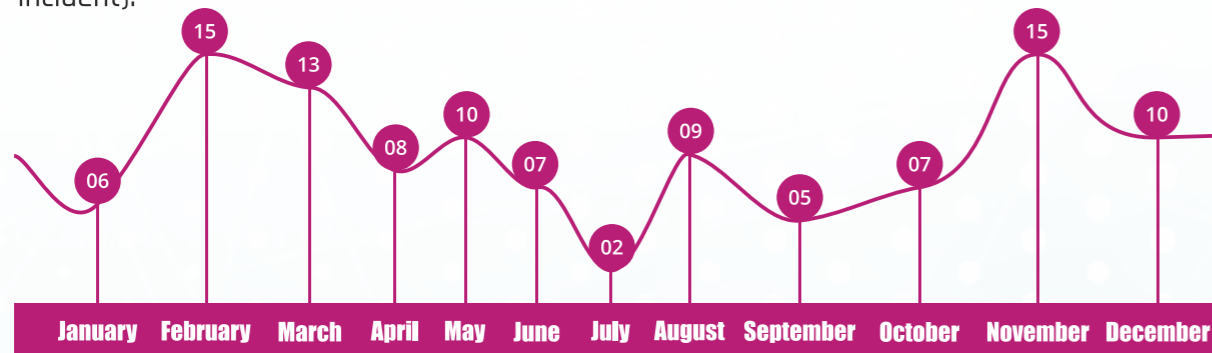
<sup>2</sup> Commencing year 2023, the Centre has focused exclusively on IHM incidents reported in the Indian Ocean Region (IOR), encompassing West Asia, East Africa, South Asia and South East Asia. Inclusion of IHM incidents in Mediterranean has been discontinued to obviate skewing of data due to high numbers.



## South East Asia

In 2023, the Centre recorded a total of 107 incidents, reflecting a decrease from the 119 incidents recorded in 2022. Notably, Indonesia (47 incidents), Malaysia (39 incidents) and Philippines (17 incidents) continued to be the key destinations for migrants. Additional incidents were reported off the coasts of the North coast of Australia (02 incidents), Singapore (01 incident) and Vietnam (01 incident).

The factors contributing to IHM incidents in South East Asia are likely to be rooted in a shared culture, linguistic affinity, better job prospects and for improved livelihood opportunities in a few countries. The majority of migrant boats were intercepted in the Straits of Malacca & Singapore (SOMS) by law enforcement agencies.



The escalating number of successfully rescued migrants underscores the enhanced vigilance of law enforcement agencies, attributed to improved information sharing and collaborative efforts among regional authorities. One noteworthy incident exemplifying this collaboration occurred when Philippine authorities rescued 123 migrants off Tubalubac Island, Philippines.

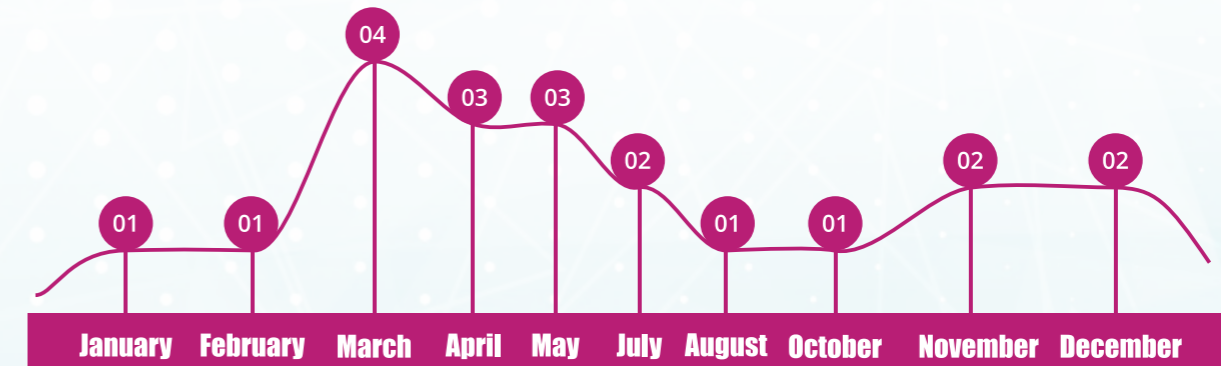
These individuals were identified as victims of human trafficking and were found to have been coerced into using drugs such as crystal methamphetamine (shabu).

In total, South East Asian law enforcement agencies seized 70 boats, apprehended 82 smugglers and rescued 3,917 migrants in 2023.

## South Asia

In 2023, the Centre recorded 20 incidents, a notable decrease from the 69 incidents recorded in 2022. The majority of these incidents were reported off the Indian coast, followed by Myanmar, Sri Lanka and Bangladesh. Notably, cultural and ancestral ties, akin to patterns observed in Southeast Asia, played a pivotal role in facilitating illegal movements through sea routes, particularly between India and Sri Lanka. A significant Sri Lankan Tamil diaspora residing in Tamil Nadu, India, maintains close connections with their counterparts in Sri Lanka. These strong ties occasionally facilitated the planning and execution of IHM ventures to other countries.

Remarkably, irregular migration from Sri Lanka to India typically involved a comparatively smaller number of migrants (often fewer than 10). The Centre also monitored four incidents of distant migration attempts from Sri Lanka to countries such as La Reunion (03) and Australia (01). The number of migrants involved in these incidents varied from a minimum of seven to a maximum of 69 migrants, undertaking the voyage in a multiday fishing vessel.<sup>3</sup> The remaining incidents of rescue or apprehension off Bangladesh and Myanmar aligned with previous trends observed in the region.<sup>4</sup>



<sup>3</sup>Reportedly, human smugglers in Sri Lanka charge an amount ranging from 1,254 USD to 31,348 USD for one migrant. Source: <https://news.navy.lk/counter-human-smuggling/2023/01/26/202301261120/>

<sup>4</sup>The Centre recorded one incident off Bangladesh and four incidents off Myanmar

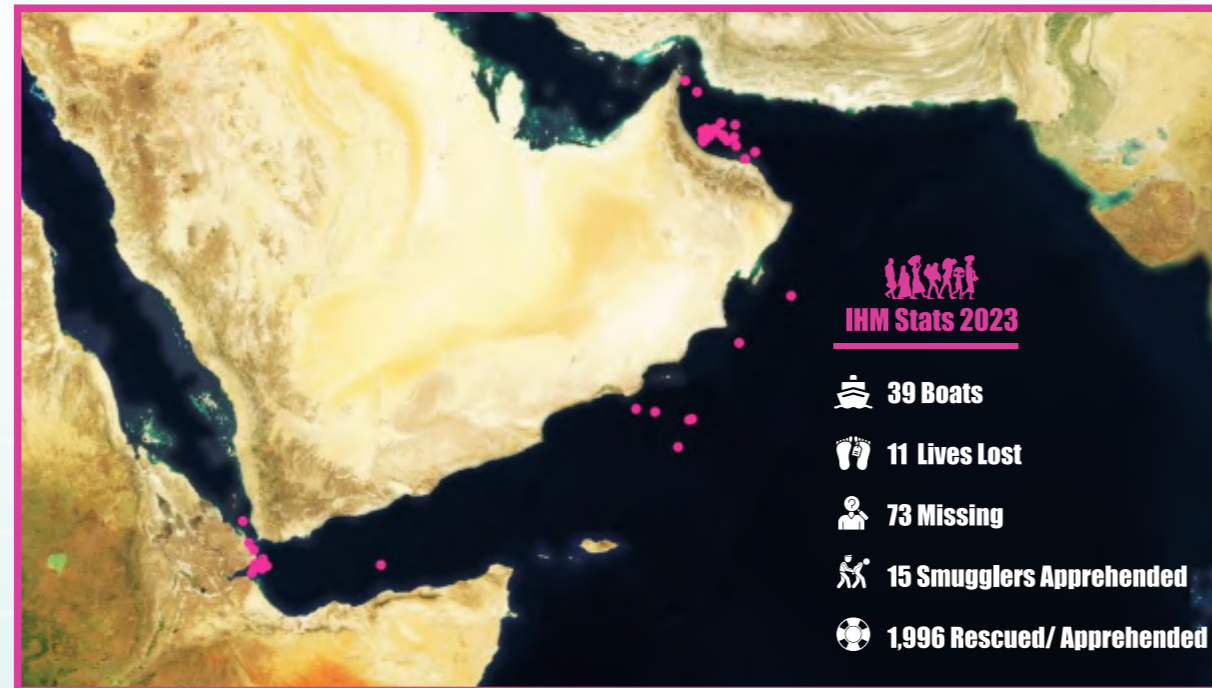
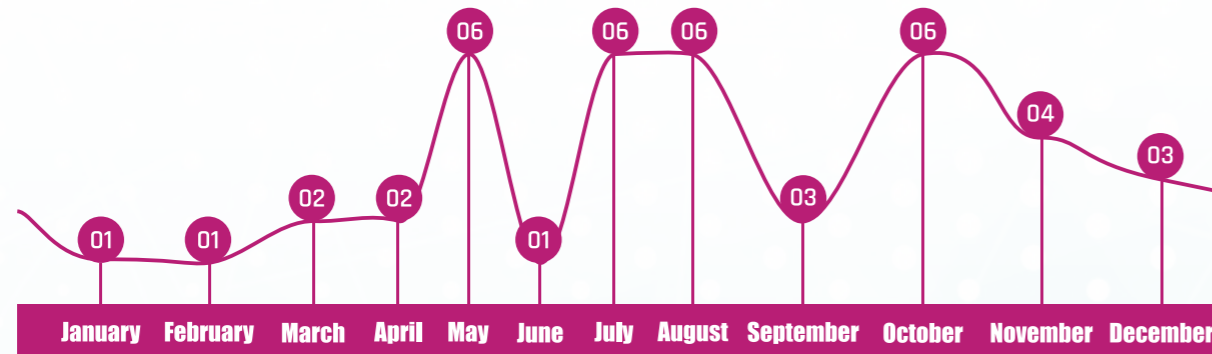




## West Asia

In 2023, the Centre recorded 41 incidents, marking an increase from the 31 incidents recorded in 2022. Oman accounted for the highest number of incidents, followed by Djibouti, Yemen and Egypt. Notably, the majority of incidents in Oman were reported off the Al Batinah North Governorate.

Due to its close proximity to the Makran coast, this route is susceptible to exploitation by various criminal elements for illegal crossings between countries in the region. Economic crises, regional conflicts and similar factors in parts of the region have contributed to the rising number of IHM incidents in this region.



Furthermore, the use of social media platforms by human smugglers to influence migrants in this region is becoming more prevalent.

In a specific incident monitored by the Centre, the movement of migrants was coordinated through WhatsApp. The sequence of events in this particular incident is outlined below.<sup>5</sup>



<sup>5</sup>Over 64 Migrants Feared Dead in Yemen Shipwreck; IOM Urges Action for Safe Migration Pathways. Available at: <https://www.iom.int/news/over-64-migrants-feared-dead-yemen-shipwreck-iom-urges-action-safe-migration-pathways>



# MARITIME INCIDENTS

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# MARITIME INCIDENTS

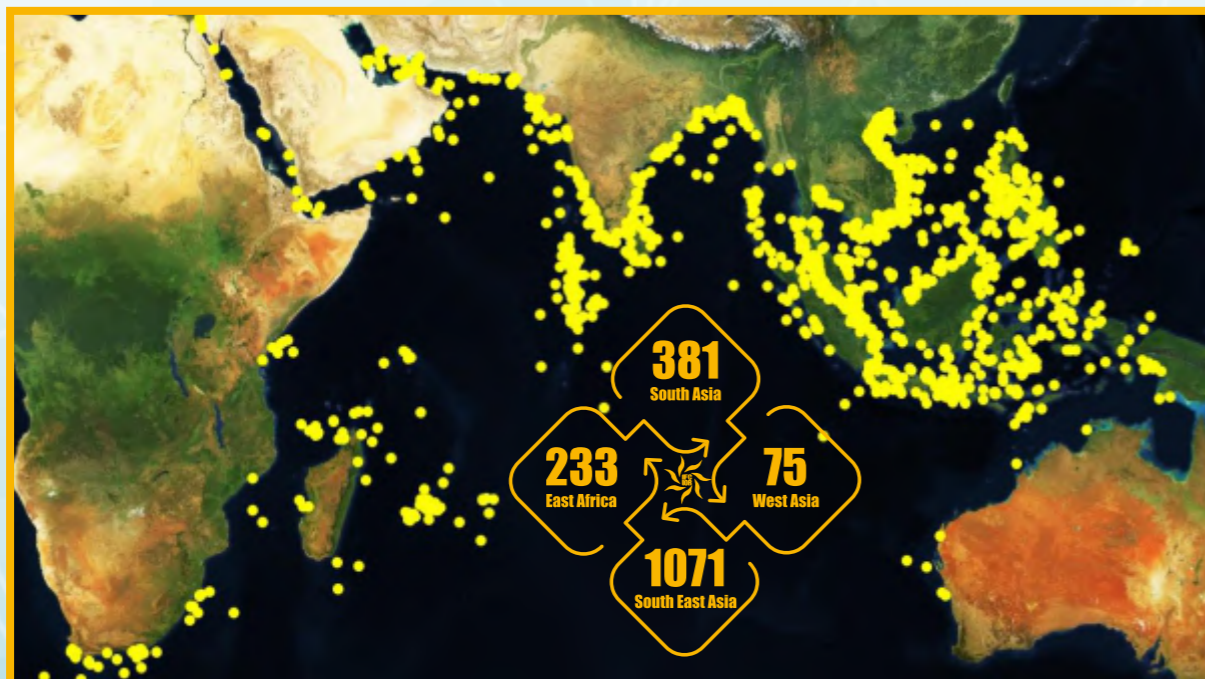
## Overview

In 2023, the IFC-IOR recorded 1,760 maritime incidents (MI), reflecting a 26% increase from the 1,395 incidents in 2022. These incidents were primarily ascribed to mechanical failures, environmental conditions and human errors. Among the recorded incidents this year, a total of 528 seafarers lost their lives, a marginal decrease from the 564 deaths recorded in 2022. Additionally, 736 individuals were reported missing in these incidents, compared to 747 individuals in 2022. Furthermore, regional law enforcement agencies successfully rescued 18,410 lives during these unfortunate events, representing a significant 56% increase

compared to the 11,816 lives rescued in 2022. The Centre has classified the maritime incidents recorded into 16 sub-categories. For ease of comprehension, the sub-categories have been grouped into the following three broad classifications (some incidents may involve more than one sub-category): -

**Incidents Affecting Vessels** - fire, flooding, grounding, collision, mechanical failure, sunk, capsizing, cargo mishap and Search and Rescue (SAR).

