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Governing Sri Lanka's maritime space

An assessment of Sri Lanka's maritime challenges and maritime domain awareness capabilities

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Executive summary and key findings

General

- Sri Lanka's geographic location in the central-northern Indian Ocean, next to some of the world's busiest sea lanes, has a profound impact on its maritime interests and perspectives. This creates significant economic opportunities, as well as threats to its security and the environment.
- Sri Lanka has important maritime interests that are likely to grow over the coming years, particularly in the following areas:
    - ports and maritime services
    - fisheries
    - offshore energy and resources
    - undersea infrastructure
    - tourism.
- Providing services for maritime trade could be a major driver in Sri Lanka's economic development. Colombo Port is already one of the busiest trans-shipment ports in the world and there is significant potential for further development in port and related services, including ship maintenance and repair, logistics, bunkering and other services. However, these services come with associated threats relating to maritime safety, port security and environmental risks that will become ever more important as this industry develops.
- Sri Lanka is heavily dependent on fisheries for food, economic benefits and employment. More can be done in developing Sri Lanka's potential in the fisheries sector, including better protecting resources from illegal fishing, particularly in northern waters, as well as in improving the management and productivity of Sri Lanka's fishing fleet.
- The maritime domain is likely to become a significant source of energy for Sri Lanka, including through offshore wind generation and, potentially, offshore oil and gas.
- Sri Lanka is highly reliant on international communications via undersea cables. There are also proposals to build an undersea electricity link and an oil and petroleum pipeline to India. These linkages are highly vulnerable to disruption.
- The tourism industry, much of it marine-based, is a major contributor to Sri Lanka's economy. Further developing a sustainable tourism industry will depend on the country's ability to make the ocean a safe, secure and unpolluted place and appropriately manage interactions between tourism and ports and maritime services.

Sri Lanka and maritime domain awareness

- Overall, Sri Lanka is able to achieve a good level of maritime domain awareness (MDA) despite limited resources and the lack of a central coordinating agency.
- Many Sri Lankan agencies with responsibilities in the maritime domain, meaning effective MDA requires significant efforts in facilitating co-operation and information sharing among numerous military and civilian agencies.
- The high maritime traffic density in Sri Lankan waters make achieving effective MDA more difficult. This traffic includes numerous commercial vessels using Sri Lankan ports or the nearby sea lanes, as well as thousands of small fishing boats in nearshore areas.
- The general level of understanding about coordinated MDA as a concept among civilian agencies is gradually growing, but new mechanisms need to established to facilitate the sharing of information and coordination on maritime issues.
- Some Sri Lankan agencies that have key roles to play in the maritime domain, including the Sri Lanka Coast Guard, Fisheries and Customs, are severely under-resourced, particularly in on-water enforcement capabilities (which is entirely lacking in the cases of Fisheries and Customs).
- A lack of resources, expertise and uncertainties about its roles and responsibilities vis a vis other agencies severely limits the effectiveness of the Marine Environmental Protection Authority in protecting and responding to major environmental incidents at sea.
- The Sri Lanka Coast Conservation Department has put significant effort into developing the Coastal Zone Management Plan, the most recent of which was produced in 2024. The plan takes an integrated approach to the conservation, development and sustainment of Sri Lanka's coastal zone.
- The United Nations Development Programme (UNDP) is assisting Sri Lanka in the development of its own Marine Spatial Plan. The Sri Lanka Navy Hydrographic Office also plans to establish a Marine Spatial Data Infrastructure (MSDI) system.
- There is no single maritime enforcement law that harmonises Sri Lanka's existing enforcement regime and provides a comprehensive framework to enforce Sri Lanka's laws at sea. This creates legal uncertainties, gaps and overlaps between different maritime enforcement agencies.
- Sri Lanka does not have a Civil Maritime Security Strategy that would provide a framework for inter-agency cooperation and guidance on key priorities.

MDA capabilities

- The Sri Lanka Navy, Sri Lanka's leading agency with responsibility for the maritime domain, does an excellent job in achieving effective MDA given its limited resources. However, many of the Navy's responsibilities still reflect the imperatives of the civil conflict, and some of these would be more appropriately handled by civilian agencies.
- The Sri Lanka Navy's Information Fusion Centre (IFC) is a valuable tool for achieving MDA, although its effectiveness is limited by resourcing issues and limitations on cooperation with other government agencies.
- The Maritime Rescue Coordination Centre (MRCC), also operated by the Sri Lanka Navy, works well in practice. However, its effectiveness could be improved by developing information sharing and command and control arrangements with other Sri Lankan agencies.
- The Fisheries Monitoring Centre, operated by the Fisheries Ministry, provides effective monitoring of Sri Lanka's multi-day fishing fleet throughout the region, including through the BluTraker VMS system provided by Australia. There is no equivalent monitoring system for Sri Lanka's large fleet of non-multi-day fishing vessels.
- Sri Lanka has posted a Liaison Officer to the Information Fusion Centre-IOR (IFC-IOR) in India, but does not have Liaison Officers posted to the Singapore Information Fusion Centre or Madagascar Regional Maritime Information Fusion Centre. There is significant room for improvement in information flows from the IFC-IOR and other regional Information Fusion Centres to Sri Lankan national agencies.
- Responsibilities for the control of hydrographic surveys have recently been reorganised under the Ministry of Defence following concerns that Sri Lanka had not maintained sovereign control over hydrographic data. This has sparked an effort to further develop sovereign hydrographic capabilities. This will likely also require developing new ways for Sri Lankan agencies to work with trusted international partners.
- Sri Lanka has a useful network of Coastal Observation Posts (COPs) that are staffed by detachments from the Sri Lanka Navy. The COPs provide convenient bases for patrolling coastal areas and some operate coastal radar and optical sensors. The COPS need to be upgraded to improve capabilities and reduce personnel costs., including new radars, optical sensors, UAVs and ATVs for transport.
- The Sri Lanka Air Force is developing a maritime aerial surveillance capability. However, further work will be required to develop surveillance, analysis and information sharing mechanisms.
- There is potential for exploring 'crowdsourcing' MDA solutions, (including mobile phone-based applications) using fishing and commercial vessels as the 'eyes and ears' of Sri Lankan agencies.

Regional and international cooperation

- Sri Lanka's MDA cooperation with neighbouring India and Maldives is generally satisfactory, although there appears to be little operational cooperation with Bangladesh or with other Bay of Bengal countries.
- There has been some recent collaboration on fish stock assessment with Sri Lanka contributing to the Bay of Bengal-Stock Assessment Network (BOB-SAN).
- Although Sri Lanka plays an active role in the Indian Ocean Rim Association, there is little direct cooperation with key groupings/programs in the western Indian Ocean, such as the Indian Ocean Commission or the Maritime Security Programme (MASE).
- Many countries and international organisations provide assistance to Sri Lanka in building maritime security and MDA capabilities, including India, Australia, the United States, Japan, France and the UN Office of Drugs and Crime. However, coordination of these efforts is generally poor and requires improvement.

Recommendations for the Sri Lankan Government

Enhancing the effectiveness of information fusion systems

- **Information Fusion Centre:** Enhance the role of the Information Fusion Centre as an independent institution in which other Sri Lankan agencies are encouraged to play an active role. This includes:
    - placing the IFC in a location separate from Naval Headquarters (i.e. keeping it at Colombo Fort when Navy Headquarters moves to the new Defence Headquarters Complex)
    - easing physical access requirements to the IFC for representatives of relevant civilian Sri Lankan agencies and selected representatives of foreign agencies
    - review mechanisms for efficient information flows with other agencies, which may include:
        - reviewing existing information sharing mechanisms between the Sri Lanka Air Force and Sri Lanka Navy (IFC and MRCC), as well as the Aeronautical Rescue Coordination Centre, to ensure the creation of a shared common operating picture. This may include information sharing between Navy and Air Force operations rooms to supplement information supplied by Sri Lanka Navy observers on aircraft
        - reviewing existing information sharing mechanisms between the Police and Sri Lanka Navy to ensure efficient and timely sharing of information
        - agencies such as Customs developing new systems for information sharing with the Sri Lanka Navy.
- **Maritime Rescue Coordination Centre:** Enhance the role of the MRCC as an independent inter-agency coordination mechanism to respond to incidents. This includes through:
    - establishing memoranda of understanding (MoUs)/standard operating procedures (SOPs) between the Sri Lanka Navy and the Sri Lanka Air Force, Sri Lanka Ports Authority, National Aquatic Resources Research and Development Agency, Marine Environmental Protection Agency, Customs, and the Department of Emigration and Immigration, Ministry of Ports & Shipping, and the Attorney-General's Department to ensure clarity of roles and required support during specific incidents (this may also require some changes in law – see below)
    - placing the MRCC in a separate location from Naval Headquarters and easing physical access requirements to the MRCC for representatives from relevant civilian Sri Lankan agencies so the MRCC can more easily be used as a command centre if required during specific incidents.
- **Sri Lanka Air Force:** As well as developing its maritime aerial surveillance capabilities, the Sri Lanka Air Force should review what MDA cooperation mechanisms need to be developed with other agencies. This may include:
    - building MDA capabilities, including the use of satellite-based MDA applications in addition to use of the Indian Ocean Region Information System (IORIS)/SeaVision platforms
    - reviewing the effectiveness of information sharing mechanisms between the Sri Lanka Air Force operations room and the IFC and MRCC, potentially including posting a liaison officer to the IFC
    - reviewing the adequacy of direct communications systems between Sri Lanka Air Force surveillance aircraft and Sri Lanka Navy and Coast Guard vessels
    - co-ordination of Sri Lanka Air Force maritime patrols with vessels from the Sri Lanka Navy and Sri Lanka Coast Guard.

- **Hydrographic and oceanographic activities:** The Sri Lankan government is in the process of reorganising its hydrographic/oceanographic activities. Future actions should include:
    - a continued focus on developing sovereign national capabilities, with assistance from selected foreign partners, as appropriate, including the acquisition of specialised vessels and equipment to facilitate deepwater research
    - a continuation of the existing moratorium on marine scientific research activities by foreign vessels in Sri Lankan waters until at least the end of 2025, while developing new modes of cooperation with trusted international partners that allow for Sri Lankan control over research and data
    - developing a national strategic plan that provides a pathway for the achievement of key strategic goals in hydrographic and oceanographic products, services and data.
- **Monitoring of the Sri Lankan fishing fleet:** The Fisheries Ministry should investigate options for installing economical tracking systems on commercial, non-multi-day fishing vessels to supplement the Vessel Monitoring System installed on multi-day vessels.

Enhancing MDA in northern waters

- **International study of IUU fishing:** Commission a study by international experts of the environmental impact of IUU fishing in northern waters as a way of helping to bring international attention to the problem.
- **Radar systems:** Improve the radar systems in the north to gain greater evidence for the prosecution of Indian fishers operating illegally in the Palk Strait area. Ideally, this should involve commercially available equipment that can be configured to Sri Lanka's needs.
- **Night-capable equipment:** As most interceptions of illegal fishers occur at night, night-capable equipment should be acquired, such as personal night vision devices and night-capable drones.
- **Sri Lankan Army:** Consider a joint services approach to shore surveillance in the northern area that utilises Sri Lanka Army personnel.

Changes to organisational responsibilities/laws

- **Joint Agencies Maritime Advisory Group:** Establish a Joint Agencies Maritime Advisory Group. Chaired by a representative from the President's Office, it should include senior officials from all agencies with responsibilities in the maritime domain, and possibly also key industry groups representing shipping, fishing and tourism. This group would be responsible for establishing and monitoring mechanisms for cross-agency coordination in information sharing and enforcement, and provide strategic guidance to the government and agencies on maritime affairs.

- **Civil maritime security strategy:** While the Sri Lanka Navy has recently proposed a Naval Strategy towards 2030, there is still a requirement to develop an overall maritime strategy for Sri Lanka to address civil maritime threats and challenges. This should be produced under the supervision of the Joint Agencies Maritime Advisory Group, with expert assistance in consultation with relevant industry groups. It may include the following elements:
    - setting out priorities among civil maritime threats/challenges
    - the allocation of legal and administrative responsibilities among lead/supporting agencies in relation to each type of threat
    - setting out key coordination mechanisms
    - plans to develop appropriate capabilities.
- **'Right-sizing' the Navy:** The Sri Lanka Navy and other defence services are currently in the process of 'right-sizing', which could include devolving selected responsibilities and/or personnel to civilian agencies, and creating opportunities for greater investment in technology. There is considerable scope for devolving selected Navy responsibilities and associated personnel to the Sri Lanka Coast Guard, Fisheries and Customs.
- **Sri Lanka Coast Guard:** The Sri Lanka Coast Guard is a relatively young organisation. Although it has its own responsibilities under Sri Lankan law, in practice it acts as an auxiliary service to the Navy. However, it lacks the resources and specialised training to properly undertake the law enforcement responsibilities required under Sri Lankan law. The Coast Guard should be evolved over time towards an independent organisation with its own priorities and policies. This would include:
    - adequate resourcing, including in ships and personnel
    - proper training in maritime law enforcement for all personnel
    - developing a system for long-term employment of trained personnel, rather than being entirely reliant on short-term secondments from the Navy.
- **Maritime safety and environment authority:** Although on paper the Maritime Environment Protection Authority (MEPA) has broad responsibilities under Sri Lankan law, it lacks the resources and legal authority to properly respond to environmental and safety threats, particularly those created by the large numbers of ships in Sri Lankan waters. The intensity of plastic pollution and other marine litter along coastal areas has risen over the past decade, but the implementation and enforcement of bans on certain plastics has been inadequate. MEPA's functions should be moved to a new, properly resourced, independent authority under the Ministry of Ports and Shipping and be expanded to include regulation of maritime safety (provided the MRCC would remain under the control of the Sri Lanka Navy). Like the Australian Maritime Safety Authority, that body would have clear legal responsibility and authority for:
    - addressing marine environmental pollution, including marine plastics, in coordination with other relevant authorities
    - coordinating Sri Lanka's response to maritime emergencies, including environmental threats
    - maritime safety enforcement
    - administering the International Ship and Port Facility Security Code (ISPS Code)
    - administering Sri Lanka's Port State Control obligations.