**Incidents Affecting Individuals** - medical evacuation (MEDEVAC), man overboard, missing and death.



**Incidents with Legal Connotations** - vessel detained and violent confrontation.

**Others** - This sub-category encompasses the maritime incidents and events that do not fall under the above sub-categories.

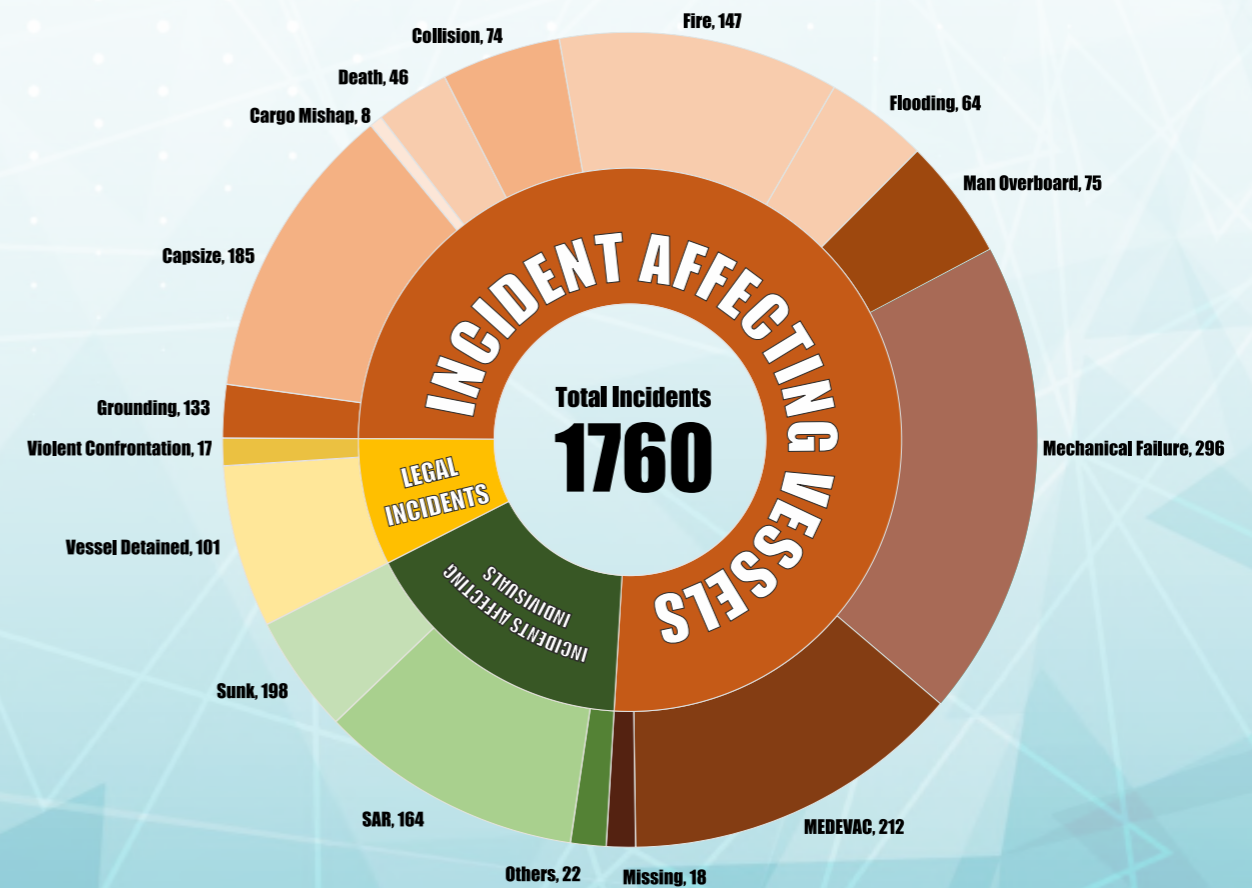
## Type of Incidents

Vessel-related incidents, encompassing occurrences such as fire, flooding, grounding, collision, mechanical failure, sunk, capsizing, cargo mishaps and search and rescue operations, collectively constituted 71% of recorded incidents. Mechanical failure, with 296 incidents, emerged as the leading cause among these. Incidents affecting individuals comprised 29%, incidents with legal implications accounted for 7%, and others/ miscellaneous incidents made up 1%.

waters, with 71 incidents attributed to unauthorized anchoring by vessels and a lack of appropriate permissions or documents. Small vessels and fishing vessels continued to account for the majority of maritime incidents.

The various sub-categories reflected an upward trend except for capsizing, death, missing and cargo mishap as compared to 2022. This indicates better coordination and prompt responses from regional authorities, especially in the coastal waters.

Notably, the majority of 'Vessel Detained' incidents (101), were reported in Malaysian



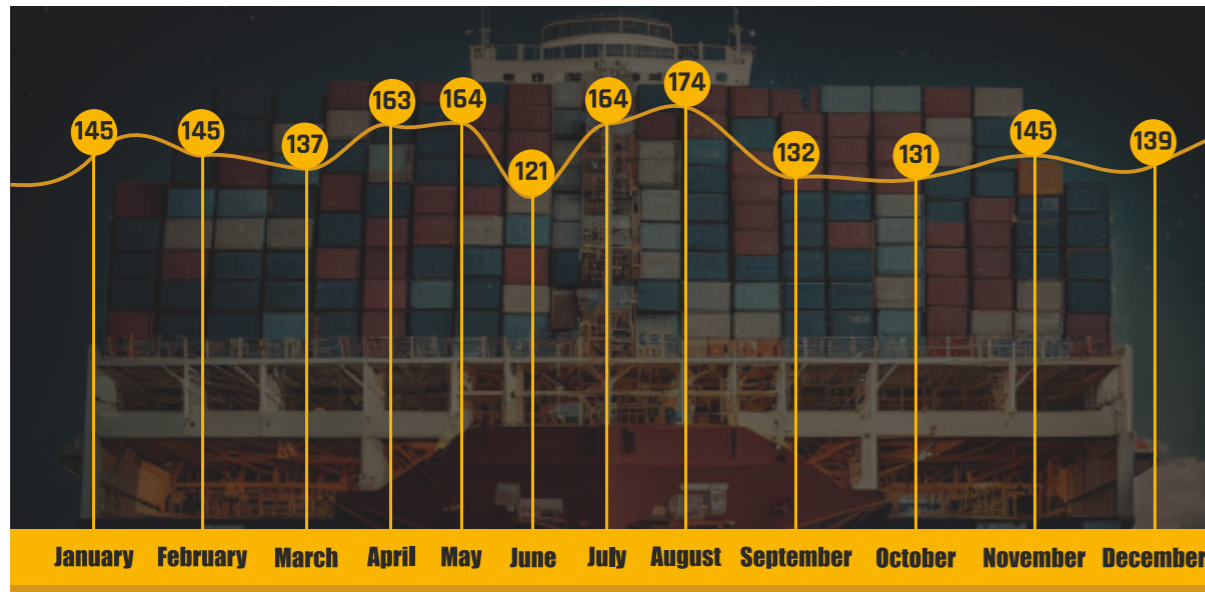


## Month Wise Breakdown

In 2023, an average of 147 incidents per month was observed, marking a 27% increase from the 116 incidents per month recorded in 2022. The months of May, July and August stood out with the highest number of incidents, potentially linked to cyclones<sup>1</sup> {Cyclone Mocha, Fabien, Mawar (Betty), Talim (Dodong), Doksuri (Egay), Khanun (Falcon), BOB 03 and Saola (Goring) } and adverse weather conditions during the monsoons. A total of 502 (29%) incidents which included mechanical failures (78), MEDEVAC (62), capsizing (57), SAR (52), fire (49), sunk (47), grounding (37), vessel detained (29), man overboard (25),

flooding (21), collision (19), death (19), others (07), missing (04), violent confrontation (04) and cargo mishap (02) were monitored during these months.

The incidents during the monsoon period in the Indian Ocean Region (IOR) are often exacerbated by non-adherence to local weather warnings, cyclone advisories, and related alerts, particularly among small vessels and fishing boats. IFC-IOR strongly recommends that mariners adhere to the weather advisories and warnings issued by relevant authorities.

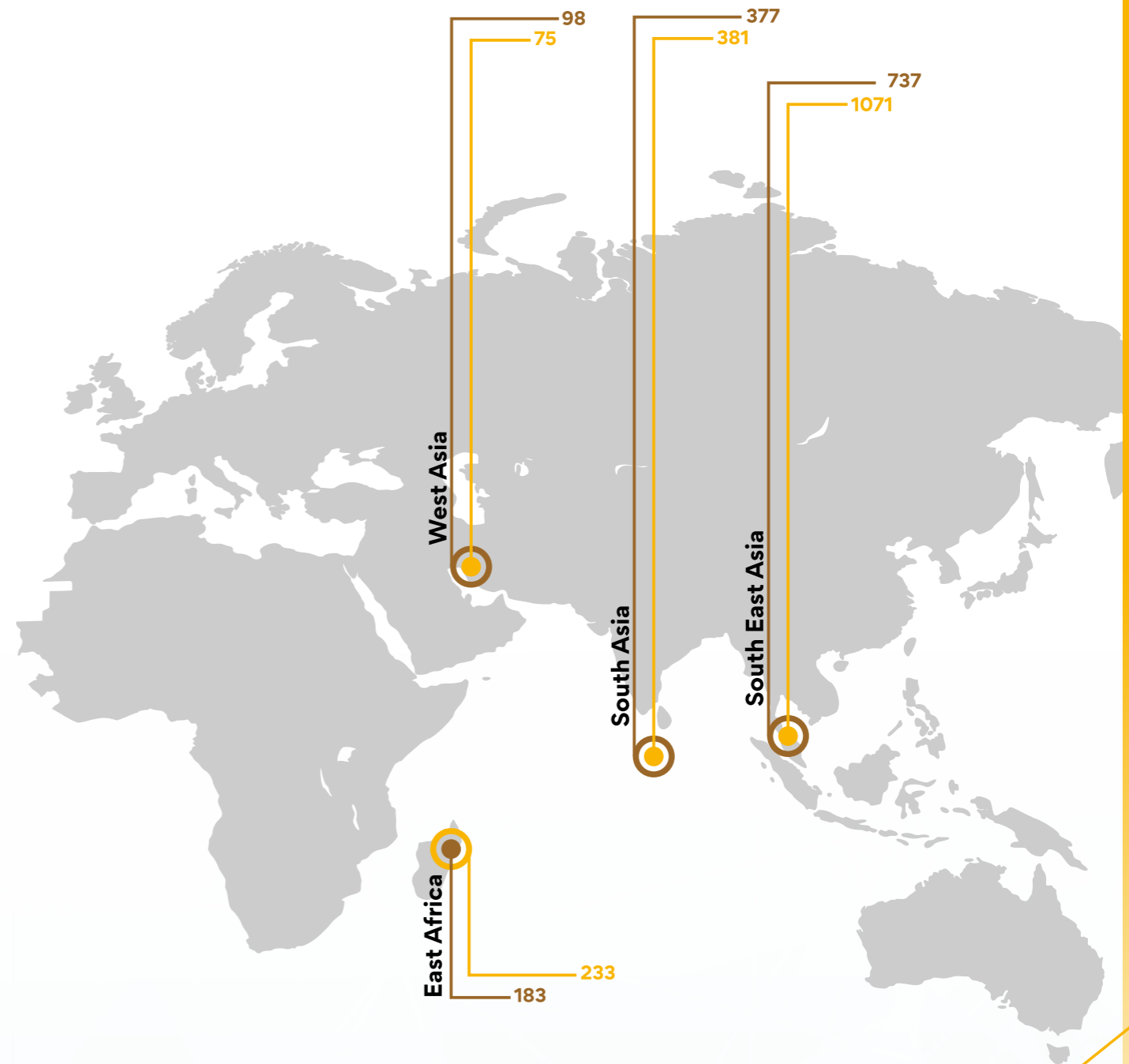


## Regional Distribution

Consistent with the previous year, South East Asia accounted for the majority of incidents, totalling 1,071 and representing 61% of the incidents. Following closely, South Asia accounted for 381 incidents, East Africa for 233 incidents and West Asia for 75 incidents. All regions except West Asia showed an increasing trend in maritime incidents compared to 2022.

The number of incidents continues to peak during the South West monsoon seasons, especially in South East and South Asia.

Year ● 2022 ● 2023



<sup>1</sup>Mocha: 09-15 May 23, Fabien: 12-21 May 23, Mawar (Betty): 19 May - 03 Jun 23, Talim (Dodong) 13-18 Jul 23, Doksuri (Egay): 20-30 Jul 23, Khanun (Falcon): 26 Jul 23 -10 Aug 23, BOB 03: 31 Jul 23 - 03 Aug 23 and Saola (Goring): 22 Aug 23 - 03 Sep 23.

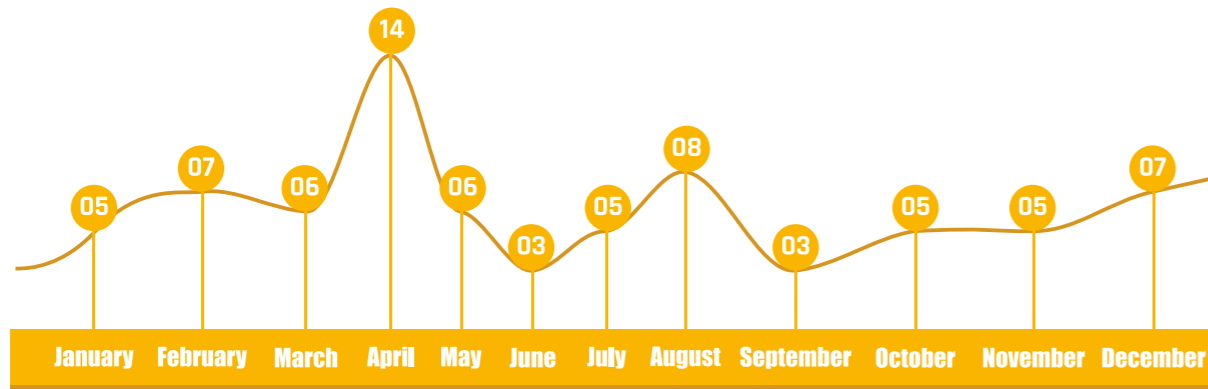


# Analysis of Incidents

## Collision

In 2023, the Centre recorded 74 incidents of collision incidents, marking a significant 32% increase from the 56 incidents in 2022. These incidents encompassed both ship-to-ship collisions and vessels colliding with marine or port infrastructure, with April registering the highest frequency at 14 incidents.

Consistent with the previous year, South East Asia accounted for the highest number of incidents at 68%, followed by South Asia (22%), West Asia (6%) and East Africa (4%). Notably, approximately 53% of the reported incidents took place off the coasts of Indonesia (19 incidents), the Philippines (10 incidents) and Vietnam (10 incidents).



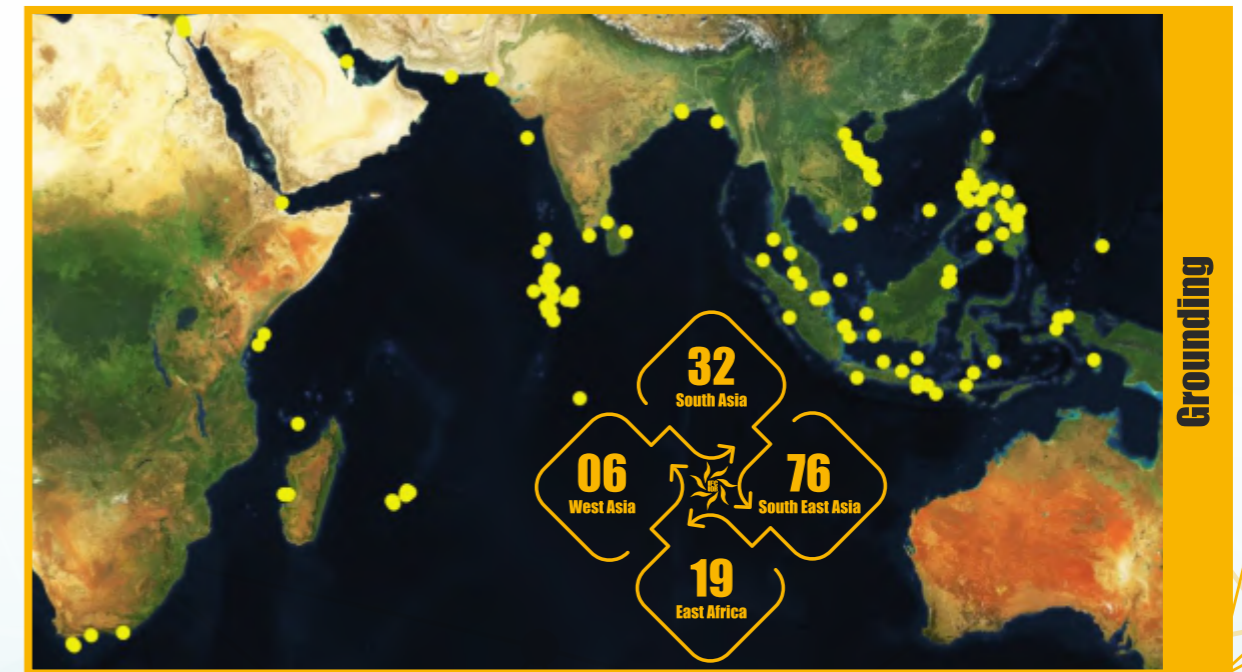
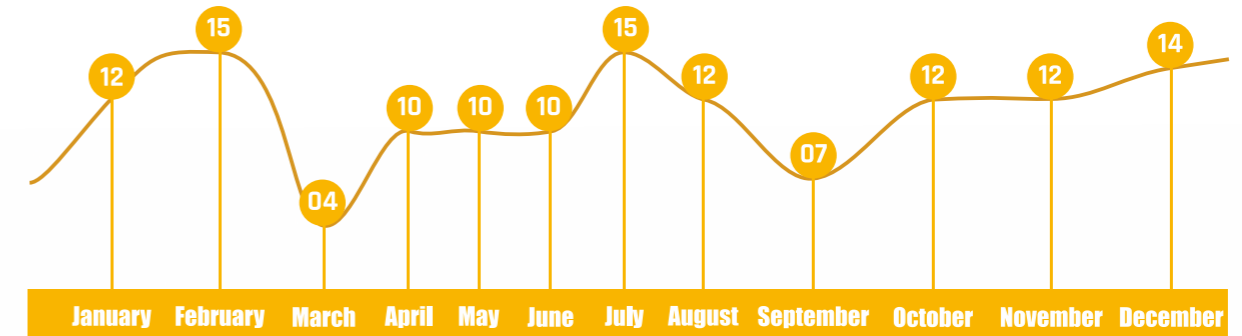
## Grounding

During the year 2023, the Centre monitored 133 incidents of vessels running aground with a monthly average of 11 incidents, an increase of 25% compared to 2022 (106 incidents).

In the Suez Canal, four grounding incidents were reported in 2023, representing an uptick from a single incident in 2022. All the vessels were re-floated and anchored at Suez Anchorage with minimal effect on the flow of traffic.

A majority of the incidents (57%), were reported in South East Asia, with a significant concentration off Indonesia (23%) and the Philippines (17%). The remainder of the incidents was dispersed across South Asia (24%), East Africa (14%) and West Asia (5%). Notably, 52% of the recorded incidents, specifically 69 out of 133, involved smaller vessels, including cargo, passenger and fishing vessels.

In South Asia, Maldives recorded the majority of grounding incidents involving small vessels. Analysis indicates potential factors such as disregard for tidal patterns, adverse weather conditions, negligence of warnings by local authorities, lack of awareness regarding navigational hazards, overloading and crew fatigue. The small vessels that ran aground, particularly during low tides, were successfully re-floated by local authorities.



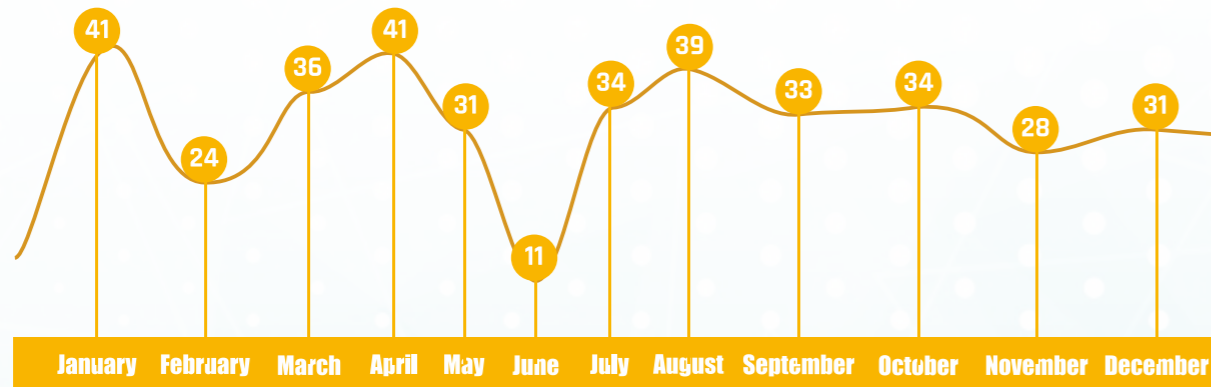


## Capsize and Sunk

The Centre recorded 383 incidents of vessels capsizing and sinking in 2023, averaging 32 incidents per month (7% increase from 359 incidents in 2022). South East Asia accounted for 68% of the total, notably off Indonesia (38%) and Vietnam (30%). The remaining incidents were distributed in South Asia (15%), East Africa (12%) and West Asia (4%). All regions experienced an overall uptick in these incidents.

A notable increase was observed in 'Capsize and Sunk' incidents, particularly involving small/ medium-sized vessels and fishing vessels, especially during rough weather periods.

Small/ medium-sized vessels and fishing vessels contributed to 80% (305 incidents) of the overall 'Capsize and Sunk' incidents. A notable increase was monitored in 2023 (76 incidents) compared to 2022 (26 incidents), during rough weather periods.

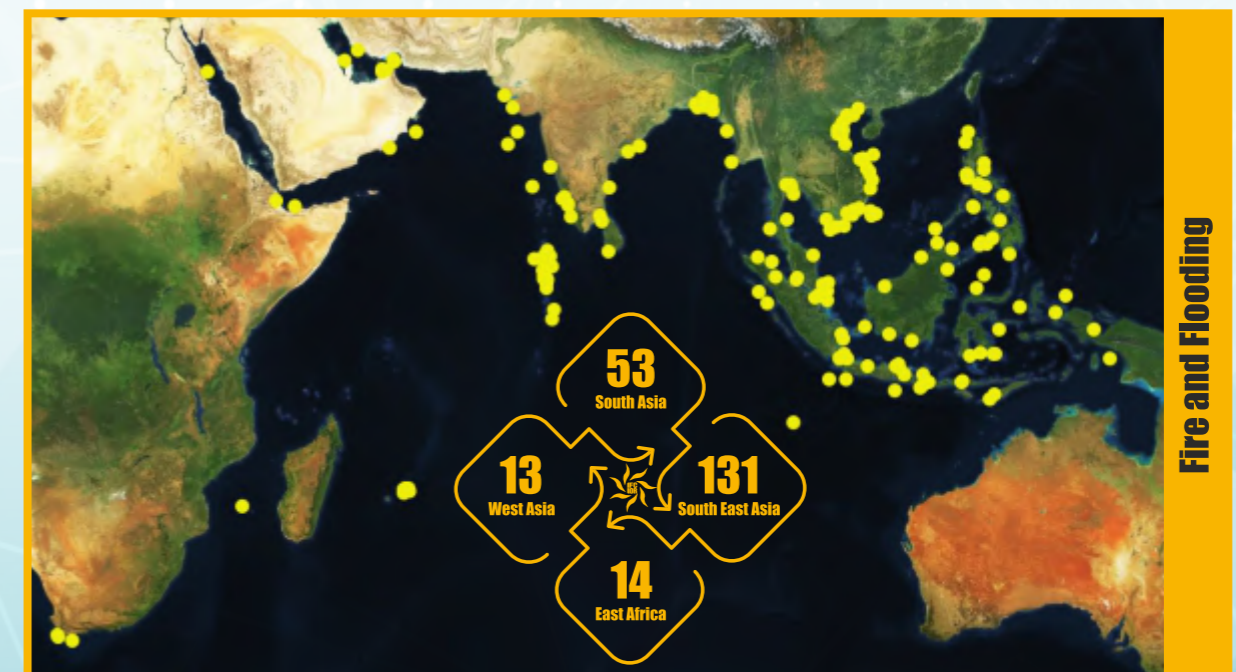
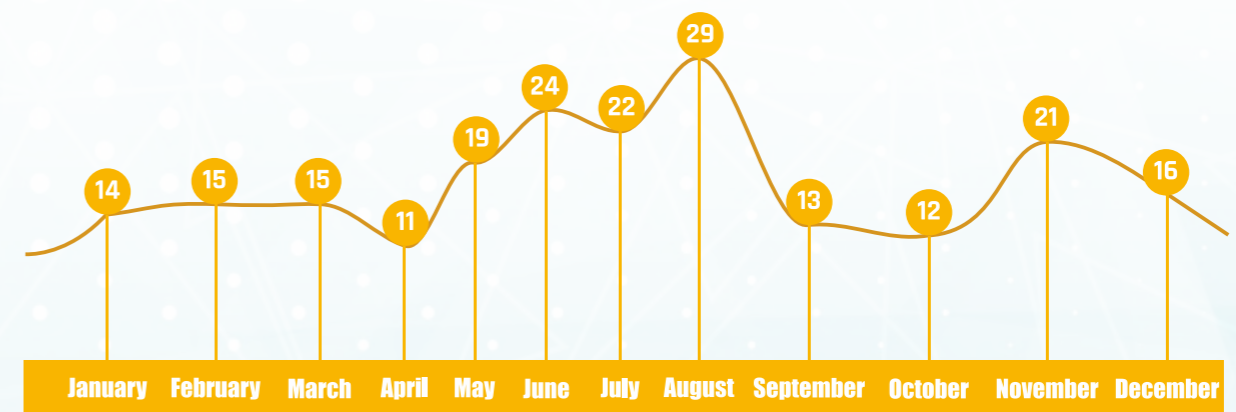


## Fire and Flooding

147 incidents of fire and 64 flooding incidents were recorded in 2023, marking a significant increase from 100 incidents of fire and 23 flooding incidents in 2022. Small boats and fishing vessels constituted 47% of the reported incidents. South East Asia recorded the highest number of incidents at 131, followed by South Asia (53 incidents), East Africa (14 incidents) and West Asia (13 incidents).