- **On-Water capabilities for Fisheries and Customs:** Develop more cost-effective approaches to maritime law enforcement by Fisheries and Customs, including:
    - enhancing on-water fisheries enforcement capabilities within the Ministry of Fisheries, in cooperation with Navy
    - re-establishing a small, specialised Marine Division for Customs, potentially with in-shore vessels to address prohibited imports and increase revenue on smuggled goods. This would need to take into account the findings of the National Audit Office regarding the operation of the rewards system for confiscated goods under the Customs Ordinance
    - potentially using specialised Customs units to ease the Navy's existing over-commitments, particularly in inshore waters, which could be initially staffed by seconded Navy personnel.
- **Define legal powers and responsibilities among maritime enforcement agencies:** There are considerable inconsistencies in maritime enforcement powers and responsibilities among different government agencies. The Sri Lankan Government should consider passing a new unified maritime enforcement law that integrates current enforcement regimes and provides a comprehensive framework for applying laws at sea. It would also clearly define the powers and responsibilities of the relevant agencies with maritime domain remits, including the Sri Lanka Navy, Sri Lankan Ports Authority, the Marine Environmental Protection Authority, the National Aquatic Resources Research and Development Agency, Customs, and the Department of Emigration and Immigration.
- **Role of provincial administrations:** Sri Lanka's provincial administrations have the potential to play an important role in connecting the Sri Lankan Government with local communities on issues of maritime security. Provincial governors of coastal provinces, (Northern, Eastern, Southern, Western and North-western provinces), could establish provincial consultative committees that regularly bring together local fishers, tourism operators, maritime service providers and other users of the maritime domain with officials from the Sri Lanka Navy, Coast Guard, Police and Fisheries to discuss local challenges and concerns and inform approaches to maritime law enforcement.
- **International treaties:** Sri Lanka should sign and/or ratify and implement the following key international treaties relevant to maritime accidents:
    - The International Convention on Salvage
    - The Nairobi International Convention on the Removal of Wrecks
    - The International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea
    - The International Convention on Maritime Search and Rescue (SAR)
    - The 2005 Protocol to the Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation
    - The International Convention on Salvage, 1989
    - The International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea, 1996
    - The International Convention on Civil Liability for Bunker Oil Pollution Damage
    - The International Convention for the Control and Management of Ships' Ballast Water and Sediments
    - The Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter.

Other recommendations

- **Establish an 'Ocean Ambassador' role:** Sri Lanka makes important contributions to many maritime institutions in the Indian Ocean region, as well as the general global maritime discussion. The government should consider establishing the role of an Ocean Ambassador who could be Sri Lanka's voice for regional and international maritime affairs.
- **Review cross-agency training:** Undertake a review of current cross-agency training activities undertaken by the Sri Lanka Navy, Sri Lanka Coast Guard, Sri Lanka Air Force, Police, and Customs, with a view to developing cross-agency courses. The review should consider the question of which organisation is best-placed to deliver relevant training or whether a new Joint Forces College/Academy should be established.
- **Fish stock assessments:** The Fisheries Ministry appears to have only very limited and/or outdated data on fish stocks in Sri Lankan waters or the broader region. Improved independent fish stock assessments will be critical to better managing Sri Lanka's legal catch and countering illegal, unreported and unregulated (IUU) fishing in Sri Lankan waters.
- **Improved fishing technology:** The Fisheries Ministry should aid and support Sri Lankan tuna fishers to improve their setting technology to achieve deeper sets. The catches of Sri Lankan tuna fishers are currently lagging other foreign fishers.
- **Protection of critical undersea infrastructure:** Undersea communications cables represent a critical vulnerability for Sri Lanka's economy. Future developments in undersea connectivity, including in undersea electricity cables and oil and petroleum pipelines, will also be highly vulnerable. Sri Lanka should further develop arrangements for to protect this infrastructure.
- **Trincomalee Port:** Given the unique natural assets of this harbour, we believe that development should currently be principally focussed on building the local tourism industry, including beach resorts, diving and whale-watching. Further significant development of Trincomalee Port facilities will be required only to serve large-scale industrial development in the surrounding region, which is currently very limited. In the short- to medium-term, commercial port facilities should be limited to those currently supporting the IOC Lanka Oil Terminal, Prima Flour Mill, Tokyo Cement and the SLPA China Bay Wharf, and these should as much as possible be constrained to the western side of the harbour. Due consideration should be given to mitigating adverse interactions between port activities (especially bunkering) and tourism.

Introduction

This report provides an analysis of Sri Lanka's maritime interests, threats and risks, and particularly its MDA capabilities and needs. This involves assessing aspects of Sri Lanka's governance of its maritime domain.

This report is the product of work undertaken by the National Security College, Australian National University. Sri Lanka Government ministries and agencies, along with other stakeholders, provided invaluable advice to the authors in preparing their assessment of the current state of Sri Lanka's MDA and identifying possible opportunities for improvement. However, the project team is solely responsible for views expressed in this report.

Sri Lanka has important maritime interests and there is a growing understanding that the maritime domain is a significant source of opportunities, as well as threats and challenges, for the country.

Sri Lanka's location next to some of the world's busiest sea lanes has led to aspirations of becoming the Indian Ocean region's leading maritime, which would be a significant driver in national economic development. This includes developing Sri Lankan ports as regional trans-shipment hubs and providing a range of associated services (e.g. maintenance and repair, logistics, bunkering, insurance and finance). But the presence of large numbers of ships also creates its own risks, including from shipping accidents, environmental threats and smuggling.

Sri Lanka is also heavily dependent on fisheries for food, economic benefits and employment. But more can be done in developing Sri Lanka's potential in fisheries, including protecting national aquatic resources and properly managing the country's fleet.

Sri Lanka's heavy dependence on the maritime domain requires an effective system of maritime governance in order to effectively manage opportunities and threats. MDA is an essential foundation for any country's ability to properly govern its maritime spaces. Without MDA, a country's jurisdiction over its maritime space may be more theoretical than real. Only with effective understanding of what is occurring in its surrounding maritime spaces can a country properly govern its maritime jurisdictions to exploit opportunities and address threats and challenges. But, for any country, achieving effective MDA is a difficult task, requiring many government agencies and other stakeholders with maritime domain interests to work together effectively.

The principal aim of this report is to describe Sri Lanka's MDA needs and capabilities and provide findings and recommendations to aid future policymaking. It is part of a project to enhance Sri Lanka's understanding and awareness of its maritime spaces to better address challenges and threats and pursue opportunities in the maritime domain.

In writing this report, we are very mindful of the significant economic challenges Sri Lanka faces, including major constraints on public spending. We have therefore tailored our recommendations towards changes that could be made at relatively low cost or otherwise to improve outcomes in an economically efficient manner.

The Sri Lankan Government is also considering options in 'right-sizing' the Sri Lankan Armed Forces. To a significant extent, the responsibilities and capabilities of the Sri Lanka Navy and other agencies with responsibilities in the maritime domain still reflect Sri Lanka's needs and imperatives during its civil conflict, and changes will likely be required to properly position them to meet contemporary challenges and threats.

The report draws from visits by project team members in February-June 2024 to meet representatives of nearly all the Sri Lankan agencies that have responsibilities in the maritime domain, backed by extensive secondary research. No classified information was used in preparing the report.

Overall, we are impressed by the steady progress that has been made in recent years to enhance Sri Lanka's maritime security, including in MDA. All consultations undertaken during the course of this study showed that relevant agencies and officials recognised that there were a range of problems and gaps in maritime security and MDA and that further action is needed. There appears to be a stronger maritime culture in Sri Lanka compared with some other neighbouring countries that could be leveraged to further develop the country's capabilities.

This report includes the following sections:

- Executive summary and key findings
- Recommendations for actions by the Sri Lankan Government
- Section One provides a basic description of the MDA concept. It explains what MDA means and how it is a key element in a country's ability to properly govern its maritime spaces
- Section Two describes Sri Lanka's maritime domain, blue economy and maritime interests
- Section Three examines the challenges and threats that Sri Lanka faces in its maritime domain. They include a range of transnational security threats, including IUU fishing, drug and human trafficking by sea, maritime piracy and armed robbery, and shipping accidents and maritime safety, as well as the over-riding threats stemming from climate change
- Section Four examines how Sri Lanka governs its maritime domain. It outlines the roles and responsibilities of the various stakeholders and summarises their efforts to achieve MDA. It also outlines the legislative framework used to support maritime domain governance
- Section Five considers bilateral cooperation in maritime security between Sri Lanka and key partners, as well as systems for regional cooperation in maritime governance and MDA

We hope that this report will be useful in helping to build an understanding of the importance of MDA in Sri Lanka and ways in which Sri Lanka can enhance the governance of its maritime spaces to take advantage of opportunities and address challenges and threats that may arise.

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Section One: What is maritime domain awareness?

1.1 The concept of maritime domain awareness

MDA is an essential foundation for any country's ability to properly govern its maritime spaces. In broad terms, MDA involves the ability to understand what is occurring in the maritime space. It involves the collection and collation of data, and analysis and understanding of that data, allowing responsible government agencies to make effective decisions as to how to respond to threats and challenges in the maritime domain (see box).

Definitions of MDA

Countries and global agencies use several formal definitions of MDA. The IMO defines MDA as the 'effective understanding of anything associated with the maritime domain that could impact security, safety, the economy or the marine environment'.

The US Government further defines the maritime domain as 'All areas and things of, on, under, relating to, adjacent to, or bordering on a sea, ocean, or other navigable waterway, including all maritime-related activities, infrastructure, people, cargo, and vessels and other conveyances'.

Coastal states have been attempting to maintain awareness of their maritime domains ever since ships and boats first put to sea. In the early days, this depended on visual line of sight or what could be gleaned from intelligence ashore. Today, much more data has become available from sensors and technologies such as global positioning systems, automatic identification systems, satellite technology and other types of surveillance, reporting and communications systems.

There are many ways for vessels and other actors to be seen by and to communicate with authorities. But there will be those who do not wish to be seen for various reasons, including IUU fishing, drugs and arms smuggling, human trafficking and other illegal activities. It is a challenge to 'see' those who want to be seen, as well as those who do not.

MDA is important to guide effective responses to illegal activities, maritime safety and other maritime incidents, but effective MDA systems also have an important deterrence function. Illegal actors will often avoid maritime spaces that they know are well monitored. On the other hand, they may be drawn to maritime spaces that are effectively 'dark'.

Despite the growing availability of large amounts of data about the maritime domain, that data is often held by different government agencies or other commercial or foreign stakeholders without effective mechanisms for sharing, analysis and decision-making based on that information. Achieving effective MDA therefore requires the establishment of systems to share, analyse and use information.

1.2 Achieving effective maritime domain awareness

Effective MDA provides a vital link between a country's ability to influence its maritime environment and its ability to *respond* to threats. Given the huge size of the Indian Ocean, it is not feasible to have full real-time situational awareness over the entire ocean space. Achieving 'effective' MDA means achieving a degree of situational awareness over a selected maritime space sufficient for enforcement authorities to understand and potentially respond to a particular maritime threat. This means that the task of achieving effective MDA may involve quite different considerations and geographic spaces, depending on whether the identified threat is, say, illegal fishing or people smuggling or potential shipping accidents. In other words, effective MDA is not a singular or permanent state of affairs.

MDA cannot be accomplished simply through constructing infrastructure and networks at the national level to share, collate and analyse data, and no country can achieve MDA by itself. Effective MDA requires international cooperation in sharing data and intelligence and frequently also in the coordination of responses. That can occur at a bilateral or a multilateral level. In recent years, we have seen the establishment of 'regional information sharing centres', which act as clearing houses for information shared by states, commercial entities and other stakeholders in relation to a particular regional maritime area.

One can think about an MDA system in different ways. One is that it is a complex *'system of systems'* that must all work together. The component systems include those used for the collection of information and data, including through reconnaissance, surveillance and reporting; the aggregation of data in a central location; analysis/processing (the interpretation of information, involving tools such as visualisations of information and statistics and trends analysis); and dissemination that involves the distribution of results to decisionmakers and users.

Another way of looking at an MDA system is that it is a set of procedures through which awareness can be achieved and then used to respond to threats. An MDA procedural chain can be represented as shown in Figure 1.

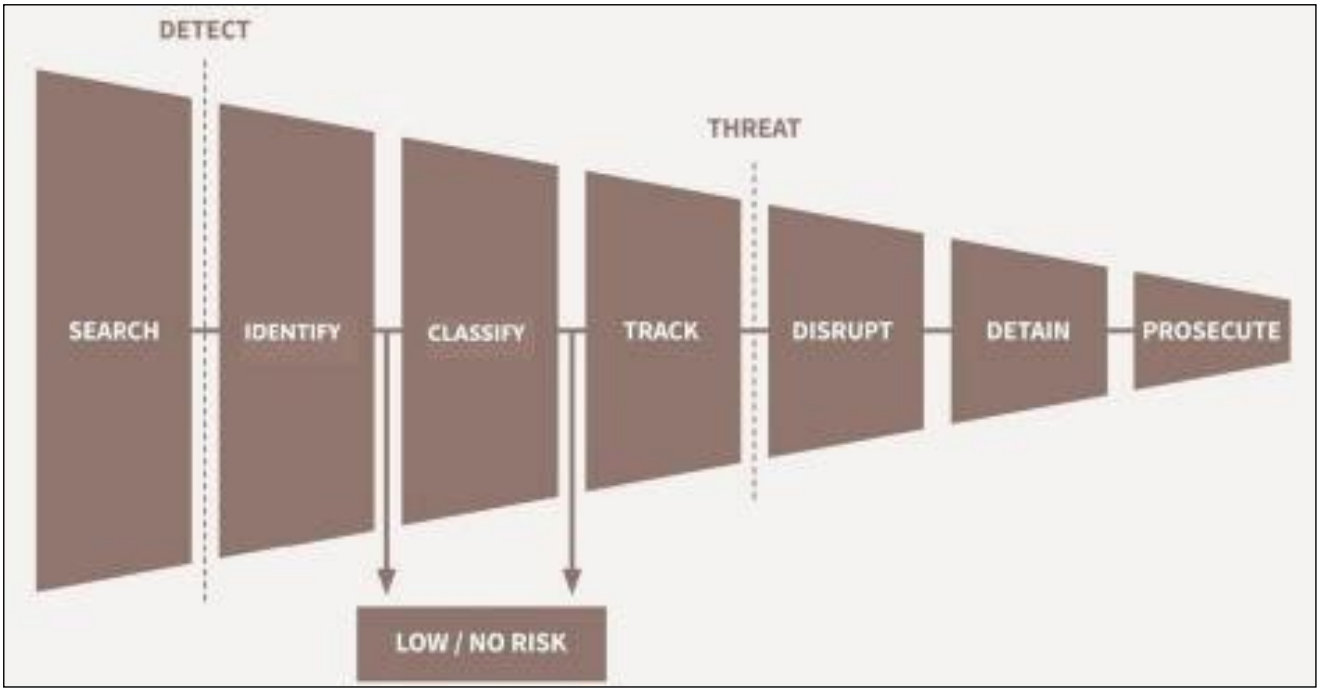

Figure 1: MDA as a process

Source: David Brewster, 'Give light, and the darkness will disappear: Australia's quest for maritime domain awareness in the Indian Ocean', Journal of the Indian Ocean Region, 2018, 14(3):296–314.

For these purposes:

- searching involves surveying a geographical area using active or passive technical or nontechnical means with the aim of identifying anomalous behaviour
- detection is the moment when an object or vessel is discovered through one or more sensors, visual detection or self-reporting through automatic identification systems (AISs) or vessel monitoring systems
- identifying the vessel may require data from a variety of sources
- the vessel is classified by level of risk, considering factors such as location, track, type and whether it is using an AIS. This may involve data from a variety of sources, including commercial shipping and financial information
- accurate tracking allows authorities to determine the vessel's direction and possible destination, which may further elucidate the threat posed. If necessary, it also informs the planning of an interception at sea or on land
- disruption may involve the arrest and detention of crew members or the confiscation of illicit cargo. If the vessel is involved in an illegal activity, the interception/interdiction itself may disrupt that activity
- where appropriate, a vessel may be detained, and, if enough evidence is available to prove that a criminal offence has occurred, offenders may be prosecuted.

1.3 The common operating picture

The centrepiece of an effective MDA system is a 'common operating picture' (COP). This is the sum of data and intelligence drawn from many sources and organisations, such as data from commercially operated AISs, military or civil radar tracking, or incident reports from law-enforcement agencies. Information from non-government sources can also play an important role, including from commercial shipping companies, commercial satellite services and local fishers or other users of the maritime space.

That data is then cross-referenced and correlated (or 'fused') into a coherent single picture. An 'awareness' element is then applied, resulting in what is commonly referred to as a 'recognised maritime picture'.

For example, a vessel lacking positive data may be recognised as being a low risk as the crew and cargo criteria are validated from information already collected by various government agencies. Validation will also be achieved through a deep knowledge of the practices and customs of the commercial shipping and fishing industries, which are likely to account for the great majority of vessels in the maritime domain.

There are many technical challenges in creating a COP drawn from many different sources and agencies, including in synthesising different data formats, time stamping, data storage and retention, data modification and symbology. Importantly, raw data must be subjected to analysis (both human and computerised) to identify anomalies or other matters of interest.

Using crowdsourcing to help build the COP

In the Sri Lankan context, there could be significant potential to improve the COP using what has been termed 'crowdsourcing'. There are nearly 2.4 million people involved in some form of fishing in Sri Lanka's maritime domain. They are a significant resource who could be utilised to contribute to the COP by reporting on vessels of interest. Crowdsourcing applications are being developed for mobile phones that allow for the easy sharing of images, locations and comments by ordinary people. That information can then be used by maritime law enforcement authorities to 'tip and cue' further investigation of potential vessels of interest.

The COP is intended to help decisionmakers act based on shared, reliable and trustworthy information, and that information can often be sourced from local communities.

1.4 Coordination of responses to threats

Although the concept of MDA does not technically involve responses to threats, effective MDA should be part of an integrated process that involves coordinated responses to identified threats. Maritime domain threats frequently fall within the responsibilities of multiple government agencies, and the lack of intelligence dissemination and response coordination between those agencies can be just as much a problem as achieving awareness in the first place. Therefore, effective MDA systems also usually involve integrated mechanisms to disseminate intelligence to relevant agencies and coordinate their responses. Consequently, this report considers those issues as part of its review of MDA.

In broad terms, MDA should be understood as a key element in effective governance of the maritime domain. This includes deterring bad actors from undertaking illegal activities, as well as providing an effective basis for responses to illegal activities and other maritime incidents.

Section Two: Sri Lanka's maritime domain and blue economy interests

This section of the report discusses Sri Lanka's maritime domain and maritime interests related to the so-called 'blue economy'. These are the key drivers behind its priorities in maintaining and developing MDA. This section includes the following subsections:

2.1 Sri Lanka's maritime history and geography

Sri Lanka is an island state situated in a strategic location in the northern Indian Ocean and adjacent to some of the busiest shipping lanes in the world. The island has a long maritime history. Buddhism is believed to have arrived from India by boat in the 3rd Century BCE when Ashoka's son Mahinda arrived on the island. At about the same time, the Greeks were aware of the island when Eratosthenes first reported it in his works. Ptolemy adopted this information in his world map from 139 AD where Sri Lanka appeared as '*Taprobana*'. Since then, it has been intrinsically linked with maritime trade. It was a key stop in the maritime silk route and has been a hub for Portuguese, Dutch and British trading ships over the course of history. This tradition continues today, with Colombo Port being one of the biggest trans-shipment ports in the world.

Trans-shipment is the process of transferring cargo from one vessel to another, at an intermediate port, without passing through customs. This allows shippers to consolidate cargo from different origins and destinations and optimise their routes and costs. Trans-shipment also enables shippers to access markets that are not directly served by their vessels, or that have limited port capacity or infrastructure.

Sri Lanka is 438 kilometres long and 225 kilometres wide with a 1,340 kilometre coastline. It lies 645 kilometres north of the Equator.[1] It is separated from India by the Palk Strait and the Gulf of Mannar. The island can be separated into three geographical zones: the central highlands in the south-central region; the plains running around the north and east; and the coastal belt surrounding the island having an average elevation of 30 metres above sea level. It has several natural harbours, with Trincomalee being considered one of the best natural harbours in the world.

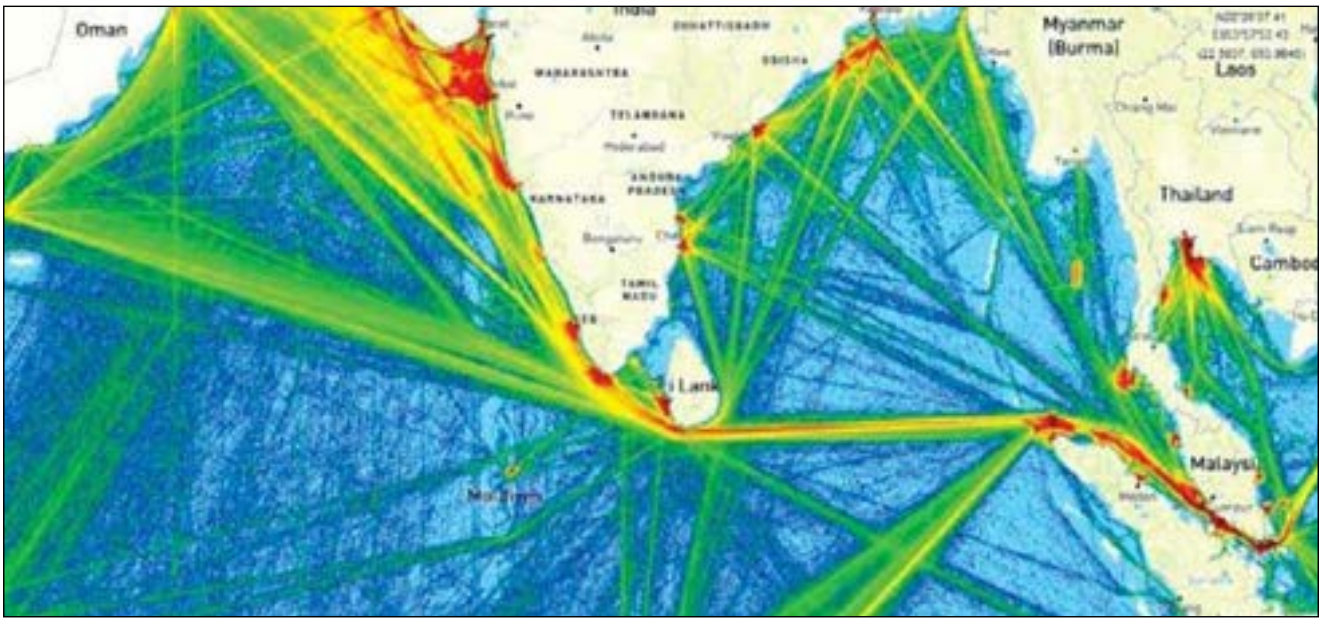

Figure 2: Sri Lanka's Geo-Strategic Position

Source: NewsIn Asia, Sri Lanka: An island nation without a notion of the ocean, 26 September 2023. https://newsin.asia/sri-lanka-an-island-nation-without-a-notion-of-the-ocean/.

2.2 Sri Lanka's maritime jurisdictions

The United Nations Convention on the Law of the Sea (UNCLOS) provides a basic framework for the different types of jurisdictions that littoral states can exercise over maritime spaces, including territorial waters, contiguous zone, exclusive economic zone and continental shelf. This can be illustrated as follows:

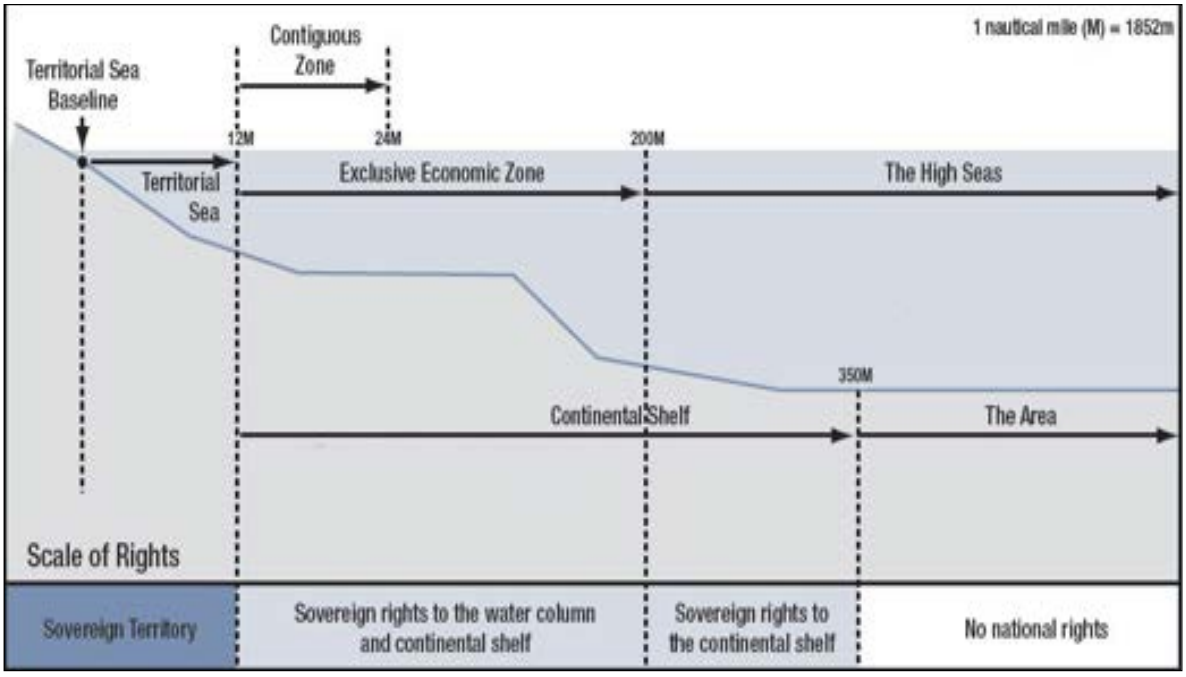

Figure 3: Illustration of types of maritime zones under UNCLOS.

Source: Arctic Council, Arctic Marine Shipping Assessment 2009 Report (Tromsø, Norway: 2009), p. 52. https://oaarchive.arctic-council.org/items/b01465f9-413d-4555-af59-07ddc7b7499a

Sri Lanka has delimited its maritime boundaries with neighbouring states within 200 nautical miles of its baseline through the following agreements with India and Maldives:

- Agreement between India and Sri Lanka on the Boundary in Historic Waters between the two Countries and Related matters on 28 June 1974[2]
- Agreement between India and Sri Lanka on the Boundary between the two Countries in the Gulf of Mannar and the Bay of Bengal and Related matters on 23 March 1976[3]
- Agreement between Sri Lanka, India and Maldives concerning the determination of the Trijunction Point between the three Countries in the Gulf of Mannar signed on 31 July 1976[4]
- Supplementary Agreement between Sri Lanka and India on the extension of the Maritime Boundary between the two Countries in the Gulf of Mannar from Position 13 m to the Trijunction Point between Sri Lanka, India and Maldives (Point T) signed on 22 November 1976.[5]

Sri Lanka's maritime zones

The laws relating to the delimitation of boundaries and jurisdictional zones in Sri Lanka are set out in Maritime Zones Law No 22 of 1976 and the Maritime Zones Proclamation made in pursuance of this law in 1977.[6] Consistent with UNCLOS, this law provides that Sri Lanka can exercise customs, fiscal, immigration or sanitary laws up to 24 nautical miles from territorial sea baselines.

The Agreement regarding Historic Waters made between Sri Lanka and India in 1974 specifically referred to the historic waters in the area between the Palk Strait and the Adams Bridge in the north-west region of Sri Lanka. The agreement allows Indian fishers and pilgrims access to Kachchativu Island during the annual church festival of St Anthony.[7]

Following these bilateral agreements, by Presidential Proclamation in 1977, Sri Lanka claimed that the 'historic waters' in the Palk Bay and Palk Strait on its side of the delimitation line are 'internal waters' of Sri Lanka (whereas the 'historic waters' on the Sri Lankan side of the Gulf of Mannar are claimed as territorial sea). The claim of 'internal waters' under UNCLOS is significant, as, for example, there is no right of innocent passage by third parties through internal waters, as is the case with territorial sea. The United States has protested this claim, beginning in 1986.