Causes of fire in the reported incidents included explosions, fire in machinery/ engine room compartment, electrical fires caused by short circuits and non-compliance with Standard Operating Procedures (SOPs) during fuel transfer.

In particular, there were four significant fires resulting from explosions during oil transfer, with two incidents occurring on the same ship off the coast of Bangladesh.<sup>2</sup> Contributing factors to flooding incidents included the lack of equipment maintenance, non-adherence to SOPs and adverse weather conditions.



<sup>2</sup>Fire incident onboard Bangladesh-flagged oil tanker SAGAR NANDINI-2. Brief on the incident is included in latter part of this report.

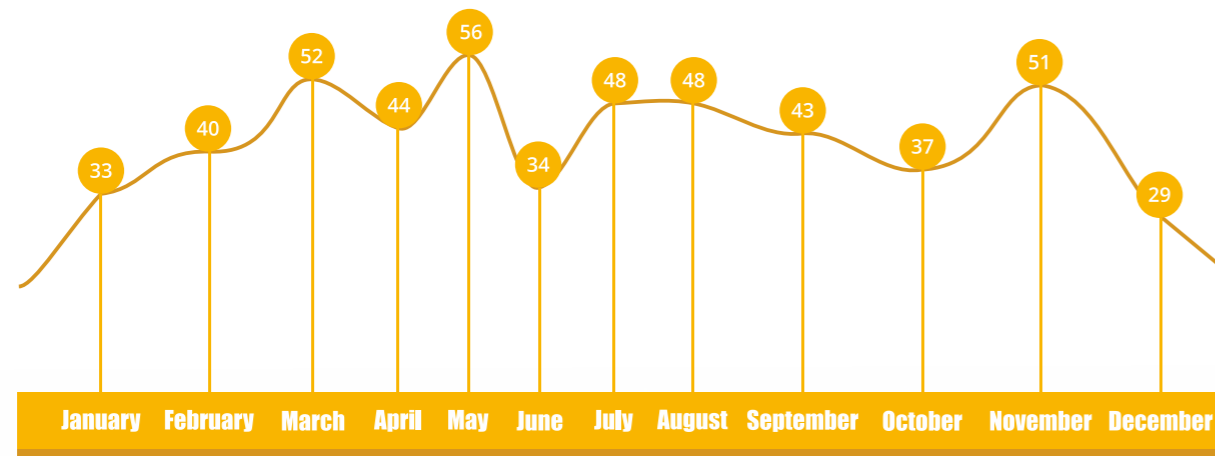


## MEDEVAC, SAR, Man overboard, Death and Missing

In 2023, the Centre recorded 515 incidents involving MEDEVAC, Search and Rescue (SAR), man overboard, deaths and missing individuals, averaging 43 monthly incidents. MEDEVAC and SAR witnessed a notable increase of 32% and 107% from 2022. However, incidents related to deaths and missing individuals decreased by 47% and 68% respectively, indicating enhanced coordination and information sharing among regional search and rescue agencies.

Regional analysis indicates that South East Asia accounted for a majority of the incidents at 58%, followed by South Asia (20%), East Africa (18%) and West Asia (4%). During 2023, a total of 658 lives were saved, while 241 individuals went missing and 106 lives were lost.

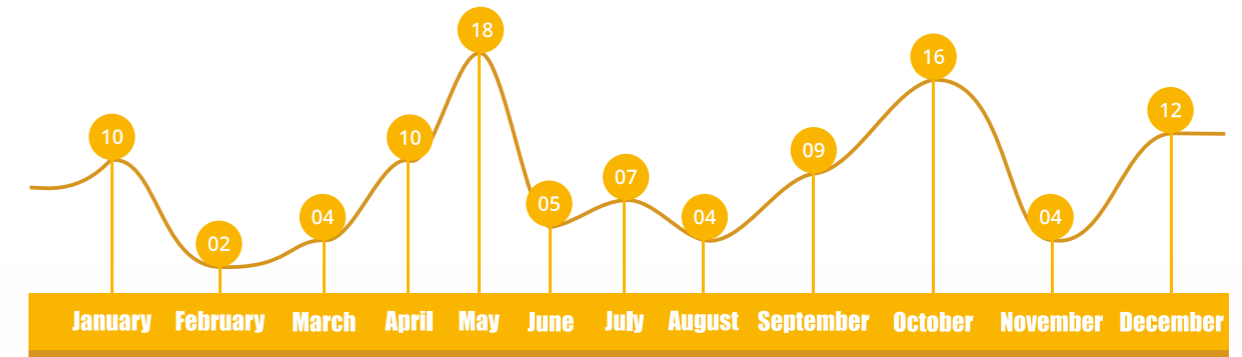
The Centre strongly urges all stakeholders to prioritize safety by adhering to SOPs, local weather warnings and safety measures, especially during monsoon seasons.



## Vessels Detained

In 2023, the Centre monitored 101 incidents, marking a 33% increase from 76 incidents in 2022 with the majority of the incidents in May (18 incidents) and October (16 incidents). Approximately 75% of these incidents were reported in South East Asia, of which significantly, 93% were off Malaysia. The majority of detentions were linked to unauthorised anchoring, with strict enforcement by Malaysian authorities playing a pivotal role. Some incidents involved vessels detained for engaging in transferring fuel without requisite permissions.

Tankers, cargo vessels and tugboats constituted the majority (47%) of the detained vessels. Seafarers are strongly advised to be aware of various regulations promulgated by coastal states before anchoring, unless Force Majeure is applicable.





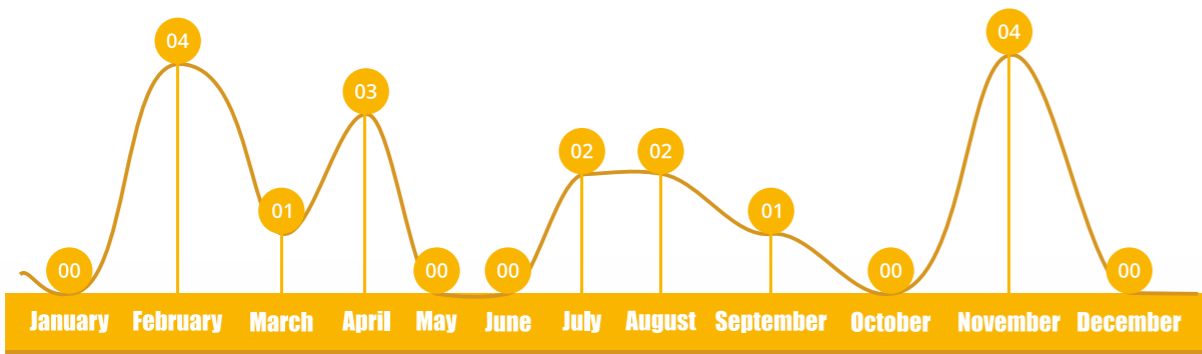
## Violent Confrontation

17 incidents of violent confrontation were recorded in 2023, a slight increase from the 15 incidents in 2022. The analysis highlights that these confrontations were predominantly between fishing groups/ fishing vessels, with occasional instances involving clashes with law enforcement agencies.

South Asia contributed the highest number of incidents, followed by South East Asia and West Asia, with the majority of confrontations reported off the coasts of India and Sri Lanka. A few incidents involving violent confrontation were reported as piracy and armed robbery by open sources and certain agencies.

However, deeper analysis revealed that these incidents were related to certain fishing communities engaging in violence, primarily driven by fish catch related conflicts.

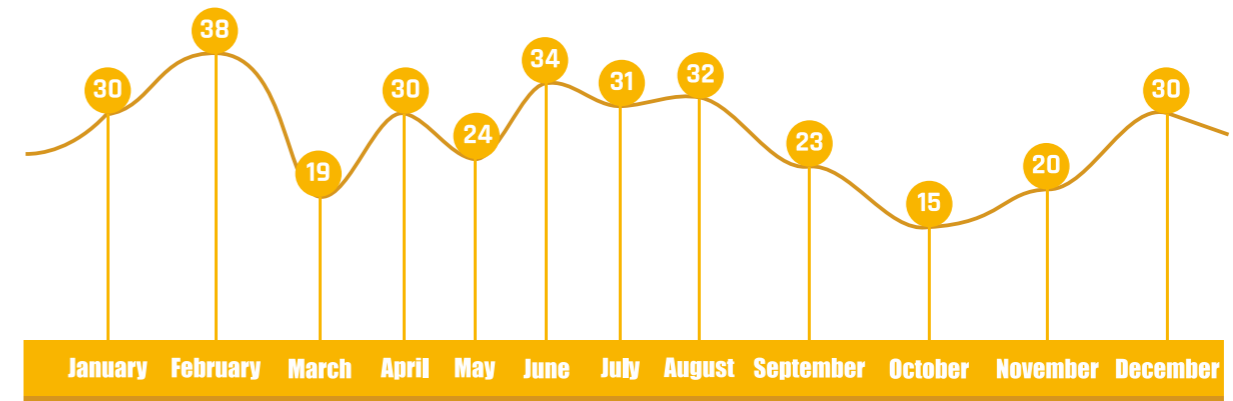
IFC-IOR recommends that the fishermen in the vicinity of the fishing vessels involved in such incidents report these incidents to law enforcement agencies and render necessary assistance to those injured. A total of two fishermen lost their lives, while 10 sustained injuries in these incidents.



## Mechanical Failure, Cargo Mishap and Others/ Miscellaneous

In 2023, the Centre recorded a total of 326 incidents in this category including 296 incidents of mechanical failure, 08 incidents of cargo mishap and 22 other/ miscellaneous incidents. Notably, 96% of the mechanical failures were recorded in coastal areas. South East Asia accounted for the highest number of incidents (171), followed by South Asia (100), East Africa (38) and West Asia (17).

The majority of these incidents were attributed to lack of maintenance, adverse weather conditions and negligence at times, leading to fuel depletion. A significant 60% of the mechanical failures were reported onboard fishing vessels. Incidents of cargo mishaps resulted from improper securing and lashing, mishandling, improper stowage and breakdowns in cargo handling equipment.







## Major Incidents

### Capsizing of LU PENG YUAN YU 028

On 16 May 23, the China-flagged fishing vessel LU PENG YUAN YU 028, with 39 crew members (17 Chinese, 17 Indonesians and five Filipinos), capsized 900 nm South of Cape Camorin in the Indian Ocean and all crew members were reported missing. The vessel capsized around 1900 hrs GMT, coinciding with Cyclone Fabien

which resulted in waves reaching 7 meters (23 feet) in the same area. Several countries, including Australia, China, India, Indonesia, Maldives, Philippines and Sri Lanka coordinated SAR efforts. The Indian Navy's aircraft also extensively searched the area, located the capsized vessel on 18 May 23 and dropped SAR kit to rescue crew members. However, there were no survivors.<sup>3</sup>



Image Source: @South China Morning Post



### Fire Onboard LADY MARY JOY 3

On 29 Mar 23, the Mongolia-flagged passenger ship LADY MARY JOY 3, carrying 249 persons (205 passengers, 35 crew members, five Army and four PCG personnel), caught fire off Baluk-Baluk Island, Philippines. Philippines authorities successfully rescued 216 people, while tragically, 33 lost their lives.

To prevent sinking and facilitate evacuation, the vessel intentionally ran aground and later it was towed to the shore by Philippine authorities. Fortunately, there were no reports of oil spill or marine environment pollution during or after the incident. Survivors attributed the fire to a short circuit in one of the passenger cabins.



Image Source: Philippine Coast Guard

### Fire Onboard SAGAR NANDINI-2

On 01 Jul 23, the Bangladesh-flagged oil tanker SAGAR NANDINI-2, laden with 1.1 million litres of petrol and diesel, caught fire due to an explosion during fuel unloading in Sugandha River, Jhalakathi, Bangladesh. The fire, which burned for 10 hours, resulted in 19

individuals sustaining burn injuries, all of whom were successfully rescued by Bangladesh authorities. Tragically, four crew members lost their lives in the incident. Subsequently, about 400,000 litres of petrol was recovered from the oil tanker.



Image Source: Daily Bangladesh

<sup>3</sup>Sri Lanka Navy conducts risky diving operation at overturned Chinese fishing vessel in high seas. Available at: <https://news.navy.lk/operation-news/2023/05/23/202305231800/> (Accessed on 20 Dec 23).



## IFC – IOR Recommendations

- » Adherence to local weather forecast, cyclone warnings and advisories disseminated by relevant agencies prior putting out to sea.
- » Effective crew change mechanism to minimise fatigue.
- » Proactive and timely reporting to relevant coastal agencies to facilitate timely response.
- » Attention to tidal variations, particularly in shallow waters and awareness of navigational hazards to avoid potential grounding incidents.
- » Proper cargo and weight management to maintain stability in prevailing and envisaged sea conditions. Improperly loaded cargo is likely to shift in adverse weather conditions, thereby leading to stability issues.
- » Installation of latest fire-protection systems such as infrared cameras and heat sensors to detect and provide adequate reaction time, especially for vessels carrying hazardous cargo and cargo requiring special attention such as electric vehicles with Lithium-Ion batteries.
- » Maintain lookout for small vessels in distress and render timely assistance as mandated by SOLAS convention.