Following agreements made between 1974 and 1976 and Sri Lanka's subsequent ratification of UNCLOS on 16 November 1994, Sri Lanka acquired a territorial sea area of 21,500 square kilometres and an Exclusive Economic Zone (EEZ) of nearly 517,000 square kilometres.[8] This implies that the waters under national jurisdiction are more than five times the size of the landmass of Sri Lanka.

However, Sri Lanka's rights to the continental shelf are yet to be finally determined. On 8 May 2009, Sri Lanka made a submission on its claim to an extended continental shelf to the United Nations Commission on the Limits of the Continental Shelf (UNCLCS).[9] Both India and Bangladesh have challenged the claim. They challenge Sri Lanka's claim that its continental shelf extends beyond 350 nautical miles from the country's baselines.[10]

The resolution of this issue will affect Sri Lanka's rights to exploit hydrocarbon reserves and seabed minerals that are believed to lie in these waters. The UNCLCS has not yet made any recommendations on Sri Lanka's submission. Separately, India has submitted an application to the International Seabed Authority (IBSA) in Kingston, Jamaica, seeking approval for the exploration of cobalt-rich ferromanganese crusts at the Afanasy Nikitin Seamount, which lies some 650 nautical miles from Sri Lanka. This exploration area overlaps Sri Lanka's claimed continental shelf. Sri Lanka has requested the IBSA postpone the approval until the completion of the UNCLCS process on its submission. Both matters are in progress before the UNCLCS and the ISBA.[11]

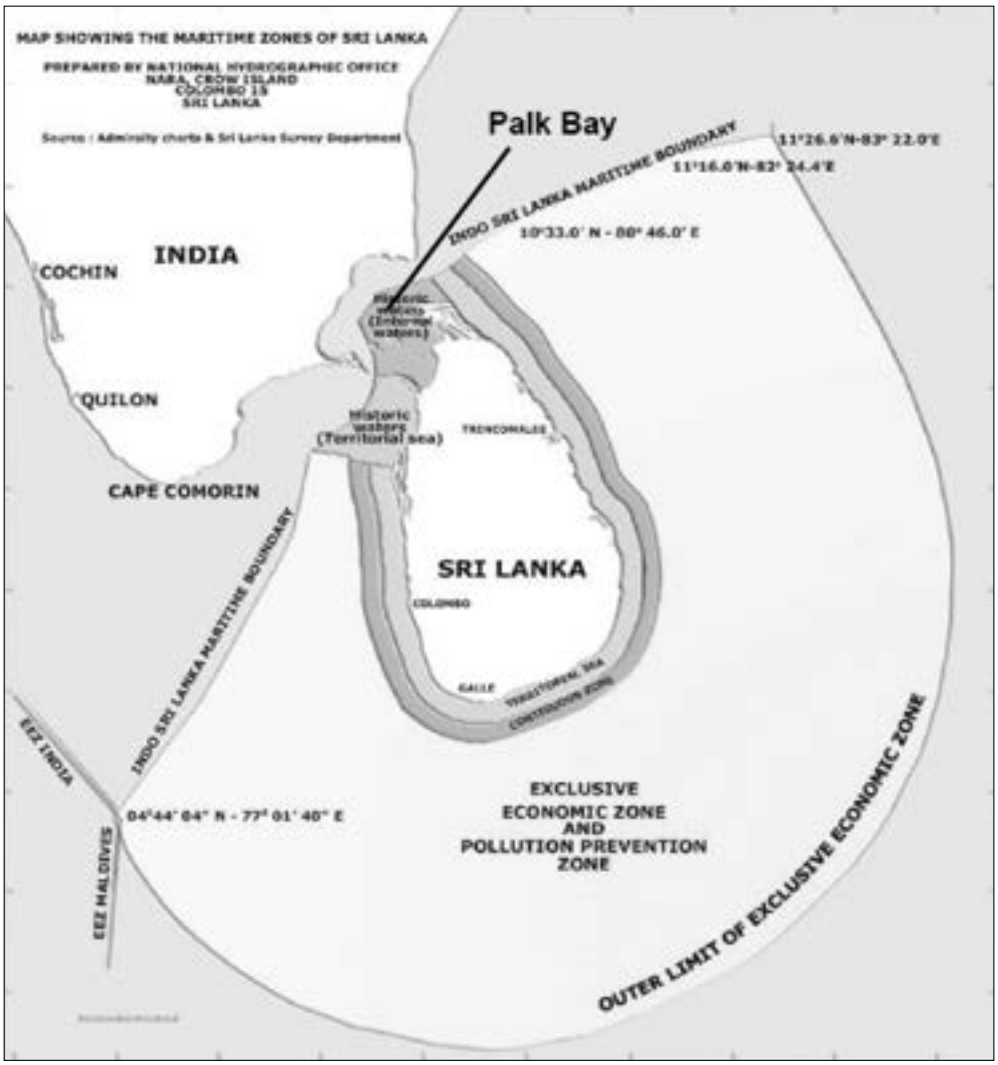

Figure 4: Sri Lanka's Maritime Zones

Source: https://www.researchgate.net/figure/Sri-Lankas-maritime-zones-showing-the-200-nautical-mile-Exclusive-Economic-Zone_fig2_310590098.

The International Conventions and Agreements related to oceans governance and the associated national laws and policies are included in Appendices 2 and 3.

Sri Lanka's maritime search and rescue region

Sri Lanka's maritime search and rescue region pursuant to the International Convention on Maritime Search and Rescue overlaps its EEZ and extends further south and eastwards. It has an area of 1,778,062 square kilometres.[12] This is 18 times the land mass of the country.

On 10 April 2014, the Sri Lanka Navy became the national responsible authority for the conduct of maritime search and rescue in the Sri Lanka Search and Rescue Region (SRR).[13] Operations are conducted from the Maritime Rescue Coordination Centre, currently located in Navy Headquarters, Colombo.

Sri Lanka's air search and rescue region is defined by the limits of the Colombo Flight Information Region under the International Civil Aviation Organisation, which covers the same area as Sri Lanka's maritime search and rescue region. The Civil Aviation Authority of Sri Lanka has responsibility for all search and rescue operations within the Colombo Flight Information Region. It maintains an Aeronautical Rescue Co-ordination Centre at Colombo Airport.

We have been advised that the Ministry of Ports and Shipping is currently in the process of formulating a National Search and Rescue Plan.

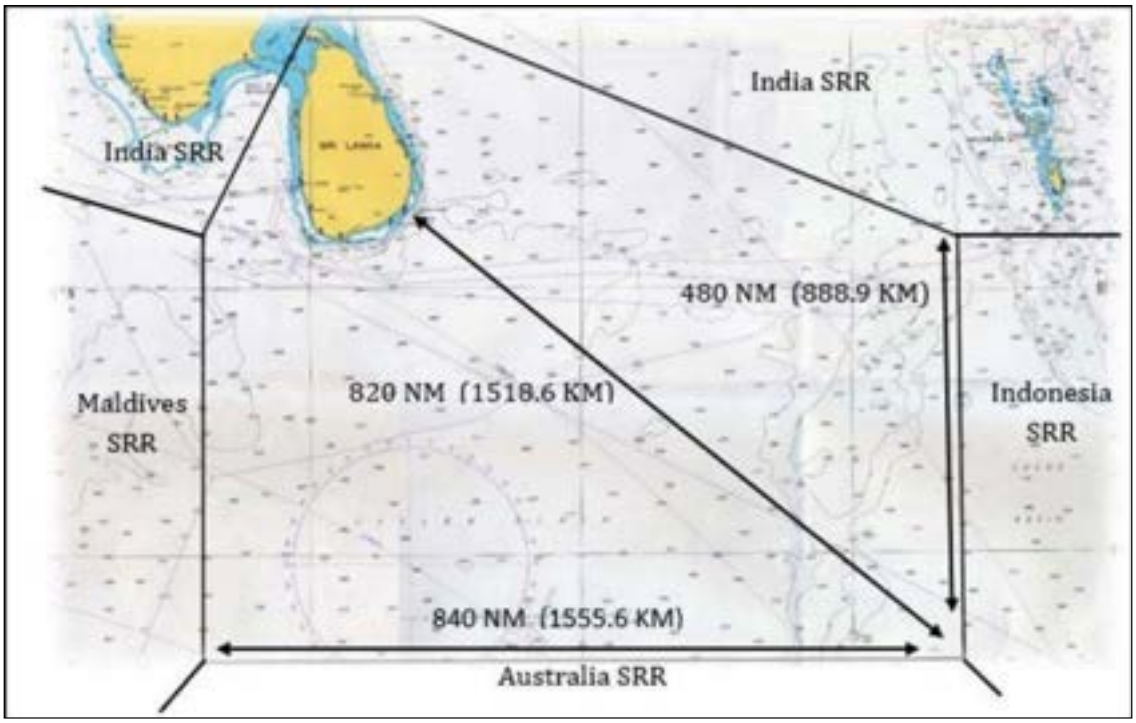

Figure 5: Sri Lanka Search and Rescue Region

Source: IFC Colombo 2022 Annual Report. https://ifccolombo.org/assets/files/report/mrcc/annual/2022MRCC.pdf

2.3 Sri Lanka's blue economy interests

The blue economy is a way of understanding maritime-related economic activities in a manner that assists in comprehensive and coordinated governance. The idea of the blue economy is therefore an important conceptual entry point for assistance in maritime governance.

Sri Lanka is a strategically located island state with a significant area of maritime zones. It is inextricably linked to the ocean and as such is perfectly placed to build on all aspects of its blue economy. The coastal area covers 24 per cent of the total land area across 14 administrative districts and is inhabited by 32 per cent of the population. The island's coastal regions also host five commercial ports, main railway lines, and 24 fisheries harbours, contributing to 65 per cent of industrial output, 80 per cent of tourism-related infrastructure, and 80 per cent of fish production.[14]

The coastal aspects of Sri Lanka's blue economy are managed under the Coastal Zone and Coastal Resource Management Plan — 2018.[15] The plan takes a holistic approach to all aspects of planning on Sri Lanka's coastline and it has four main objectives:

- to improve the status of the coastal environment
- to develop and manage the coastline
- to improve the living standards of coastal communities and resource users; and
- to promote and facilitate economic development based upon coastal resources.

Sri Lanka has several specific maritime interests related to the blue economy. These will be discussed further below and include:

- ports and maritime services
- fisheries
- offshore energy and resources
- undersea infrastructure; and
- tourism.

2.3.1 Ports and maritime services

The port and maritime services sector is a major source of employment and revenue for Sri Lanka and is seen as a major driver in the country's economic development. Colombo Port is already a major trans-shipment hub for South Asia and the northern Indian Ocean. Successive administrations in Sri Lanka have aspired to develop the country's maritime trade industry more comprehensively along Singapore's model, taking greater advantage of opportunities in ship repair and maintenance, logistics, bunkering and salvage, as well as related services such as insurance, finance and law.

Sri Lanka currently has only a relatively modest merchant shipping fleet, with Sri Lankan-flagged vessels over 100 gross tonnes aggregating just 322,000 gross tonnes and the state-owned Ceylon Shipping Corporation operating two large bulk carriers. Sri Lanka supplies large numbers of seafarers to the world's merchant fleet, with around 22,000 seafarers as at June 2022. Sri Lanka also has a small ship maintenance and shipbuilding industry led by Colombo Dockyard PLC (now owned by Japan's Onomichi Dockyard Co).

Sri Lanka profits significantly from its position astride the main east-west shipping route across the Indian Ocean, meaning it is very well-placed to provide port services (regional hub and trans-shipment) as well as related services such as maintenance, bunkering and logistics. According to the United Nations, given this unique location, the country's ports and shipping industry has the potential to increase its contribution to GDP from 2.5 per cent to 6 per cent by 2030.[16]

Colombo is already one of the world's busiest trans-shipment ports and it is primed for significant expansion. Trincomalee on Sri Lanka's east coast is a large natural harbour that is underutilised for shipping, although it also hosts a fast-growing tourism industry. Hambantota, which lies just 10 nautical miles from some of the world's busiest sea lanes, is also well-placed to provide a range of services to passing traffic. The small port of Kankesathurai (KKS) in northern Sri Lanka also offers potential as a transport hub between India and Sri Lanka.

Trans-shipment is especially important for Sri Lanka as it has a relatively small domestic market and limited natural resources. By providing high-quality trans-shipment services, Sri Lanka can attract more cargo and customers from other countries, and enhance its competitiveness and relevance in the global supply chain.

However, Sri Lanka is likely to see increased competition in the trans-shipment business, particularly from several new regional hub ports being developed in India, including at Vizhinjam and Cochin, and potentially at Great Nicobar island.[17] In 2019, the Sri Lankan government adopted a policy of reducing its reliance on the Indian trans-shipment market, stating that Sri Lankan ports needed to transform themselves from 'regional trans-shipment hubs' to 'Global Maritime Hubs'.[18]

Sri Lanka also aims to expand its activities in other shipping and logistics services. In May 2023, the Sri Lankan Government set up a policy committee to draw up a framework to develop the island's shipping and logistics services and attract new investments.

Sri Lanka's primary ports are:

- Colombo (southwest Sri Lanka)
- Hambantota (southern Sri Lanka)
- Trincomalee (eastern Sri Lanka)
- Galle (southern Sri Lanka)
- Oluvil (eastern Sri Lanka)
- Kankesathurai (KKS) (northern Sri Lanka).

The Sri Lankan Port Authority (SLPA) oversees Colombo, Trincomalee, Galle, Oluvil and KKS ports. Hambantota International Port (HIP) is operated by China Merchant Ports Holding in a public-private partnership with the Sri Lankan Government. SLPA's plans for ports under its authority are guided by the National Port Master Plan (NPMP) that was developed in 2019 with assistance from the Asian Development Bank.

Colombo Port

Colombo Port is by far the largest port in Sri Lanka, serving most of the domestic market as well as being a key trans-shipment hub for South Asia and the broader region. Colombo Port is now the busiest in South Asia and the 25th busiest port in the world, with 7.3 million TEU (twenty-foot equivalent unit) passing through in 2021. Most recently, the Port of Colombo saw its trans-shipment volume growth accelerate for the third consecutive month, with a 29.1 per cent year-on-year increase reaching 528,348 TEUs in February 2024. This growth was driven by ongoing disruptions in the Red Sea.[19]

The Port of Colombo has been in use in various forms over the last 2,000 years. After being utilised by Roman and Chinese traders, it became a base for Arab Muslim trade in the 8th Century. The Portuguese first discovered the port in 1505 and remained there until their defeat by an alliance between the Dutch and the Kandyan King, Rajasinghe II. The Dutch East India Company operated there until 1796, when they were defeated by the British.