## SOLAS Regulation II-1/3-8 for Towing and Mooring Equipment

The IMO Maritime Safety Committee (MSC) has issued new requirements related to towing and mooring equipment. SOLAS Regulation II-1/3-8 regarding towing and mooring equipment includes extended regulatory scope on towing and mooring arrangement and equipment for both new and existing ships. Accordingly, ships with building contract on or after 01 Jan 24; or constructed on or after 01 Jul 24; or delivered on or after 01 Jan 27 will be required to comply with the following new requirements: -

- » Ship is to be provided with arrangements, equipment and fittings of sufficient safe working load to enable the safe conduct of all towing and mooring operations associated with the normal operation of the ship meeting the appropriate requirements in MSC.1/Circ.1175/Rev.1 - Revised Guidance on Shipboard Towing and Mooring Equipment.
- » Each fitting or item of equipment provided under this regulation are to be clearly marked with any limitations associated with its safe operation, taking into account the strength of the supporting ship's structure and its attachment to it.
- » For ships of 3,000 gross tonnage and above, the mooring arrangement is to be designed, and the mooring equipment including lines are to be selected, in order to ensure occupational safety and safe mooring of the ship, based on the guidelines provided in MSC.1/Circ. 1619. Ship-specific information are to be provided and kept on board.
- » Ships of less than 3,000 gross tonnage should comply with the requirement above as far as reasonably practicable, or with applicable national standards of the Administration. Further, all ships (ships constructed before, on or after 01 Jan 07) will be required to comply with following new requirements in respect of inspection and maintenance of mooring equipment including lines with effect from 01 Jan 24: -
- » Mooring equipment, including lines, are to be inspected and maintained in a suitable condition for their intended purposes taking into consideration Guidelines in MSC.1/Circ. 1620.
- » Procedures for mooring operations, inspections and maintenance of mooring equipment, including mooring lines are to be established and available onboard taking into account industry practices in MSC.1/Circ.1620.
- » Procedures to allow the identification and control of mooring lines, mooring line tails and associated attachments are to be established and available onboard.
- » The periodic inspection of mooring lines, mooring line tails and associated attachments are to be included in the onboard maintenance plan or equivalent maintenance management system.
- » Manufacturers' criteria for replacement of mooring lines are to be available.
- » Records of the original design concept, equipment, arrangement and specifications are to be available onboard.

Source: IMO



# MARITIME SECURITY THREATS (HYBRID)

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# MARITIME SECURITY THREATS (HYBRID)

## Overview

Maritime security threats of hybrid nature refer to an action conducted in the maritime domain by state or non-state actors whose goal is to undermine or harm a target by combining overt and covert military and non-military means, conventional capabilities, irregular tactics and formations, indiscriminate violence and coercion, as well as criminal disorder. Such maritime security threats include the usage of conventional military weapons like rockets, missiles, artillery shelling, floating mines, limpet mines, etc. and

unconventional measures like Water Borne Improvised Explosive Devices (WBIEDs), Remote Controlled WBIEDs (RCWBIEDs), Unmanned Aerial Vehicles (UAVs) or Drones and Unmanned Surface Vehicles (USVs). **The sudden upsurge of conflict-related incidents involving aerial attacks on ships using drones/ missiles in the Red Sea and Western Indian Ocean in the last two months of 2023 has been an alarming development.** A brief description of these incidents, along with the analysis, has been elucidated in the succeeding paragraphs.



## Type of Incidents

In 2023, the Centre monitored 43 incidents (successful and unsuccessful attacks), a significant upsurge compared to 2022 (12 incidents). Drone attacks (23), followed by missile attacks (10), vessels seized/ detained (01), suspicious approach (04), threats over radio (04) and attempted boarding (01) were reported in 2023.

The spill over effect of ongoing conflicts globally and the state of regional geopolitics in West Asia resulted in deteriorating maritime security and safety in West Asia.

### Unsuccessful Attacks



Drone Attack

19



Missile/  
Projectile Attack

02

### Successful Attacks



Drone Attack

04



Missile/  
Projectile Attack

08

## Location and Time of Attacks

The majority of the drone and missile attacks were reported between the port of Hodeida and Mocha in the Red Sea. However, a few drone/ projectile attacks were also monitored in the Arabian Sea. Apart from drone/ missile attacks, vessels transiting through the Red Sea were also threatened over radio (MMB Ch 16).

A few incidents of vessels being seized/ detained were also monitored off Mocha, Yemen. Most of the attacks were reported during daytime; however, a few incidents of sighting of drones overhead the vessels were also reported during dark hours.

### TIME OF INCIDENTS



Day

33



Night

10





## Impacts of Attacks

This recent upsurge in attacks in the Red Sea by non-state actors has led some companies to reroute their vessels away from the Suez Canal and the Bab-El-Mandeb choke point, and take longer route around the Cape of Good Hope to reach Europe and Asia, considerably increasing their transit time.<sup>1</sup> Although international forces operating in the area are responding and assisting the vessels transiting through this region, the region remains volatile with the risk of major disruption to global trade through one of the most important choke points in IOR.

Further, the following repercussions of the ongoing conflict and attacks in the Red Sea have been observed: -

- » Increase in war risk premium.<sup>2</sup>
- » Impact on both global energy security and dry cargo trade, especially in Europe.<sup>3,4</sup>
- » Increase in 'Dark Ship' activities.<sup>5</sup>
- » Increase in container freight rates.<sup>6</sup>



<sup>1</sup> The Centre has monitored about 24% reduction in the traffic transiting through the Red Sea and Bab-el-Mandeb and a 20% increase in the traffic transiting through the Cape of Good Hope during Nov-Dec 23.

<sup>2</sup> Red Sea war risk rates 'still rising' after doubling in past week. Available at <https://lloydlist.com/LL1147660/Red-Sea-war-risk-rates-still-rising-after-doubling-in-past-week>. (Accessed on 25 Dec 23)

<sup>3</sup> Red Sea attacks: How will global trade be affected?. Available at <https://www.dw.com/en/red-sea-attacks-how-will-global-trade-be-affected/a-67763899> (Accessed on 25 Dec 23).

<sup>4</sup> Ocean Shipping Rates Surge as Red Sea Attacks Continue. Available at <https://www.wsj.com/articles/ocean-shipping-rates-surge-as-red-sea-attacks-continue-2c21beeb> (Accessed on 26 Jan 24).

<sup>5</sup> AIS data monitored at the Centre indicates a 36% increase in dark ship activities between the end of 2023 and early 2024.

<sup>6</sup> Shipping rates spike as Red Sea crisis draws first blood. Available at <https://www.freightwaves.com/news/container-shipping-rates-spike-as-red-sea-crisis-draws-first-blood> (Accessed on 03 Jan 24).

## Interim Industry Transit Advice: Southern Red Sea And Gulf Of Aden – 15 Dec 23

The interim industry transit advisory by the shipping industry comprising stakeholders from BIMCO, Cruise Lines International Association, INTERCARGO and INTERTANKO, IMCA, and OCIMF highlights the following:-

- » Ship owners, operators, managers and staff should regularly evaluate the risks to their ships, including navigation and collision avoidance, and plan routes accordingly.
- » Switching off AIS makes it marginally more difficult to track a ship but may also hinder the ability of the military to provide support or direct contact.
- » Limiting the information in AIS data fields or switching off AIS could make a ship harder to locate but it is unlikely to ultimately prevent an attack. Limiting AIS data to the mandatory fields and omitting the next port of call (NPOC) could be considered.
- » As per BMP 5, ships planning a passage through the Southern Red Sea and Gulf of Aden should conduct a thorough ship and voyage specific threat and risk assessment considering any additional advice from their flag State.
- » The industry recommendation to use the Maritime Security Transit Corridor (MSTC) remains unchanged in light of the recent attack.

Source: BIMCO

## Navigational Shifts: Major Carriers Rerouted via South Africa

As on 21 Dec 23, some of the largest shipping companies, including Maersk, Hapag-Lloyd, CMA CGM, and MSC, have proactively rerouted their vessels to avoid the Red Sea's crises. OOCL and Evergreen have taken a decisive step by halting cargo acceptance to and from Israel until further clarity emerges. The repercussions of this situation extend beyond container shipping; major oil and gas players, such as BP, are also suspending tanker movements through this critical maritime corridor.

Source: <https://www.seatrade-maritime.com/containers/top-container-lines-reroute-red-sea-avoid-attacks>



# Analysis of Incidents

## Unmanned Aerial Vehicles (UAVs) or Drone Attacks

Unmanned Aerial Vehicles (UAVs) or aerial drones have emerged as a modern means to target military and non-military assets both at sea and ashore. Usage of UAVs for delivering explosives and 'kamikaze drones' have seen a rise in the maritime domain, especially during 2023. The Centre monitored 23 drone attacks (successful/ unsuccessful), a significant increase compared to 2022 (03 incidents). No casualties or injuries to the crew were reported in these incidents. However, damages to the vessels under attack were monitored. In the majority of the incidents, the vessels reported fire onboard due to the impact and explosion of drones. In few incidents, the international forces were able to shoot down the drones aimed at targeting the vessels transiting through this region. It has been reported that the COTS radar fitted onboard merchant ships can detect UAVs/ drones.



## Missile or Projectile Attack

The Centre recorded 10 missile or projectile attack incidents in 2023, a significant increase compared to 2022 (01 incident). Most of the incidents were reported off Mocha and during daytime. The analysis of incidents revealed that the UAVs/ drones flew overhead the vessels prior to missile attacks. There exists a possibility of these UAVs/ drones being used for targeting data. No casualties or injuries to the crew were reported in these incidents. However, damages to the vessels under attack were monitored by the Centre. In the majority of the incidents, the vessels reported fire onboard due to the impact and explosion of missiles, which was extinguished by the ship's crew.



## Vessel Seized/ Detained

In 2023, one incident of vessel seized/ detained was monitored by the Centre. On 19 Nov 23, the Bahamas flagged vehicle carrier Galaxy Leader with 22 crew members was boarded, 50 nm west of Hodeida by an unknown number perpetrators using a helicopter.

In addition, the Centre also monitored a few incidents related to attempted boarding, threats over radio and suspicious approaches in the Red Sea area. These attempts were thwarted in coordination with the international forces in the area.



### Key Takeaways

- » Extensive deployment of drones for surveillance towards identifying potential targets and obtaining targeting data.
- » Some vessels reported instances of GPS jamming.
- » Extensive use of social media platforms by perpetrators to build a narrative justifying attacks.
- » Targeting of vessels potentially affiliated to countries involved in ongoing conflicts.<sup>7</sup>

<sup>7</sup>Ambrey Threat Circular – Indian Ocean Region Insecurity dated 14 Dec 23. Available at: [AMBREY-THREAT-CIRCULAR-INDIAN-OCEAN-REGION-INSECURITY.Pdf](#) (Accessed on 20 Dec 23)



## IFC-IOR Recommendations

- » A thorough threat assessment by the Company Security Officer is needed before planning/ scheduling transit through conflict-affected areas in consultation with MARSEC Centres and Information Fusion Centres in IOR.
- » Before transiting through this region, the shipping company may seek input on recent incidents/ attacks from the IFC-IOR, UKMTO, and MICA Centre.
- » General briefing to the crew about contingency/ emergency plan.
- » The vessels are advised to keep their engines ready for high-speed transit.
- » The measures described in BMP 5 are recommended and may be adapted on a case-to-case basis.<sup>8 9</sup>
- » To report any suspicious activity and to seek any assistance, if required, the vessel may contact IFC-IOR, UKMTO or MICA Centre.
- » Vessels planning to transit through conflict-affected areas are advised to call international forces/ navies for assistance in an emergency on MMB Ch 16 and regularly monitor advisories and notifications promulgated by MARSEC Centres.



<sup>8</sup>BMP5 - Best Management Practices To Deter Piracy And Enhance Maritime Security in the Red Sea, Gulf Of Aden, Indian Ocean and Arabian Sea, Version 5-2019.

<sup>9</sup>BMP WA - Best Management Practices to Deter Piracy and Enhance Maritime Security for Vessels & Mariners Operating Off the Coast of West Africa including the Gulf of Guinea consolidates and enhances existing guidance for specific threats in this region. First Edition - 2020.



# CYBER SECURITY THREATS

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# CYBER SECURITY THREATS

## Overview

In the evolving landscape of technological progress, the shipping industry is undergoing notable transformation. A matter of considerable concern revolves around maritime cyber threats, which have the potential to disrupt shipping operations. A cyber-attack targeting the shipping management system of a port could cause significant challenges and pose risks to the safety and security of the maritime sector. Given the inherently interconnected nature of such infrastructure, attacks can originate from various sources.

The consequences may manifest as disruptions in the supply chain, resulting in economic losses and delays in delivery of goods. Additionally, there's the risk of data breaches, potentially compromising sensitive cargo information, financial records and even crew data. These breaches not only raise privacy concerns but also carry possible legal and financial implications. It is important to note that only a fraction of actual or attempted attacks may be detected, and a significant number of them may go unreported.

## Analysis of Cyber Security Incidents in 2023

The Centre recorded 11 incidents of cyber-attacks on shipping companies and port infrastructure. The analysis highlights ransomware attacks as the primary method of cyber criminals to infiltrate insurance companies, shipping fleets and port infrastructure systems. The tactics employed in ransomware attacks involve hackers penetrating a ship's systems, disabling its operations and subsequently demanding a ransom for the restoration of normalcy.

Such tactics pose a potential risk to financial loss and substantial disruptions in maritime operations. A few notable incidents are mentioned below.

### » Cyber Attack on DNV

On 07 Jan 23, the Norway-based classification society DNV reported that its Ship Manager servers fell victim to a ransomware attack. The targeted fleet management software serves the technical, operational and compliance aspects of fleet management.

Approximately 70 customers, operating a total of around 1,000 vessels, were reportedly affected. As a precautionary measure, the affected servers were promptly shut down after the attack. However, it was confirmed that all vessels retained the ability to utilize the onboard offline functionalities of the Ship Manager software and other systems onboard the vessels remained unaffected.

### » Ransomware Attack on Royal Dirkzwager

On 17 Mar 23, Royal Dirkzwager, a Dutch maritime logistics firm, reported a ransomware attack and confirmed no impact on its operations. Nevertheless, it resulted in the unauthorised access and theft of data from servers containing various contracts, personal information and sensitive details related to port infrastructure. Among the affected services was Ship2Report port arrival platform. Despite the severity of the attack, the company successfully executed recovery through alternative service options. Additionally, it was confirmed that the flagship service, Ship2Report port arrival platform and all related systems were fully restored.

### » Cyber Attack on Several Shipping and Logistics Websites in Israel

On 06 Jun 23, a group of hackers launched ransomware attacks on multiple shipping and logistics websites in Israel. Employing a watering hole attack strategy, which involves compromising websites frequented by specific groups like government officials, journalists or corporate executives, the hacking campaign targeted at least eight Israeli websites, including the shipping

company SNY Cargo. In this type of attack, once a website is compromised, attackers inject malicious code that activates when users visit the site. The hackers utilised malicious JavaScript to collect various data, such as the user's IP address, screen resolution and the URLs of the previously visited webpages. Additionally, they made attempts to discern the user's computer language preference, aiming to tailor their future attacks accordingly.

### » Ransomware Attack on Port of Nagoya, Japan

On 05 Jul 23, Japan's largest port, Nagoya, a pivotal hub for car exports and a cornerstone of the Japanese economy, fell victim to a ransomware attack. The port's operations were disrupted for a span of two days. The cyber incident targeted the computer system responsible for managing shipping containers, compelling the port to cease handling containers arriving at the terminal by trailers. This was also the first reported ransomware attack on a Japanese port, significantly impacting the supply chain, particularly in the auto industry.

### » Cyber Attack on DP World, Australia

On 10 Nov 23, DP World Australia Containers Terminal, responsible for overseeing about 40% of the cargo entering and departing Australia, experienced a cyber-attack across its terminals in Melbourne, Sydney, Brisbane and Fremantle. This incident led to a temporary disruption in operations, resulting in approximately 30,000 containers piling up at these terminals. Fortunately, normal operations were fully restored by 13 Nov 23.

## IFC-IOR Recommendations

- » Increasing cyber security threats necessitate robust cyber security measures, awareness and a collaborative approach to deter and counter cyber-attacks in the maritime domain.
- » Port security organisations, shipping companies, ship owners and organisations linked with the commercial shipping industry may also implement risk control processes and contingency planning, developing and implementing activities necessary to detect a cyber event quickly. It is recommended that maritime agencies, shipping companies and port security organisations continually evaluate and upgrade their cyber security systems to counter these increasingly sophisticated attacks.
- » Identifying measures to back up and restore cyber systems impacted by a cyber event is highly recommended to ensure uninterrupted services for the shipping industry, including port facilities and infrastructure, management software, etc.
- » The Centre recommends that mariners plan for cyber security vulnerabilities, have a response and contingency plan and follow the guidelines outlined in the following: -
  - » Cyber Security Code of Practice for Ships - 2023.
    - » Cyber Security Onboard Ships - Version 4, published by industry bodies (ICS, IUMI, BIMCO, OCIMF, INTERTANKO, INTERCARGO, InterManager, WSC and SYBAss).
    - » Maritime Safety Committee Circular - Guideline on Maritime Cyber Risk Management dated 07 Jun 22.
    - » IMO Resolution MSC-FAL.1/Circ.3 of 05 Jul 17.
    - » Cyber Security Guidelines for Ports and Port Facilities published by the International Association of Ports and Harbours (IAPH) in 2021.
  - » Coastal countries, international organisations and agencies may be urged to collaborate to monitor submarine cable activities and to identify any suspicious or unauthorised activity.
  - » Submarine cables may be protected from unintentional damage by vessels' cables by promulgating a 'Cable Protection Zone', especially near offshore landing points.

Two new Unified Requirements (UR), URs E26 and E27 were released by the International Association of Classification Societies (IACS). These URs have been developed to establish a common set of minimum functional and performance criteria to make a ship cyber resilient. URs E26 and E27 have come into force w.e.f. 01 Jan 24 and will be mandatory for new construction ships and offshore vessels. The brief description of these URs is as follows: -

- » UR E26 - Cyber Resilience of Ships: It provides a minimum set of requirements for cyber resilience of ships and is intended for the design, construction, commissioning and operational life of the ship. The five key functional aspects which this UR covers for cybersecurity are: Identify, Protect, Detect, Respond, and Recover.
- » UR E27 - Cyber Resilience of On-board Systems and Equipment: Aimed at providing minimum security capabilities for systems and equipment to be considered cyber resilient and is intended for third party equipment suppliers.

Source: International Association of Classification Societies (IACS) UR E26 and E27:  
Available at <https://iacs.org.uk/resolutions/unified-requirements/ur-e>





## IMPACT OF INTERNET OF THINGS (IoT) IN THE MARITIME INDUSTRY AND FUTURE TRENDS

- Lt Cdr Vishnu B Nair, Operations Officer II, IFC-IOR

The maritime industry, has adopted new technologies with an aim to evolve towards digitalisation. Digitalisation relies on Big Data, real-time control, artificial intelligence, autonomous vehicles, robotics, network connectivity, virtual reality and Internet of Things (IoT) among others. Recent studies highlight a disturbing trend, which estimates the average cost of a cyber attack in the maritime domain at \$550,000 in 2023 - a threefold surge from \$182,000 in 2022. Even more alarming is that ransom demands have seen a steep rise of over 350% in the same period<sup>1</sup>.

The maritime industry's future is envisioned prominently by the concept of autonomous or remotely operated vessels and the possible attack surfaces that exist therein. However, adopting autonomous/ remotely operated vessels could face several challenges at the operational,

safety, and regulatory levels and the solutions will have to be validated. Even though autonomously operated vessels may not be vulnerable to traditional cyber attacks, incidents such GPS spoofing, manipulating the communication link's attack surface, etc. are very much a possibility. Cases of cyber attacks that may result in collision and environmental hazards, owing to the vulnerability of bidirectional data storage points and retrieval of data from the cloud will remain a cause of concern. On the other hand, remotely operated vessels would comprise of a large network of sensors and would largely be driven by algorithms. The extensive levels of interconnectivity have the potential to open new attack surfaces in sensor networks, remote controls and communication links between remote operators onshore and the vessel. The bi-directional links transporting volumes of data will also be a source of concern with regard to data security.

<sup>1</sup>Kenny, M. and Macdonald, F. (2023) Global Industry Report: Shifting tides, rising ransoms and critical decisions: Progress on maritime cyber risk management maturity. Available at: <https://cyberowl.io/resources/global-industry-report-shifting-tides-rising-ransoms-and-critical-decisions-progress-on-maritime-cyber-risk-management-maturity/> (Accessed on 27 Dec 23).

A holistic approach to maritime cyber security is the need of the hour. This would entail various steps, including making well-informed cyber security investments, partnering closely with OEMs for more resilient and secure software, adherence to best practices, and fostering collaborative expertise regarding cyber security among the shipping community. A vital strand in achieving more robust cyber protection is enhancing cyber security awareness across the community. To support this effort, a legal framework and updated insurance methodologies need to be established to further strengthen solutions to cyber threats.

Moreover, it is important to make cyber security issues fully transparent among the stakeholders to improve the understanding and progress the development of solutions collectively. In the future, among the many challenges that remain, the development of a plan to standardise digital services for autonomous vessels is of high importance. Furthermore, a well-defined security standard that reduces the number and scope of cyber attacks on autonomous vessels and smart ports needs to be introduced for the economic sustainability of commercial shipping.

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2. Meland, P.H. et al. (2021) A Retrospective Analysis of Maritime Cyber Security Incidents. Available at: [https://www.researchgate.net/publication/354657671\\_A\\_Retrospective\\_Analysis\\_of\\_Maritime\\_Cyber\\_Security\\_Incidents](https://www.researchgate.net/publication/354657671_A_Retrospective_Analysis_of_Maritime_Cyber_Security_Incidents) (Accessed on 28 Dec 23).





# MARINE ENVIRONMENT POLLUTION





# MARINE ENVIRONMENT POLLUTION

## Overview

Marine pollution poses a significant threat to ecological systems, aquatic life and marine growth, impacting a state's coastline and rendering it unusable due to the harmful effects of pollutants. These incidents, often accidental, may also be intentionally induced through the use of vessels or other means.

In 2023, the Centre monitored 32 incidents of marine environment pollution, marking a significant increase from 18 incidents in 2022. Among these, 14 were oil spills, 17 included

pollution, including the floating of dead fish, tar-like substances, cigarette packets, microplastics, etc. Additionally, one incident involved an environmental hazard wherein a fishing aggregate device became entangled with marine debris and 200 sq mtr of coral reef was affected.<sup>1</sup>

South East Asia accounted for 20 incidents, followed by four incident each in South Asia, West Asia and East Africa. A brief description of notable incidents is enumerated in succeeding paragraphs.



<sup>1</sup>The incident caused extensive damage to Acropora colonies, mainly branching and tabular. When the device was removed from the reef, several of these colonies were detached from the seabed. Numerous small residues of the device (from the aggregate system, wires, nets and ropes) remained trapped in the crevices of the coral colonies and hard substrate, creating plastic pollution. Available at: <https://www.lejournaldesarchipels.com/2023/06/06/fad-runs-aground-on-dapani-reef/?lang=en> (Accessed on 24 Dec 23).

## Significant Incidents

### MV AASHI

On 21 Feb 23, the Gabon-flagged tanker MV AASHI, carrying 1,900 tons of asphalt, grounded off Siheneasi Village in the Tugala District of North Sumatra, Indonesia. Preliminary investigations indicated that adverse weather conditions and a hull leak led to the grounding. The vessel was submerged about 80% due to the impact of strong waves.

### Environmental Impact

As per reports, the asphalt leak from MV AASHI spread across a radius of 70 kilometers. Additionally, tarballs were found on the pristine beaches of North Nias, including the Sawo-Lahewa protected area, posing a threat

to conservation areas such as Toyolawa - Lahewa, the coastal stretch from Tugala Oyo beach to Faekhuna'a beach in Afulu District and a turtle nesting area. The local fishing community was severely impacted as they were unable to catch fish due to the asphalt spill.

### Removal

Indonesian authorities coordinated the clean up effort. Ministry of Maritime Affairs and Fisheries also engaged with the tanker owner to facilitate compensation of fishermen who were unable to catch fish due to the asphalt spill.



Image Source @ Ministry of Environment and Forestry



## MT PRINCESS EMPRESS

On 28 Feb 23, the MT PRINCESS EMPRESS, transporting 800,000 liters (176,000 gallons) of industrial fuel oil, sank off Mindoro Island, Philippines. The oil spill generated a slick stretching 120 km (65 miles).

### Environmental Impact

The oil spill reached the coastline, resulting in the closure of more than 30 beaches and the enforcement of a fishing ban, causing a financial loss exceeding USD \$5 million. The environmental impact affected an area of about 9,900 hectares of mangrove swamp, 6,000 hectares of seagrass and 20,000 hectares of coral reefs. Additionally, over 60 individuals reported illnesses attributed to the contamination of potable water supplies. Despite the use of toxic dispersants to remove the oil spill, the lingering residual remains exacerbated further environmental damage. Consequently, a state of disaster was declared for nine districts in Oriental Mindoro province, Philippines.



Image Source @SWZ/Maritime

### Removal

The Philippine authorities and local population could complete the clean up operation only in Oct 23.



Image Source @SWZ/Maritime

## Proactive Measures and Initiatives

To help reduce the risk from pollutants, following legislations came into force in 2023

IMO Strategy on Reduction of Green House Gas (GHG) Emissions from Ships

Australia implemented new regulations relating to air pollution from vessels, to align with the IMO's aim of reducing carbon emissions from international shipping by 40% by 2030 compared to 2008 emission levels. This came into effect from 01 Jan 23 in a reissue of Marine Order 97.

During IMO Marine Environment Protection Committee (MEPC) 80 meeting in London from 03 - 07 Jul 23, member states adopted the **2023 IMO Strategy on Reduction of GHG Emissions from Ships**, with enhanced targets to tackle harmful emissions. They also adopted amendments to the **Prevention of Pollution of the Sea (Noxious Liquid Substances in Bulk) Regulations**, which came into force on 01 Nov 23.

On World Ocean Day, 08 Jun 23, the United States introduced a bill, the Clean Shipping Act of 2023, to clean up the shipping industry by eradicating Green House Gas (GHG) emissions from all ocean shipping companies (which account for about 3% of total annual GHG) with which the USA does business.

**Energy Efficiency Existing Ship Index (EEXI) and Carbon Intensity Indicator (CII)**

On 19 Jun 23, the Intergovernmental Conference on Marine Biodiversity of Areas Beyond National Jurisdiction (BBNJ) organised by the UN adopted the Agreement under the United Nations Convention on the Law of the Sea (UNCLOS) on the conservation and sustainable use of BBNJ.