The British further developed the Port of Colombo throughout the 1800s and in 1912 it was converted into a sheltered harbour.

Major changes occurred in the port after Sri Lanka gained its independence in 1948 and in the 1980s it underwent a major transformation to handle containerised cargo. The next 20 years saw the establishment of the Jaya Container Terminal (JCT), the South Asian Gateway Terminal (SAGT) and the Unity Container Terminal (UCT).

In 2008, work began on the Colombo Port Expansion Project with the South Harbour Development. The first new terminal, the Colombo International Container Terminal, was opened in 2014. This is a joint venture between China Merchant Holdings and SLPA being operated under a 35-year build-operate-transfer arrangement. In 2020, the East Container Terminal began operations.

The West Container Terminal is scheduled to be completed in 2025. It is being developed by a joint consortium of India's Adani Ports (51 per cent), Sri Lanka's John Keells Holdings (34 per cent) and SLPA (15 per cent). It will be operated for 35 years under a build-operate-transfer arrangement. The terminal is designed to handle 3.5 million TEU per annum. In 2023, the United States International Development Finance Corporation provided US$553 million of funding to the Adani-led project. The presence of Adani is likely to provide valuable connections with Adani owned ports in India.[20]

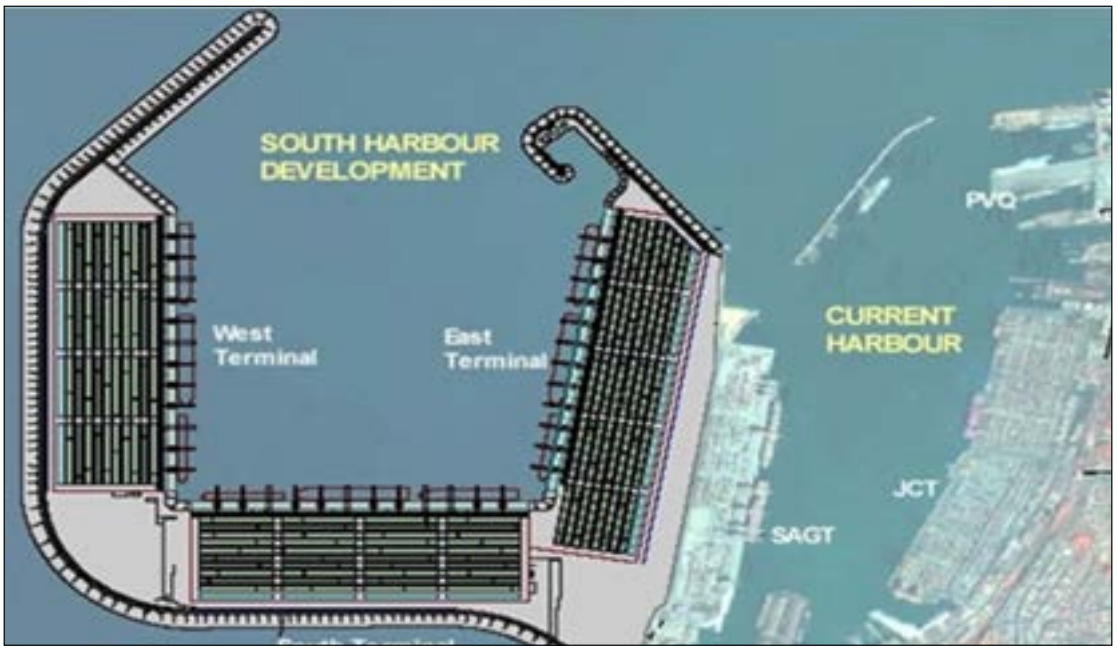

Figure 6: Development of South Harbour, Colombo Port.
Source: Lanka Hydraulic Institute

SLPA has also completed a feasibility study funded by the Asian Development Bank for a major new port facility called the Colombo North Port. This will have at least four terminals.[21]

According to the SLPA, on completion of the East and West Container Terminals, Colombo Port will have a total capacity of some 15 million TEU per annum. The development of the North Port would bring total capacity to some 35 million TEU per annum.[22]

Hambantota International Port

Hambantota International Port is operated under a 99-year lease by a public-private partnership between China Merchant Ports Holdings (85 per cent) and the Sri Lankan Government (15 per cent). This arrangement is a result of a complex 2017 debt-for-equity swap when the port did not perform to expectations and the Sri Lankan Government could no longer service debts that incurred as part of the port's construction by a Chinese company. This led to concerns from many foreign analysts that China might use the port for military purposes.

Hambantota Port is Sri Lanka's major roll on/roll off (RORO) facility, with other available services including container cargo, conventional cargo, dry bulk cargo, breakbulk cargo, project cargo, liquid bulk cargo (LPG, LNG), petrochemicals, marine bunker fuel and cruise terminals. Overall, the port seeks to provide complementary services to those provided by the much larger Colombo Port, rather than competing directly with it.

In January 2024, the port announced that it had handled more than 700,000 RO/RO units in 2023, a 26 per cent increase from the previous year. This includes a significant amount of RO/RO trans-shipment traffic.[23]

There are ambitious plans to develop a special economic zone adjacent to Hambantota Port. In November 2023, the Sri Lankan Government announced that it had approved plans for China's Sinopec to build a US$4.5 billion oil refinery nearby.[24]

An SLPA official acts as Deputy Harbour Master and the Sri Lanka Navy advises that it is not the responsible authority for security at Hambantota Port. There is a small Sri Lanka Navy presence located at the eastern breakwater and the Sri Lanka Navy has plans to shift its Southern Command to Hambantota at some time in the future.

Figure 7: Plans for Hambantota Port

Source: ONLANKA

Trincomalee Port

Trincomalee harbour is claimed to be the second-largest natural harbour in the world and the available water and land area is about 10 times as much as the Port of Colombo. Under the NPMP, Trincomalee Port will focus on supporting energy, industry, and tourism.[25]

Sri Lanka's civil conflict, which was fought nearby, hindered Trincomalee Port's development and it is still obviously underutilised. The SLPA has plans to further develop the port to cater for bulk and break bulk cargo and port-related industrial activities, including heavy industries, tourism and agriculture. However, these developments do not appear to be particularly advanced. It was noted that there were only six vessel arrivals in February 2024, three to supply oil product to the Lanka/IOC oil terminal, two carrying grain for the local flour mill, and one providing clinker to the Tokyo Cement factory.[26] The SLPA Resident Manager stated that there were five to six cruise ship visits a year and the harbour supports a large local fishing fleet.

The development of the Trincomalee Tank Farm by Indian Oil Corporation in partnership with Ceylon Petroleum could create further opportunities for Trincomalee Port. The tank farm of around 100 large oil tanks was built in the 1930s and has a total capacity of around 1.2 million tonnes of oil. Indian Oil is now considering how it will use the tank farm. One option involves developing Trincomalee Port as a regional 'bunkering hub' to supply fuel for commercial vessels using busy sea lanes nearby — a significant step in developing Trincomalee as a major regional port. The most ambitious proposal involves connecting the tank farm to a proposed new oil refinery at Nagapattinum, India, via an undersea pipeline. This would have significant consequences for Sri Lanka, enhancing its energy security and potentially turning the tank farm into a strategic hydrocarbon reserve.[27]

Galle Port

Galle was historically one of the key Indian Ocean ports. With the focus of commercial operations now on the redevelopment of Colombo and Hambantota ports, Galle is aimed at tourism and supporting pleasure yachts, with the building of a marina and passenger vessel wharf that would cater for whale-watching tourism operators.

KKS Port

KKS was observed to be a very basic harbour on the Jaffna peninsula. There are adjacent wharf facilities for the Sri Lanka Navy and Coast Guard. It lies only 60 nautical miles from the Indian port of Nagapattinam. Development of the port was severely impeded by the civil conflict, which was waged very nearby. Recently, there has been an intense focus on improving the facilities to support the recommencement of a ferry service between Sri Lanka and India and there is potential also for a small-scale cargo service. Australia has supported the development of this service by financing the building of a new Customs and Immigration facility adjacent to the wharf. However, cargo facilities at KKS Port are extremely basic.

Oluvil Port

Oluvil port is still being developed and is set to be the south-eastern link in the chain of coastal harbours. Developing the port as a commercial harbour may be unlikely due to sedimentation issues, but discussions are under way about the potential to develop it as a fisheries, recreational and naval port for smaller draft vessels.

2.3.2 Fisheries

The fishing sector is not only economically important in Sri Lanka; it is the lifeblood of coastal communities. It is a primary source of animal protein for the Sri Lanka population as well as employment opportunities, food and nutritional security, foreign earnings, aquatic biodiversity conservation and socio-economic development.

Sri Lanka is a large fish-producing country, with an annual total production of 397,230 tonnes in 2022, and fish exports accounted for US$318 million in 2021. The sector contributes 2.7 per cent to GDP and provides full- and part-time employment to more than 2.4 million people.[28] This equates to over 10 per cent of the population relying directly or indirectly on the fisheries sector for their livelihood. Equally as important as its financial contributions, fish also accounts for approximately 50 per cent of Sri Lanka's daily animal protein, which is three times the global average.[29]

According to the National Aquatic Resource Research and Development Agency (NARA), marine fisheries accounted for the great majority (nearly 71 per cent) of the total fish production in 2022, of which coastal landings made up 53 per cent, while 47 per cent was from offshore catch.

In 2022, inland fish production accounted for 29 per cent of total production, made up of inland capture fisheries (81 per cent), shrimp (12 per cent) and other aquaculture species (8 per cent).[30]

Year	Off shore	Coastal and Lagoon	Total Marine	Capture	Aquaculture	Shrimp	Total Inland	Total Production
2019	172910	242580	415490	73230	10710	6400	90340	505830
2020	144370	182560	326930	84310	10140	7360	101810	428740
2021	153415	178260	331675	80720	9105	14410	104235	435910
2022	131170	149440	280610	94860	7680	14080	116620	397230

Figure 8: Total Fish Production by Sectors 2019 -2022 (Metric Tonnes)
Source: National Aquatic Resource Research and Development Agency [NARA], Sri Lanka: Fishing industry outlook – 2022.

According to NARA, in the years to 2022, there was a consistent decline in Sri Lanka's offshore and coastal fish production (see Figure 9).

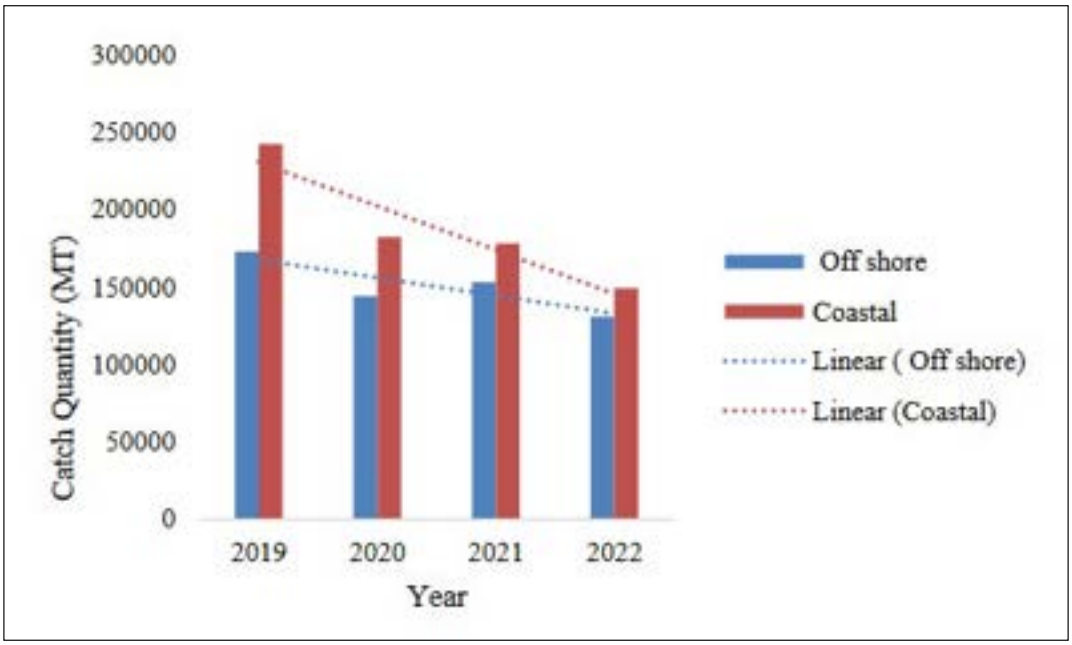

Figure 9: Trend in offshore and coastal fish production during 2019-2022 (metric tonnes)
Source: National Aquatic Resource Research and Development Agency [NARA], Sri Lanka: Fishing industry outlook – 2022.

NARA states there were 17,544 fishing vessels insured and 11,985 seaworthiness certificates issued in 2022.[31] A 2005 order directs all fishing vessels greater than 10.3 metres (34 feet) to be fitted with a satellite-based Vessel Monitoring System (VMS) device. The Department of Fisheries and Aquatic Resources (DFAR) advised that 4,700 multi-day fishing vessels have been fitted with such systems as part of a program financed by the Australian Government (see Figure 10).