» The Ship Energy Efficiency Management Plan (SEEMP) shall include the methodology for calculating the ship's attained annual operational CII and the required annual operational CII wef 01 Jan 23.

**Three notable IMO Rules came into force, as follows:-**

**Control of Harmful Anti-fouling Systems on Ships (AFS Convention)**

» Amendments have been made to the IMO Convention for the Control of Harmful Anti-Fouling Systems on Ships (AFS Convention) to incorporate regulations on the biocide cybutryne. Ships are prohibited from applying or re-applying anti-fouling systems containing cybutryne wef 01 Jan 23. The removal or application of a coating to AFS with this substance must occur at the next scheduled renewal of the anti-fouling system after 01 Jan 23, but no later than 60 months following the last application of an anti-fouling system containing cybutryne to the ship.

» Operational CII - Each ship of 5,000 gross tonnage and above, shall calculate the attained annual operational CII over a 12-month period from 01 Jan to 31 Dec for the preceding calendar year.

» The attained annual operational CII shall be documented and verified against the required annual operational CII to determine operational carbon intensity rating A, B, C, D or E, indicating a major superior, minor superior, moderate, minor inferior or inferior performance level, either by the administration or by any organisation duly authorised by it.

» A ship rated D for three consecutive years or rated as E shall develop a plan of corrective actions to achieve the required annual operational CII.



# CLIMATE CHANGE AND SECURITY

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# CLIMATE CHANGE AND SECURITY

## Overview

Climate change has far-reaching implications for the world's oceans and seas. Rising sea levels, extreme weather events, ocean acidification and alterations in sea temperature and circulation patterns pose challenges to the maritime domain. The World Meteorological Organisation's report on the 'Provisional State of the Global Climate 2023' underscores that the past nine years have been the warmest on record and the rate of global mean sea level rise in the past decade (2013 - 2022) is more than twice the rate observed in the first decade on record (1993 - 2002).<sup>1</sup>

According to the 'CLIMATE CHANGE 2023 Synthesis Report' published by the Intergovernmental Panel on Climate Change (IPCC), the global surface temperature in the last two decades has risen by 1.1° C, from the year 1850 - 1900.<sup>2</sup> The report highlights that the emission of Green-House Gases (GHGs) is the principal contributor towards the same. The emission of GHGs has increased due to human activities, mainly unsustainable use of energy, unplanned usage of lands, changes in lifestyle and patterns of consumption within countries and among individuals.

The shipping industry alone, contributes 3 % of the GHG (a total of 1,076 million tonnes of CO<sub>2</sub>e). "Carbon dioxide equivalent" or "CO<sub>2</sub>e" describes different GHGs in a standard unit. For any quantity and type of GHG, CO<sub>2</sub>e signifies the amount of CO<sub>2</sub> which would have the equivalent global warming impact by way of using fuel oil as the main energy source for the vessels. This fraction can go high as the shipping volume is ever evolving.

Climate security represents the impact of climate change on both traditional and non-traditional security threats. The effects associated with climate change are expected to intensify pre-existing issues and conflicts while simultaneously giving rise to new challenges. Key areas of concern include the rise in sea levels, heightened severity and frequency of natural disasters, conflicts over fisheries, climate-induced migration and threats to freshwater supply. In long term, this phenomenon poses a risk not only to stability of national and regional political landscapes but also to human survival. In the short term, climate change disrupts natural systems, leading to adverse effects on human systems and potentially contributing to maritime crimes and illegal human migration.

Further, escalation of certain maritime crimes, such as illegal fishing, may act as a catalyst for the emergence of others, such as piracy. The Centre recognises the role of climate security challenges and its affects in maritime safety and security

Addressing climate change and security issues requires a multifaceted strategy that combines environmental stewardship with robust security measures. Coastal countries may collaborate to develop and implement comprehensive climate change mitigation and adaptation plans involving a transition towards sustainable energy sources, carbon emission reduction and eco-friendly practices in the maritime domain. Additionally, enhancing early warning systems for extreme weather events and building resilient infrastructure along coastlines are critical steps to mitigate the immediate impacts of climate change.

It is important to consider development goals and aspirations while working out a strategy to tackle the challenges of climate change. The 28th Conference of the Parties (COP28) organised by the United Nations Framework Convention on Climate Change (UNFCCC) in Dubai from 30 Nov to 13 Dec 23, deliberated on some of these key issues.<sup>3</sup>



<sup>1</sup> Provisional state of the global climate 2023 World Meteorological Organization. Available at: <https://wmo.int/files/provisional-state-of-global-climate-2023> (Accessed on 21 Dec 23).  
<sup>2</sup> Climate change 2023 synthesis report - IPCC. Available at: [www.ipcc.ch/report/ar6/syr/downloads/report/IPCC\\_AR6\\_SYR\\_LongerReport.pdf](http://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_LongerReport.pdf) (Accessed on 21 Dec 23).

<sup>3</sup> <https://unfccc.int/news/cop28-agreement-signals-beginning-of-the-end-of-the-fossil-fuel-era>





During the summit, almost all the participating countries agreed to gradually stop using fossil fuels, which are the main contributors to climate change. It is one of the significant agreements reached during the summit after 28 successive deliberations and negotiations. Some of the notable decisions of the meeting are as follows: -

- » Triplicating the global renewable energy capacity and doubling the global average annual rate of energy efficiency enhancements by the year 2030.
- » Fast-tracking the endeavours to phase out unsustainable coal power.
- » Expediting global attempts to achieve 'net-zero emission energy' mechanisms at the earliest or by the mid-century by using zero or low carbon fuel systems.
- » Changing away from fossil fuels in energy systems through tidy and reasonable means at par with the ever-evolving science and technology during the current decade to achieve net zero by 2050.
- » Expediting zero and low-emission strategies through renewable energies, nuclear power, and reduction and discontinuing of carbon capture related technologies.
- » Fast tracking the global reduction of non-CO<sub>2</sub> emission, methane in specific, to a greater extent by 2030.
- » Accelerating the reduction of emissions by highway traffic through an array of options such as infrastructure development and employment of zero or low emission vehicles.
- » From a security perspective, fostering regional cooperation and information sharing are crucial to face emerging threats exacerbated by climate change. Strengthening maritime surveillance capabilities, investing in research on the nexus between climate change and security and engaging in diplomatic efforts to promote sustainable practices are vital components of a holistic approach. By integrating climate considerations into security policies and fostering international collaboration, the nations in the IOR can collectively navigate the challenges posed by climate change while ensuring the stability and security of the region.



# IMPACT OF CLIMATE CHANGE ON SMALL ISLAND NATIONS IN THE INDIAN OCEAN

-Maj Hassan Nadeem, Maldives ILO

The small islands in the Indian Ocean encounter numerous challenges inherent to their geographical location, limited economic resources, substandard living conditions, small landmass and uneven population distribution. The economic growth of island states primarily hinges on two key sectors: tourism and fisheries. Nevertheless, the detrimental impacts of climate change exacerbate the existential challenges these small nations face, burdening their economic landscapes.

Scientific studies have shed light on the daunting challenges these small states confront due to global warming, rising sea levels, heightened frequency of natural disasters, weather patterns and population displacement. The impending threat of rising sea levels has already cast a shadow over the future existence of several small island states. During the UN Security Council meeting on sea-level rise and its implications for international peace and security, UN Secretary-General António Guterres underscored that few coastal nations are on the brink of disappearance, with some facing sea level rise rates three times higher than the global average.<sup>1</sup>

The impact of climate change on island states like the Maldives, Mauritius, and Seychelles is elucidated in the following paragraphs.

The escalating sea levels have significantly affected the small island state of Maldives, leading to challenges such as coastal erosion, a substantial decline in freshwater levels, coral bleaching and unforeseen swells impacting the islands. Given that 80% of the Maldives' territory is situated below one meter above mean sea level, the country

stands as one of the most susceptible nations globally to the impact of climate change. The Maldivian government is implementing substantial land reclamation projects and constructing robust concrete sea walls around its islands to fortify vulnerable areas. To address the financial aspect of this initiative, in 2023, the government allocated MVR 2006 million from the budget for environmental protection.<sup>2</sup> This funding is to support natural disaster response and relief operations during calamities emerging from the adverse effects of climate change.

The Republic of Mauritius faces significant climate risks and disasters due to its position in an active tropical cyclone basin. Mauritius has experienced a series of prolonged droughts, intense cyclones, hurricanes, and flash floods in recent years. The duration of the intermediate dry season has extended, leading to a shift in the onset of summer rains, thereby intensifying pressure on the availability of fresh water to meet agricultural, tourism, industrial and domestic demands. The most recent catastrophe was the impact of Super Cyclone Freddy, recognized as the longest-lasting tropical cyclone globally. This super cyclone brought heavy rainfall, widespread flooding and powerful winds, resulting in extensive damages and financial losses across the island state. To address challenges emanating from climate change, Mauritius has outlined a clear path towards climate sustainability through the "Maurice Ile Durable" program. Both the public and private sectors are urged to integrate climate change considerations into their new development strategies to ensure resilience and sustainability in the face of environmental challenges.<sup>3</sup>

Seychelles faces a range of environmental threats akin to those experienced by Mauritius. Its geographical location and terrain render it susceptible to tropical cyclones, tsunamis, storm surges, heavy rainfall, flooding, landslides, rockslides, and forest fires. Seychelles' coastal areas, which hold much of its natural resources, face considerable risks from climate change, including rising sea levels and ocean acidification, which affect key sectors such as fisheries and tourism. The country's heavy dependence on tourism, coupled with past instances of coral bleaching, exacerbates these risks. Climate change, particularly rising sea levels and coastal erosion, significantly impacts the country's development and infrastructure, particularly along its coastline. As the second nation to ratify the United Nations Framework Convention on Climate Change, Seychelles is dedicated to reducing emissions by 26% by 2030 and achieving a net-zero emissions economy by 2050.<sup>4</sup> Adaptation measures, such as constructing retaining walls and implementing ecosystem-based strategies, are being prioritized. The Seychelles Government is actively integrating climate change adaptation into its policy framework, guided by the Seychelles' National Climate Policy. This policy seeks to foster a sustainable, climate-resilient and low-carbon future for Seychelles.

## Conclusion

The small island nations in the Indian Ocean confront a pressing existential threat attributed to their geographical constraints, limited resources and the impacts of climate change. Factors such as rising sea levels, frequent natural disasters, shifting weather patterns and resultant population displacement collectively pose a significant and direct challenge to the existence of coastal countries within the Indian Ocean Region (IOR).

In response to these challenges, a comprehensive and collaborative approach is imperative. Engaging all stakeholders, including the local population, is crucial to developing and implementing effective countermeasure to ensure the sustainability and survival of these vulnerable nations. This demands a concerted effort from various sectors to address the multifaceted threats posed by geography, resource limitations, and the evolving climate scenario. Thus, the presence of an IFC-IOR emerges as a pivotal component of this collaborative strategy. By integrating data from its national and international linkages, and other relevant stakeholders, the IFC-IOR enhances situational awareness and enables a more coordinated response to emerging threats.



<sup>1</sup>Sea level rise poses 'unthinkable' risks for the planet, Security Council hears | UN News. Available at: <https://news.un.org/en/story/2023/02/1133492> (Accessed on 20 Dec 23)

<sup>2</sup>Maldives Budget 2023. Available at: <https://2023.budget.gov.mv/en> (Accessed on 20 Dec 23)

<sup>3</sup>Climate Change. Available at: <http://metservice.intnet.mu/climate-services/climate-change.php> (Accessed on 20 Dec 23)

<sup>4</sup>Seychelles: Seychelles-Requests for an Extended Arrangement Under the Extended Fund Facility and an Arrangement Under the Resilience and Sustainability Facility and Cancellation of the Current Arrangement Under the Extended Fund Facility-World Bank Assessment Letter for the Resilience and Sustainability Facility. Available at: <https://www.elibrary.imf.org/view/journals/002/2023/235/article-A002-en.xml> (Accessed on 20 Dec 23)



# HIGHLIGHTS OF 2023 @ IFC-IOR

Information Fusion Centre – Indian Ocean Region (IFC-IOR) was established on 22 Dec 18, by the Government of India with a vision to promote collaborative maritime security and safety in the Indian Ocean Region (IOR). IFC-IOR's mission aligns seamlessly with the tenets of India's vision of 'Security and Growth for All in the Region' (SAGAR), underscoring the need for security, stability and prosperity in the IOR. In the five years since its inception, it has established itself as a linchpin in the regional maritime security architecture and has been increasingly playing a pivotal role in enhancing cooperation and information sharing amongst regional and international partners towards a safe and secure IOR.





## CAPACITY BUILDING EFFORTS

### MARITIME INFORMATION SHARING WORKSHOP (MISW)

In 2023, the Centre organised its flagship event, the MISW from 14 - 16 Sep 23, marking a significant milestone in fostering collaboration among maritime security stakeholders in the region. The theme of MISW 2023 was 'Advancing Maritime Security for a Sustainable Future'. The event brought together 41 delegates from 26 countries, representing both the Indian Ocean Rim Association (IORA) and the Djibouti Code of Conduct/Jeddah Amendment (DCoC/JA).

Day one of the workshop featured a series of enlightening sessions, each designed to provide attendees with a nuanced understanding of the challenges and opportunities in holistic maritime safety and security. On the second day of the workshop, participants were introduced to India's two-pronged approach towards maritime security with the Information Management and Analysis Centre (IMAC) being a key enabler for national

maritime security efforts and IFC-IOR engaging with regional and international partners for a safe and secure IOR. The highlight of the second day was the maritime security exercise, a hands-on experience that immersed participants in real-world scenarios. The participants were divided into four syndicates, each assuming the role of a regional information fusion and maritime security centre, which grappled with a wide array of maritime security and safety challenges. The third and final day of the workshop was an exclusive session dedicated to the Djibouti Code of Conduct-Jeddah Amendment (DCoC/JA) countries.