Gillnet, purse-seine and line fishing methods are the major fishing gears, contributing 70 per cent to the total fish catch, while bottom trawling is prohibited. Commercially important fish categories are tuna, swordfish, prawns and shrimps, mud and blue swimming crabs, lobsters, sea cucumber and sea bass.[32]

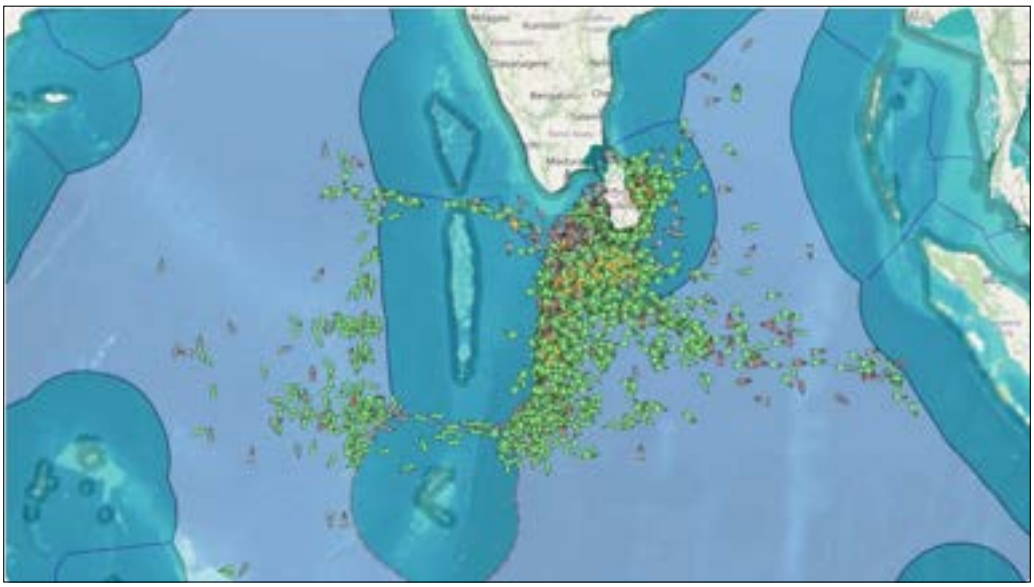

Figure 10: Sri Lanka Fisheries Vessel Monitoring System

Source: Fernando Asiri 3 June 2023. Deep Sea Fishing Management: The Need for Better Regulation and Enforcement. https://www.themorning.lk/articles/FRZHpGxVvWJ3BL5sYZ8N

Fish stocks

Fish stock assessment is a key element of a country's MDA. In Sri Lanka, the Ministry of Fisheries and NARA share this responsibility. The outcomes of stock assessments form the foundation for making both long- and short-term decisions in fisheries management. According to NARA, stock assessment helps in evaluating whether underfishing or overfishing is taking place and identifying the optimal level of fishing that would yield the maximum sustainable yield.

One example of resource depletion in Sri Lankan waters was identified by NARA in 2020 when it assessed that 90 per cent of the sea cucumber stock in the Mullaitivu district had been depleted during that year. NARA recommended the fishing ground be entirely closed for sea cucumber fishing to allow for the recovery of the depleted resource.

There is also likely to be significant resource depletion in Sri Lanka's northern waters, which are subject to illegal bottom trawling by large numbers of Indian fishers.

DFAR has relatively little information on fish stocks in Sri Lankan waters or the Bay of Bengal and it advised that there has been no recent independent fish stock survey, with the last being conducted by the Norwegian Research Vessel *Dr Fridtjof Nansen*, which surveyed the waters of the Bay of Bengal (Bangladesh, Myanmar, Sri Lanka and Thailand) between June and October 2018.[33]

Fifty per cent of the catch by South Asian countries is derived from shared stocks. However, the management of these stocks appears unaddressed and poses a real challenge to sustainable catches. The lack of comprehensive catch reporting contributes to poor data resolution, hindering effective fisheries management.

The lack of comprehensive catch reporting and regional cooperation in stock assessment may be having a deleterious effect on Sri Lankan fisheries management. Figure 9 (above) provides data on declining catches of Sri Lankan offshore and coastal fisheries and Figure 11 provides comparative data between Sri Lanka and other South Asian countries.

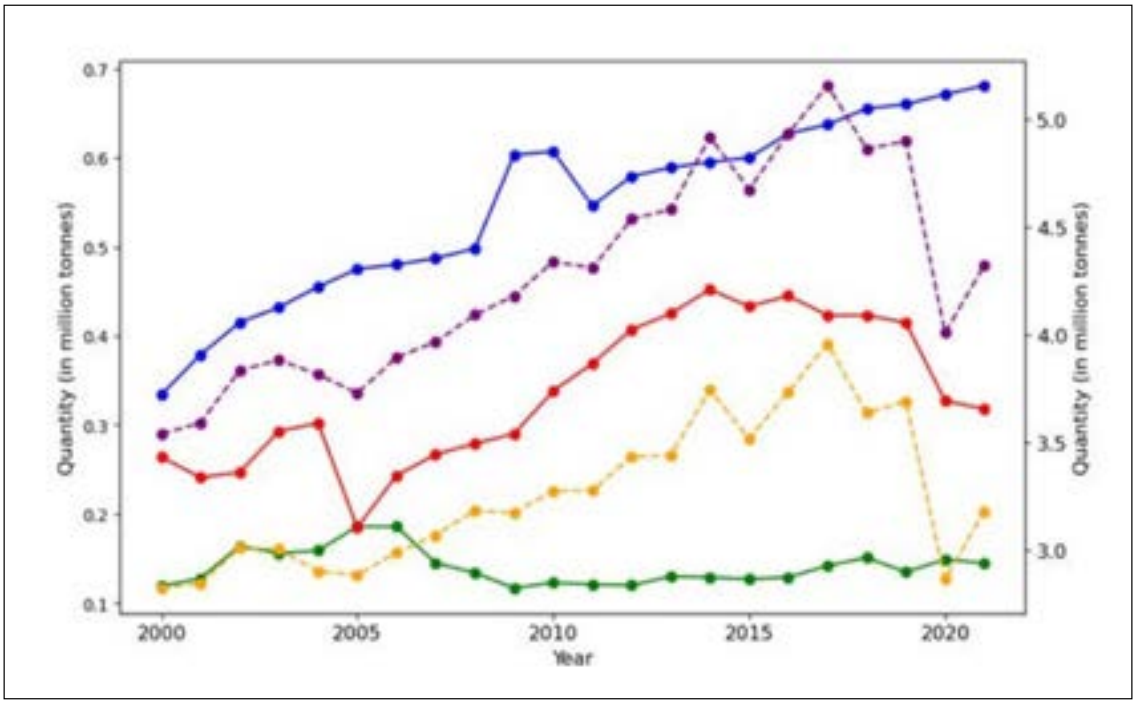

Figure 11: South Asian Fisheries Catch Comparison

Source: Bay of Bengal – Stock Assessment Network

Interviews with DFAR indicated that Sri Lanka does not have any MoUs related to regional fisheries cooperation. However, Sri Lanka is a member of the Bay of Bengal-Stock Assessment Network (BOB-SAN). The BOB-SAN was recently established following a United Nations Food and Agriculture Organisation (FAO) Regional Workshop for a Network of Practitioners on Fishery Stock Assessment held in January 202334 to fill the need for collaboration management strategies among the Bay of Bengal rim countries.

Fishing management controls

Sri Lanka also employs several fishing management controls. These include the following:

- quotas and catch limits, exemplified by catch limits on yellowfin tuna, commercial minimum size limitations in lobster and blue swimming crab fisheries, and the prohibition of catching, processing, and transporting certain species
- strict prohibition of mechanised bottom trawling
- limitations on scuba divers and oxygen tanks brought onboard
- size restrictions on gillnets (less than 2.5 kilometres)
- prohibition of night fishing for scuba divers; and
- area closures and temporal closures, particularly in fisheries such as sea cucumber and lobster.

The United Nations Sustainable Development Goal (SDG) 14 is *"Conserve and sustainably use the oceans, seas and marine resources for sustainable development"*. Sri Lanka seeks to attain this goal through the establishment of several Marine Protected Areas (MPAs). These include Fisheries Management Areas (FMAs) and Terrestrial Protected Areas (TPAs). These mostly protect biodiversity on and around coral reefs, mangroves and seagrass beds, while the FMAs seek to conserve fisheries resources. Certain TPAs with marine components also contribute to protecting marine biodiversity.

As shown in Figure 12, there are currently seven marine protected areas in Sri Lanka.

Figure 12: Marine Protected Areas and Fishing Management Areas in Sri Lanka.
Source: MPA Brief – Sri Lanka 2015 http://www.boblme.org/documentRepository/BOBLME-2015-Brochure-12.pdf

2.3.3 Energy and resources

Importation of coal, oil and gas

Sri Lanka currently has no domestically produced coal, oil or gas and consequently all of these products must be imported by sea.

Although Sri Lanka is doing well developing its renewable energy sources, as of September 2022, 42 per cent of its installed power generation capacity still relied on fossil fuels (24 per cent thermal oil and 18 per cent coal) generated from a mix of public and private power plants. The Ceylon Electricity Board operates Sri Lanka's only coal-fired plant at Lakvijaya and three thermal power stations at Kelanitissa, Sapugaskanda and Uthuru Janani. The remaining thermal capacity is provided by private operators.[35] Coal arrives at a loading wharf adjacent to the Lakvijaya plant.

Crude oil for Sri Lanka's only refinery at Sapugaskanda, along with imported refined products, is delivered via a Single Point Buoy Mooring (SPBM) mechanism located 10 kilometres offshore from the Ceylon Petroleum Storage Terminals at Muthurajawela. Other refined product is delivered to the Lanka IOC tank terminal in Trincomalee via ship, with bunkering occurring offshore by barge.

Both methods of importing oil are very prone to maritime environmental incidents. A burst pipeline from the Muthurajawela SPBM was responsible for oil spill incidents in 2015 and 2018.[36] Ships loitering near Trincomalee awaiting bunkering will also increase the likelihood of an oil spill incident in an area that is primed for significant growth in tourism.[37]

As previously noted, Indian Oil Corporation, which effectively controls the Trincomalee Oil Tank Farm (including through its joint venture with Ceylon Petroleum), is considering its options to develop those assets. This includes developing Trincomalee Port into a major regional bunkering hub for passing ships. There is also consideration being given to connecting the Trincomalee Tank Farm with a newly built Indian oil refinery via an undersea pipeline.[38]

As noted above, the Sri Lankan government approved a proposal by China's Sinopec in November 2023 to build a new oil refinery in Hambantota. This will require crude oil to be delivered via the Hambantota International Port.

Sri Lanka currently has no dedicated facilities to import LNG. The Indian company Petronet has undertaken to supply Sri Lanka with LNG in connection with plans to convert two existing power stations, Yughadhanavi and Sobhadabavi, to be operated by LNG.[39] This would eventually be through an LNG shore terminal or a Floating Storage Re-Gasification Unit (FSRU). In the meantime, Sri Lankan Ministry of Shipping personnel advise that Petronet is exploring options to ship 850 metric tons of gas daily in 50 containers of 17 tons each.[40]

Exploitation of offshore hydrocarbon deposits

Offshore oil exploration in Sri Lanka began in the late 1950s, with exploration mainly confined to the shallow water portion of the Cauvery and Mannar Basins from 1957 to 1984.[41] In 2001, there was renewed exploration activities based on potential hydrocarbons in the deep-water Mannar Basin. Despite positive prospects, commercial extraction is yet to commence.

Offshore exploration is overseen by the Petroleum Development Authority of Sri Lanka (PDASL), which was established by the Petroleum Resources Act, No. 21 of 2021. It is the body entrusted with promoting and regulating all oil and gas exploration, development, and production activities in Sri Lanka. The PDASL is responsible for ensuring the exploration and production of indigenous oil and gas resources are carried out using international best practices, adhering to robust health, safety and environmental practices and contributing to the socio-economic development and energy security of Sri Lanka.[42]

In January 2023, the Sri Lankan Government announced that it would issue two-year oil and gas exploration licences for as many as 900 offshore blocks to foreign firms.

PDASL and NARA have also established the excellent Marine Environmental Baseline Information Network (MEBIN).[43] This is a marine database that can be used to overlay maps detailing environmental protection measures prior to any future hydrocarbon exploration activities.

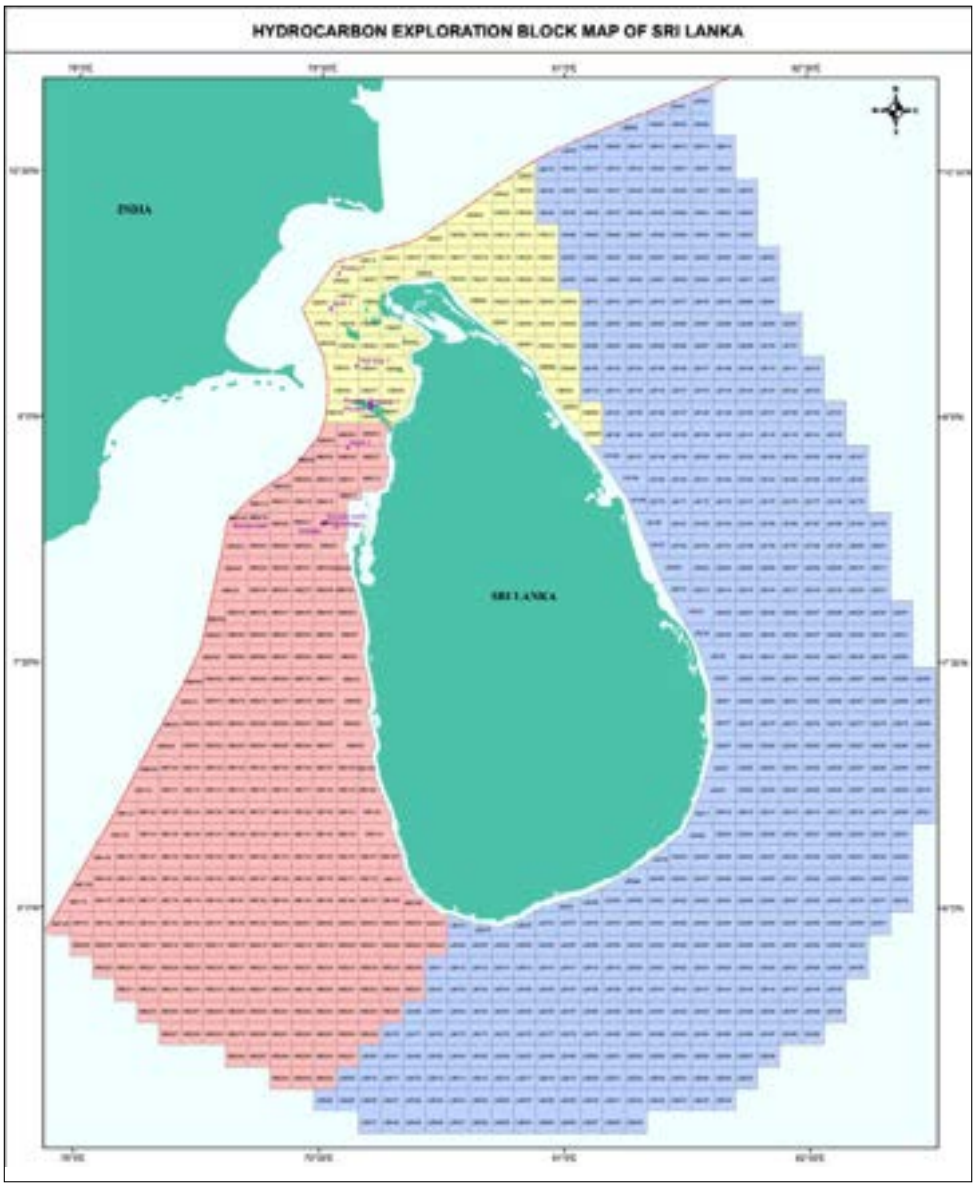

Figure 13: Hydrocarbon Exploration Block Map of Sri Lanka

Source: Petroleum Development Authority of Sri Lanka

Plans for offshore renewable energy facilities

According to the *Sri Lanka Climate Prosperity Plan*, Sri Lanka has enormous offshore wind resources that are almost entirely untapped. At the closest point, Sri Lanka is 25 kilometres from India, which is projected to be the largest single energy growth market of this century. Sri Lanka can be an energy exporter and even though some baseline fossil fuel capacities may remain for some decades, Sri Lanka can produce more than 100 per cent of its domestic consumption needs in renewable energy, relying especially on offshore wind as well as solar and other technologies.[44]