The primary agenda was to streamline the DCoC Information Sharing Network (ISN) Standard Operating Procedures (SOPs). Cdr Deepak Lavaniya, Deputy Director of IFC-IOR, led a thought-provoking session on the critical need for a robust information-sharing architecture to enhance maritime safety and security.

MISW 2023 not only fostered knowledge exchange but also strengthened international bonds, reaffirming the commitment of nations to work together towards a safer and more secure maritime environment. The workshop served as an invaluable platform for

participants to delve deep into the intricacies of maritime security and the robust information-sharing mechanisms required for success in the endeavour. The workshop not only nurtured knowledge but also forged a functional understanding of contemporary challenges among all those involved.





### Maritime Data Management Course for Eastern Africa Standby Force (EASF)

The EASF is one of the five regional standby forces of the African Standby Force (ASF) established under the African Peace and Security Architecture (APSA). Lt Cdr Rohit Jadhav, Operations Officer, IFC-IOR, conducted the maiden Maritime Data Management course for EASF member states from 24 - 28 Apr 23 at EASF Secretariat, Nairobi, Kenya.



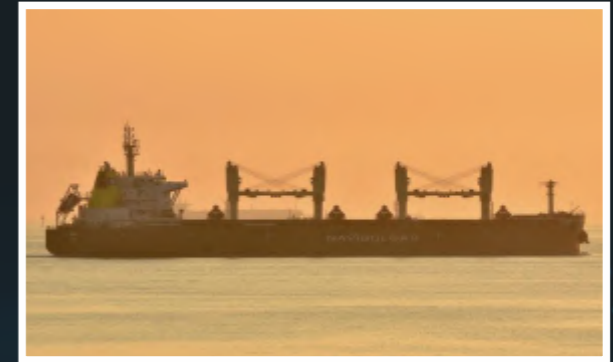
## OPERATIONAL RESPONSES AND ASSISTANCE TO THE SHIPPING INDUSTRY

The last quarter of 2023 was characterised by a deteriorating maritime security situation in the Red Sea and Gulf of Aden due to the ongoing conflict in West Asia and sudden resurgence of piracy. The Centre's collaborative efforts have played a pivotal role in orchestrating operational responses and assisting the shipping community during recent attacks. The following are a few notable instances wherein IFC-IOR's contribution was instrumental in coordinating operational responses and offering assistance.

**CMA CGM SYMI.** On 25 Nov 23, the Centre's national and international linkages played a crucial role in coordinating the assistance provided in response to the drone attack on CMA CGM SYMI.



**MV RUEN.** On the night of 14/ 15 Dec 23, during the hijack incident onboard MV RUEN, the Centre played a pivotal role in coordinating operational response and assistance to the vessel, resulting in the safe evacuation and rescue of the injured crew member.



**MV CHEM PLUTO.** On 23 Dec 23, the Company Security Officer (CSO) of MV CHEM PLUTO reported a drone attack 220 nm SW of Porbandar, India, to IFC-IOR. The Centre promptly orchestrated and coordinated the deployment of assistance to the vessel on the high seas. Indian Navy and Coast Guard ships/ aircraft were deployed to safely escort MV Chem Pluto to an Indian port, facilitating necessary repairs. The nature of the attack was also comprehensively investigated.





# COLLABORATION IS THE KEY: SRI LANKA ILO PERSPECTIVE

-CDR INDIKA WIJESINGHE, SRI LANKA ILO

The evolution of technology has empowered non-state actors with asymmetric tactics, presenting a formidable challenge for law enforcement agencies attempting to address these threats. The major categories of transnational crimes include piracy and armed robbery, contraband smuggling, Illegal Unreported and Unregulated (IUU) fishing, irregular human migration, improvised maritime security threats and cybercrimes. These issues threaten maritime security and demand a comprehensive and collaborative approach to ensure a peaceful and prosperous IOR. Addressing the multifaceted threats prevalent in the expansive Indian Ocean necessitates recognising the fact that no individual country or organisation possesses the requisite capacity and capability to respond effectively and neutralise these challenges. Collaboration is the most viable and constructive approach, which offers numerous benefits to all regional stakeholders.

Considering the interconnected nature of maritime trade, where ships, crews, goods, and routes span multiple countries, it becomes evident that transnational crimes are similar in nature and have its impacts

across borders. Therefore, collaboration emerges as the most effective strategy to combat these challenges. This collaborative approach leverages a perfect blend of experience, expertise, subject knowledge, domain awareness, local insights, and individuals' collective capacity and capability, forming the foundation for a robust and effective force against transnational threats.

Collaboration is not an instantaneous achievement; it necessitates a foundation of trust between all stakeholders. Beyond trust, three critical elements play pivotal roles in establishing collaboration among like-minded partners: integrity, credibility and a partnership built upon shared interests and threats. The attainment of these objectives lays the groundwork for trust, forming the basis for successful collaboration. Trust is fostered once integrity, credibility, shared interests, and threats are aligned, enabling effective collaboration. This collaborative approach, grounded in trust, empowers authorities to address transnational maritime crimes comprehensively. The result is enhanced maritime safety and security in the Indian Ocean Region.

**Thus, collaboration is the key.....**





# GLOSSARY OF TERMS

## PIRACY AND ARMED ROBBERY

**Hijack.** An illegal act of violence where attackers have illegally boarded and taken control of a ship against the crew's will with an objective which could include armed robbery, cargo theft or kidnapping.

**Kidnap.** An illegal act of violence involving unauthorised forcible removal of persons belonging to the vessel.

**Attack.** An act of violence, where a ship has been subjected to an aggressive approach by an unidentified craft AND weapons have been discharged.

**Illegal Boarding.** An act of violence, where attackers have boarded a ship but HAVE NOT taken control. Command remains with the Master.

**Sea Theft.** Any illegal act of stealing property from a vessel without any violence against the crew or passengers, other than an act of piracy and directed against a ship or property on board a ship.

**Sea Robbery.** Any illegal act of stealing property from a vessel committed with arms or with violence against the crew or passengers, other than an act of piracy and directed against a ship or property onboard a ship.

**Suspicious Approach.** An action involving, definite alteration towards the ship, rapid increase in speed which cannot be accounted for in the prevailing conditions, sudden changes in course towards ship and aggressive behavior by the craft.

**Attempted Sea Theft.** Any illegal act of an attempt to steal property from a vessel without any violence against the crew or passengers, other than an act of piracy and directed against a ship or property onboard a ship. Nothing reported to be stolen from the vessel.

**Attempted Sea Robbery.** Any illegal act of an attempt to steal property from a vessel committed with arms or with violence against the crew or passengers, other than an act of piracy and directed against a ship or property onboard a ship. Nothing reported to be stolen from the vessel.

**Attempted Boarding.** An action involving, close approach or hull-to-hull contact with report that boarding paraphernalia were employed or visible in the approaching boat, but are thwarted by BMP measures, PAST, weather conditions, lack of appropriate equipment, etc.

## CONTRABAND SMUGGLING

**Contraband Smuggling:** Contraband is any item that is illegal to produce or possess. Smuggling is most prominently a form of customs violation, avoidance of duties, and tax fraud. Contraband smuggling involves movement of goods that are against the law to be imported or exported.

**Drugs.** The broad understanding of drug smuggling is derived from commentary of the United Nations Convention against Illicit Traffic in Narcotics Drugs and Psychotropic Substances, 1988. For the purpose of this report, "drugs" also refers to UNODC's definition of any natural or synthetic substances in Schedules I and II under the Controlled Substances Act, and "illicit traffic" under the International Drug Control Convention. The report categorises drugs by type and effect under the following definitions: -

- » **Opioids.** Substances that bind to  $\mu$ -opioid receptors, including opium and derivative substances, such as heroin and morphine. Also includes semi-synthetic opioids of varying strength such as codeine, fentanyl, carfentanyl, methadone, hydrocodone, hydromorphone, meperidine, tramadol, and oxycodone.
- » **Cannabinoids.** All substances derived from or synthesized to emulate and bind to cannabinoid receptors in the brain. Includes hashish, cannabis, ganja, charas, marijuana, bango, and synthetic cannabinoids.
- » **Amphetamine Type Substances (ATS).** Amphetamine and derivatives, predominantly methamphetamine, captagon, ecstasy, syabu, yaba, and mephedrone; includes ephedra as a precursor for synthetic drugs.
- » **Other Drugs.** There are several additional drugs noted in this report that are not easily placed into these categories. They include khat, cocaine, LSD, magic mushrooms, and ketum.

**Domestic Products.** Goods that are either common household products or manufactured items. Examples include rice, flour, salt, turmeric, gas cylinders, and cars.

**Natural Resources.** Goods or resources that are harvested from nature, including gold, wood, sand, and metals.

**Fuel.** Smuggling fuel is a form of arbitrage aimed at bringing lower priced fuel from one jurisdiction into a higher priced jurisdiction in order to obtain a profit through the price differential. Examples include petroleum, crude oil, and gas.

**Tobacco.** Any product of the tobacco plant, including cigarettes, cigars, and chewing tobacco.

**Alcohol.** Smuggling of alcoholic beverages that are illegal to be imported or exported.



**Weapons.** Goods designed for inflicting bodily harm or any form of damage, including guns, knives, explosives, and fireworks.

**Wildlife.** Live animals, bird, or animal parts listed under the Convention on International Trade in Endangered Species (CITES) of Wild Fauna and Flora, including elephant tusks, pangolin scales, sea cucumber, tortoises, turtle eggs, and shells.

**Others.** Items not falling in any of the categories above such as ancient artifacts, ammonium nitrate, etc.

### ILLEGAL UNREPORTED UNREGULATED (IUU) FISHING

**IUU Fishing.** A range of offences covering fishing without permission or in violation of regulations of the flag state or host nation, misreporting or failure to report catches to relevant authorities where required to do so, fishing vessels without a flag or national registration, or fishing on stocks without management measures in place.

**Illegal Fishing.** Fishing conducted by national or foreign vessels in waters under the jurisdiction of a State, without the permission of that State, or in contravention of its laws and regulations; conducted by vessels flying the flag of States that are parties to a relevant regional fisheries management organisation but operate in contravention of the conservation and management measures adopted by that organisation and by which the States are bound, or relevant provisions of the applicable international law; or in violation of national laws or international obligations, including those undertaken by cooperating States to a relevant regional fisheries management organisation.

**Unreported Fishing.** Fishing activities which have not been reported, or have been misreported, to the relevant national authority, in contravention of national laws and regulations; or are undertaken in the area of competence of a relevant regional fisheries management organisation which have not been reported or have been misreported, in contravention of the reporting procedures of that organisation.

**Unregulated Fishing** Fishing Activities in the area of application of a relevant regional fisheries management organisation that are conducted by vessels without nationality, or by those flying the flag of a State not party to that organization, or by a fishing entity, in a manner that is not consistent with or contravenes the conservation and management measures of that organization; or in areas or for fish stocks in relation to which there are no applicable conservation or management measures and where such fishing activities are conducted in a manner inconsistent with State responsibilities for the conservation of living marine resources under international law.

**Local IUU Fishing.** IUU fishing conducted by fishing vessels of a state, in the waters under the jurisdiction of the flag state, without valid license/ permit of that state, or in contravention of its laws and regulations. Offences by licensed foreign fishing vessels are also counted under this category.

**Poaching.** IUU fishing conducted by foreign flagged vessels, in waters under the jurisdiction of a state, without valid license/ permit of that state, or in contravention of its laws and regulations.

### IRREGULAR HUMAN MIGRATION (IHM)

**Human Smuggling.** Human Smuggling involves facilitating the illegal entry of a person into a State of which that person is not a national or permanent resident, for financial or other material benefits. Smuggled migrants pay smugglers to facilitate their movement. Attempts by individual(s) alone, are also classified under this category.

**Human Trafficking.** Human Trafficking is where the person is coerced and moved/ migrated against his/ her will (forced or deceived into doing so) into a State of which that person is not a national or permanent resident.

**Irregular Human Migration.** The incidents have been placed in a single category of Irregular Human Migration due to the challenges associated with conclusively determining the will and intent of illegal migrants.

### MARITIME INCIDENTS

**Fire.** Incidents involving fire and/ or explosion in the maritime domain.

**Grounding.** Incidents involving vessel running aground.

**Collision.** Incident involving collision of vessels or collision of vessel with navigational hazards/ aids.

**Mechanical Failure.** Incidents involving failure of mechanical shipboard systems such as engine, steering, switchboards etc.

**Medical Evacuation (MEDEVAC).** Incidents involving evacuation of crew from their vessel due to a medical emergency.

**Search and Rescue (SAR).** Incidents involving conduct of search and rescue by authorities or maritime personnel to locate missing person or vessel.

**Sunk.** Incident involving vessels sinking at sea due to maritime accidents attributable to collision, weather or other constraints.

**Capsize.** Incident involving capsizing of vessels sinking at sea due to maritime accidents attributable to collision, weather or other constraints.

**Man Overboard.** Incidents involving crew/ passengers falling overboard from a vessel.

**Vessel Detained.** Incidents involving apprehension of vessels by maritime authorities of a state for engaging in unauthorised activities within the maritime jurisdiction of the state.

**Violent Confrontation.** Incident involving acts of violence (such as use of force) in an encounter between two or more parties in the maritime domain.

**Cargo Mishap.** Incidents involving cargo including containers falling overboard at sea.

**Missing.** Incidents involving mariners reported missing due to accidents at sea.

**Death.** Incidents involving loss of life at sea attributable to collision, weather or other constraints.





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