Consistent with this, the Sri Lankan Government has set a goal to have 70 per cent of electricity generated by renewable energy sources by 2030, and achieve carbon neutrality in electricity generation by 2050. The World Bank recently completed an Offshore Wind Road Map for Sri Lanka, which identified a locational potential of 56GW. This includes 27GW of fixed offshore wind in shallow waters (less than 50 meters) and 29GW of floating offshore wind in deeper waters (between 50 and 1,000 meters).[45]

In February 2024, the Sri Lankan Government approved a proposal to increase the contribution of large-scale renewable energy through the development of offshore wind projects in the north, west and south-east of the country.[46]

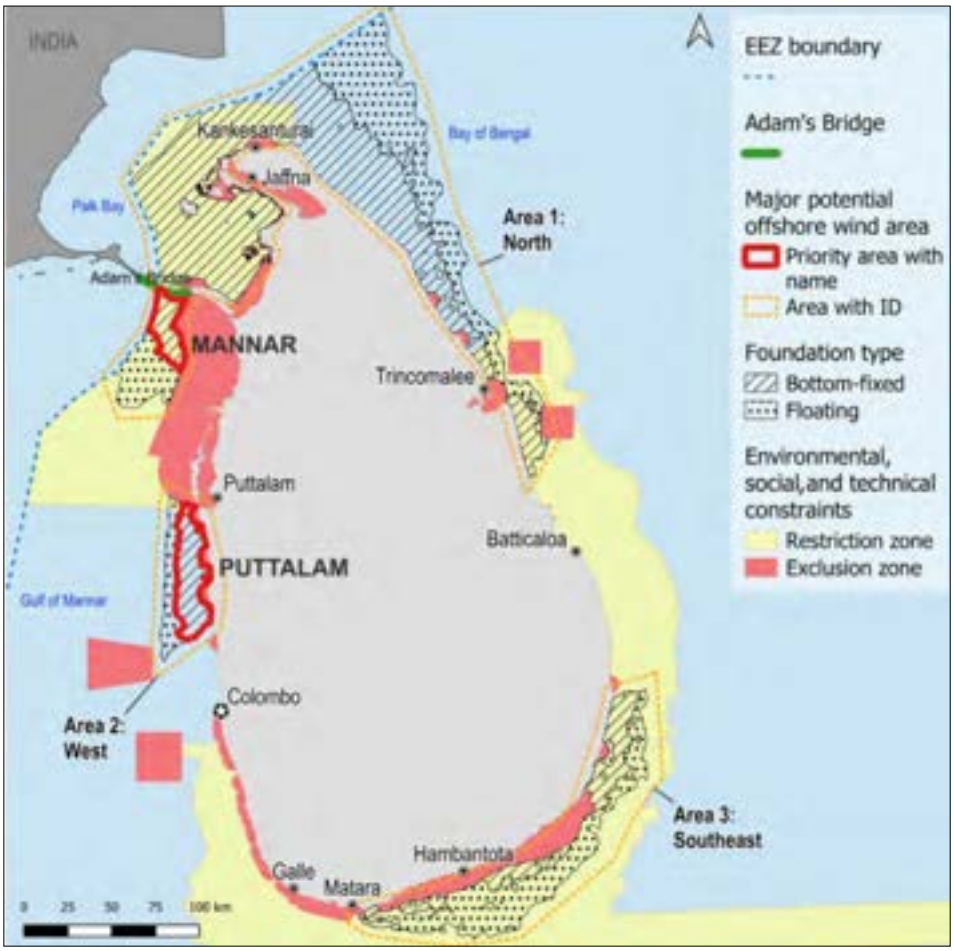

Figure 14: Sri Lanka Offshore Wind Potential

Source: World Bank Offshore Wind Road Map

2.3.4 Undersea infrastructure

Like most countries, Sri Lanka is highly reliant on international communications based on undersea cables. There are also proposals to build an undersea electricity link with India as well as an undersea oil and petroleum pipeline to India. Any offshore wind farm development will also have an undersea connection to the shore.

Sri Lanka has five communications cable landing stations run by three telecommunications companies[47]:

- Lanka Bell Station in Colombo for the Falcon Cable system
- Dialog Axia Station in Mt Lavinia for the Maldives — Sri Lanka Cable
- Sri Lanka Telecom Station in Colombo — for SMW4 and Dhirago — SLT Cable systems
- Sri Lanka Telecom Station at Mt Lavinia — for SMW3 and Bharat Lanka Cable systems
- Sri Lanka Telecom Station at Matara — SMW 5 with Singapore

A sixth cable, SMW 6, is scheduled to be landed at Matara in 2025.

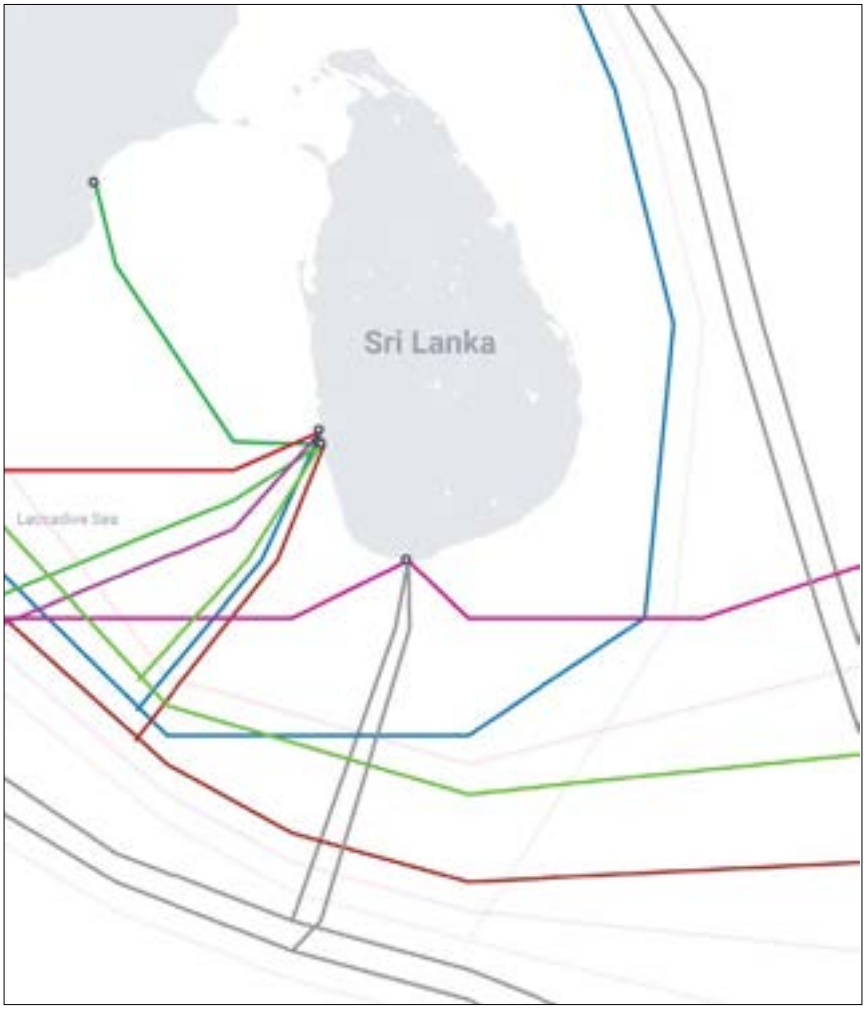

Figure 15: Submarine Cable Map – Sri Lanka

Source: https://www.submarinecablemap.com/country/sri-lanka

Sri Lanka is also adjacent to several other cables running across the Indian Ocean. This is why a cable repair ship, *Asean Explorer* (or sister vessels), will often be based in Colombo or other Sri Lankan ports. These vessels are owned by a consortium of Southeast Asian telecommunications companies.

Figure 16: Cable-laying ship at work off Galle Face Green, Colombo.
Source: David Brewster

In March 2024, the Secretary to the Sri Lankan Ministry of Power and Energy announced plans for a US$1.2 billion undersea electricity cable (Madurai-Anurdhapura) that would link the Indian and Sri Lankan national grids.[48] It would include a 120-kilometre crossing of the Palk Strait. A subsea high-voltage direct current (HVDC) interconnector with an initial capacity of 2.5GW (275 kV) would link the Anuradhapura and Madurai grids as of 2025, to be scaled up to 10+ GW capacity by 2040. The initial installation is estimated to cost US$100 million over two years.[49] Consideration has also been given to an overhead cable across the shallow waters that would help export energy from proposed renewable projects in northern Sri Lanka, including proposed projects on Delft, Analativu and Nainativu islands.

As previously noted, the Indian Oil Company is also considering the construction of an undersea pipeline that could be used to transport oil and petroleum between India and Sri Lanka. The pipeline could land in northern Sri Lanka, with one branch connecting to Colombo and another branch to Trincomalee, with access to the storage facilities at the Trincomalee Oil Tank Farm.

2.3.5 Tourism

The tourism industry — which contributes to 12 per cent of GDP and is the third largest source of foreign exchange[50] — can also be transformed under the blue economic model.

Tourism connects the country's economic and security interests to the ocean domain. Developing a sustainable industry depends on the country's ability to make the ocean a safe, secure and unpolluted place. Tourism in Sri Lanka has historically been focussed on beaches. In addition, with the increasing prevalence of whales close to the coast, (including blue whales), there is potential to develop a whale-watching tourism industry.

In recent years, several developments have adversely affected the tourist industry. The series of terrorist bombings in 2019, the COVID-19 pandemic, political instability in Colombo and the worst economic crisis since independence have played an important factor in recent declines in tourism (from 2,333,796 foreigners visitors in 2018 to 719,913 in 2022).[51] With targeted investments and a clear ocean tourism strategy, Sri Lanka's tourism industry can evolve and unlock further opportunities in sustainable coastal tourism.[52]

The *X-Press Pearl* incident (see below), involving large spills of chemicals and plastics, also probably had a major adverse impact on tourism. Although no data is publicly available, the contamination of pristine beaches and the negative media coverage likely deterred potential tourists concerned about the environmental fallout. In broader terms, the incident may have undermined Sri Lanka's international reputation as a destination with a pristine natural environment.[53]

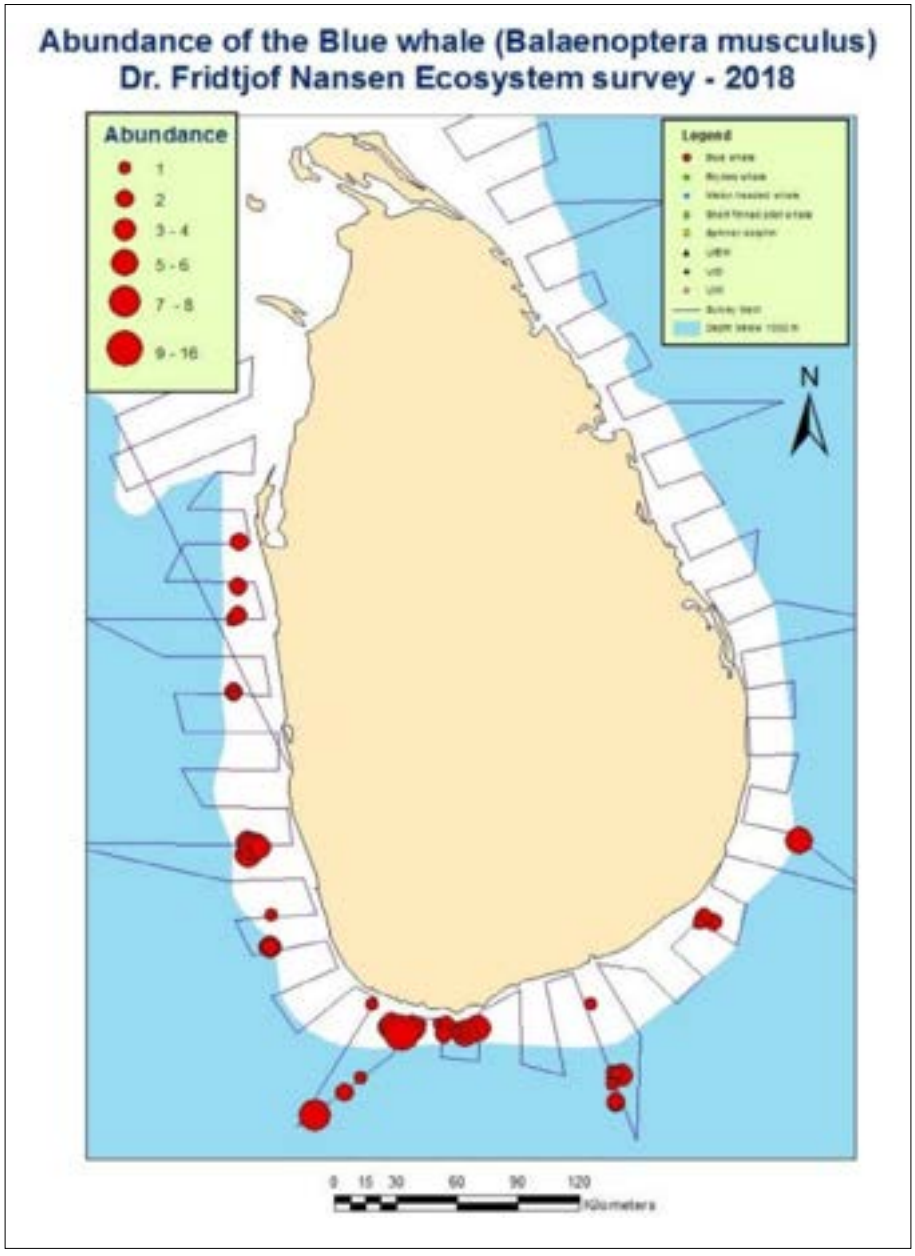

Figure 17: Abundance of the blue whale – Sri Lanka

Source: Brief Summary of Findings Dr Fridtjhof Nansen Ecosystem Survey of Sri Lanka 2018

Section Three: Challenges and threats in Sri Lanka's maritime domain

Sri Lanka's geographical location provides it with several advantages in the maritime domain. Proximity to busy sea lanes has seen Colombo Port develop into one of the busiest in the world, while Sri Lankan fishers benefit from being close to plentiful Indian Ocean fishing grounds, and the beaches of Sri Lanka are known world-wide and provide enormous tourism potential. However, Sri Lanka's advantageous geography also brings challenges and threats to the country's maritime security.

This section reviews key maritime security threats to Sri Lanka. It contains the following subsections, which are not listed in any priority order:

3.1 **IUU fishing**

3.2 **Drug and arms trafficking by sea**

3.3 **Human smuggling by sea**

3.4 **Maritime piracy and armed robbery**

3.5 **Shipping accidents and maritime safety/marine pollution**

3.6 **Port security and cyber threats**

3.7 **Climate change**

3.1 IUU fishing

IUU fishing by Sri Lankan vessels in other waters and foreign vessels in Sri Lankan waters is an important threat to Sri Lanka's maritime interests.

The country's management of the threat posed by illegal fishing by Sri Lankan fishers around the region has received intense international scrutiny over the last 15 years. In 2012, the European Council 'yellow-carded' Sri Lanka for failing to properly monitor its fishing fleet, punish vessels guilty of illegal fishing, or develop robust fisheries laws to deter IUU fishing. At the time, Sri Lanka was the second biggest exporter of fresh and chilled swordfish and tuna to the EU (€74 million of imports in 2013). This sanction was upgraded to a 'red-card' in 2015 before Sri Lanka was withdrawn from the restricted list of countries in April 2016 after demonstrating it had developed a robust legal and policy framework to fight illegal fishing activities.[54]

One of the biggest threats that Sri Lanka currently faces in the maritime domain is from Indian bottom trawling boats that are illegally entering Sri Lankan waters in very large numbers. Hundreds of steel-hulled Indian bottom trawlers enter Sri Lankan waters every day (previously it was generally only on Tuesdays, Thursdays and Saturdays) to begin their trawl westwards back towards Indian waters. It requires a constant effort by both the Sri Lanka Navy and Sri Lanka Coast Guard to try to prevent this illegal fishing, with several arrests every month.

Between 1974 and 1976 Sri Lanka and India successfully delimited their maritime boundaries. Over the course of history artisanal fishers from both countries would freely fish across the Palk Strait and this was generally understood by both sides even after the delimitation. However, over time Indian fishers have converted to industrial bottom trawling technology and have continued to cross Sri Lanka's maritime boundary to conduct their fishing. This was aggravated during the civil war, when Sri Lankan fishers were prohibited from operating in northern waters, which meant that fish stocks increased.

Sri Lankan agencies and fishers have become increasingly frustrated with these operations as they can be large-scale. The Sri Lanka Navy estimates that it may involve approximately 400-500 vessels a night, including wooden and steel-hulled craft operating in the vicinity of around one third of Sri Lanka's coastline. This has a consequent effect on stock depletion and just as importantly causes significant environmental damage.

The Sri Lanka Navy has been proactive in deterring this activity through multiple and regular arrests (averaging around six to eight arrests per month depending on weather, seasonal issues and diplomatic circumstances). Sri Lankan authorities are under strict orders not to fire upon Indian fishing boats and therefore must use other methods. Sri Lanka Navy and Sri Lanka Coast Guard vessels are increasingly receiving damage to their ships after aggressive actions by Indian fishing vessels, including ramming, in response to attempts to arrest them (see Figure 18).

Figure 18: Damage sustained by Sri Lankan naval vessel in trying to arrest IUU fishers in northern waters.
Source: Sri Lanka Navy

According to the Sri Lanka Navy, Indian fishers are also modifying their vessels (e.g. by welding steel plates to their gunnels) to avoid Sri Lankan authorities using water cannons to assist in arrests (see Figure 19).

Figure 19: Hull modifications on Indian fishing boats to prevent arrest
Source: Sir Lanka Navy

The Sri Lanka Navy's ability to monitor the Indian fishers is limited by a lack of resources, including insufficient radar coverage, night vision devices and drones. The project team understands that radar systems were being used only intermittently and only at night in order to save on maintenance costs.

Although the Sri Lanka Navy has a direct communications line with the Indian Coast Guard, the project team understands that the Indian Coast Guard does not respond adequately to this issue.

According to some reports, the Sri Lankan courts have recently increased the detention period imposed on masters of illegal fishing vessels from two weeks to six months. This has led to protests on the Indian side and intensified the focus from both the Sri Lankan and Indian governments.

The Indian Consul-General in Jaffna confirmed that India also bans bottom trawling and advised that Indian authorities are not registering new trawlers capable of bottom trawling. He further stated that the Indian Coast Guard appears reticent to prosecute bottom trawlers as they may be sympathetic to the fishers' business model in that the boats are generally provided on a short-term lease and are not operated by the owners.

However, the Sri Lanka Navy states that Sri Lankan fishers will be arrested by Indian authorities if they stray into Indian waters, even if their fishing gear is stowed.

As observed during our recent research visit, Sri Lanka now has a strong system and processes in place to prevent and defend against IUU fishing. Underpinning this system is the comprehensive *2020 Sri Lanka National Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing*[55]. This document details all the relevant laws, regulations and measures relating to IUU fishing. This plan is now also accompanied by the establishment of a Fisheries Monitoring Centre that employs a satellite-based Vessel Monitoring System, plus other satellite and AI-assisted MDA systems, including Sea Vision, IORIS and Skylight.

3.2 Drug and arms trafficking by sea

Illegal drugs are broadly regarded as a significant and growing problem in Sri Lanka. Drug trafficking by sea to Sri Lanka involves two main routes. One is the eastern 'Smack Track' from Iran/Pakistan involving the smuggling by sea of heroin and methamphetamines produced in Afghanistan. This generally involves the transport of drugs by dhows, which are then trans-shipped to Sri Lankan trawlers in the waters west of Maldives. It is not clear to what extent these drugs are intended entirely for the Sri Lankan domestic market or for trans-shipment to third countries. A related threat involves the smuggling of arms, which may involve the same crime gangs based in Iran/Pakistan and are carried on the same vessels.

The Sri Lanka Navy and Coast Guard generally intercept suspect vessels within the Sri Lankan EEZ.[56] In 2024, the Sri Lanka Navy's SLNS *Gajaba* was deployed to the Arabian Sea in support of coalition operations in the Red Sea. While on that deployment it also searched a dhow suspected of drug trafficking. Police report there has been a reduction in interdictions on this route in recent times because smugglers have changed their practices in on-water communications.

The second main route for drug smuggling into Sri Lanka is bringing 'Kerala Gold' cannabis from India, across the Palk Strait to northern Sri Lanka. This may involve trans-shipment between Indian and Sri Lankan fishing vessels. Sri Lankan authorities state that the adverse economic impact from illegal fishing (including overfishing and bottom trawling of Sri Lankan waters by Indian fishers) may be causing Sri Lankan fishers to turn to smuggling. Given the number of fishing vessels and the porous nature of maritime borders in the north, police and other agencies find it difficult to estimate the extent of this trade.

3.3 Human smuggling by sea

Human smuggling by sea can involve arrivals in Sri Lanka and departures from the country. The movement of people from Sri Lanka was often a result of Sri Lanka's civil conflict or the post-conflict environment.[57] Unapproved departure from the country is a crime in Sri Lanka and successive Sri Lankan administrations have worked hard over the last decade or more to stamp it out.

Departures from Sri Lanka include irregular migration to India, eastwards to Southeast Asia and Australia, and westwards to French La Reunion and other destinations.

Over the last decade or so, the Australian Border Force (ABF) has worked closely with the Sri Lankan Department of Immigration and Emigration to stop irregular maritime departures at source. This has been largely successful, although there are still occasional vessel departures headed towards Australia. According to the ABF, at least 38 boats carrying 873 asylum seekers – including 124 children – arrived in Australian waters between 2013 and 2021.

The Department has what was described as a 'unique' arrangement with the Australian Government that facilitates the expedited repatriation to Sri Lanka of any Sri Lankan nationals that reach Australian territory. These repatriations generally occur by chartered aircraft, although in 2022 an ABF vessel was used to return some 46 Sri Lankan nationals.

Since May 2023, there have been no attempts to reach Australia by boat from Sri Lanka. We understand that irregular migration from Sri Lanka to Australia is now largely occurring by air, by way of third countries. This approach is utilised by organised crime syndicates and is not unique to Sri Lanka. Relevant border agencies and the aviation industry are attempting to address this threat.

There is still a flow of irregular migration by sea from Sri Lanka to western parts of the Indian Ocean, including to La Reunion and the Chagos islands.[58] In January 2023, the maritime police at the Pointe de Galets port in Réunion Island escorted 69 Sri Lankans — including seven women and six children — on fishing boats. Between 2018 and 2019, 275 migrants had arrived in Réunion Island on six boats.[59] According to 2023 reports, at least 120 Sri Lankans (asylum seekers) were based at a fenced encampment in Diego Garcia in Chagos Archipelago.[60]

3.4 Maritime piracy and armed robbery

Being a major maritime hub and having a large distant water fishing fleet gives Sri Lanka significant interests in maritime safety throughout the region. The recent resurgence of maritime piracy and armed robbery is therefore a significant concern for Sri Lanka.

In January 2024, a Sri Lankan fishing trawler with six crew members operating in the western Indian Ocean was attacked by Somalia-based pirates. An accompanying fishing trawler alerted Sri Lankan authorities using its Australian-supplied VMS system. The pirates failed to disable the VMS system on the hijacked vessel, which allowed the Sri Lankan Fisheries Monitoring Centre and the Maritime Rescue Coordination Centre to track its progress. The Sri Lanka Navy then notified Seychelles and Indian authorities and helped guide a Seychelles Coat Guard vessel and Indian Naval ship to intercept the hijacked fishing boat. The Sri Lankan trawler and its crew were then released and pirates arrested by the Seychelles Coast Guard.[61]

In recent months, Sri Lanka made an important demonstration of its interests in maritime security in the broader Indian Ocean region. In December 2023, following Houthi attacks on international shipping in the Red Sea and subsequent upsurge in piracy, Sri Lanka joined the Combined Military Forces operating in the Western Indian Ocean. In January 2024, the Sri Lanka Navy deployed its offshore patrol vessel, SLNS *Gajaba* to the Arabian Sea.[62] Logistical limitations prevented it from deploying to the Red Sea. The Sri Lanka Navy vessel was operating in cooperation with coalition naval forces, in support of the US-led Operation Prosperity Guardian.[63]

3.5 Maritime safety and marine pollution

One of the world's busiest shipping lanes passes very close to Sri Lanka. The major east-west route across the Indian Ocean carries nearly 30 per cent of the world's maritime trade and is channelled through the Traffic Separation Scheme (TSS) 10 nautical miles to the south of Dondra Head. This is used by up to 35,000 Ultra Large Container and bulk carriers, plus 5,000 Ultra Large Crude Carriers annually moving through an area close to the Sri Lanka Coast at high cruising speeds. This contributes to a greater likelihood of incidents in the country's maritime zones.

The reliance on offloading of fuel products from a Single Point Buoy Mooring (SPBM), plus offshore bunkering, further increases the risk of marine pollution. This is in addition to the problem of unrecorded incidents, such as minor oil spills and the release of ballast water.

From a maritime safety perspective, the figures below detail the number of incidents dealt with by the Sri Lankan MRCC over the period 2018-23. According to the MRCC, the increase in recorded incidents in recent years largely reflects an increase in false alarms.

Year	Total Incidents	MOB	Death	Patients on board	Fire on board	Technical failure	No Cons	Ground	Collision	Capsize	Others	False Alert	Assist	Cleared	Monitored
2018	274	15	9	44	2	120	29	-	15	4	6	30	69	72	133
2019	263	11	4	48	1	131	33	5	5	10	6	19	39	86	138
2020	309	12	3	60	3	125	34	4	5	4	11	48	39	151	119
2021	318	15	7	46	5	75	31	1	5	11	14	108	30	196	92
2022	331	18	6	41	2	99	32	8	3	9	10	103	35	193	103
2023	377	12	14	48	1	111	35	7	2	6	10	131	26	238	113

Figure 20: Incidents recorded by the Sri Lanka Navy Maritime Rescue Control and Coordination Centre
Source: Sri Lanka Navy Maritime Rescue Control and Coordination Centre Briefing Notes

Unfortunately, Sri Lanka has had to deal with several recent high-profile incidents. The most notable of these was the MV X-Press Pearl (see box).

The enforcement of Port State Controls in Sri Lanka is the responsibility of the Ministry of Shipping. It appears that Sri Lankan authorities do not undertake a significant number of inspections of vessels. According to the Indian Ocean MoU on Port State Controls, during 2023, Sri Lankan authorities conducted only nine inspections on vessels, leading to the detention of two vessels. In contrast, during that same period, Bangladesh authorities undertook 876 inspections, while Indian authorities undertook 571 inspections.[64]

MV X-Press Pearl – "Sri Lanka's worst environmental incident"

On 20 May 2021, cargo ship X-Press Perl, with 1,486 containers on board carrying nitric acid, caustic soda, solid sodium methoxide solution, cosmetics, methanol and vinyl acetate, including micro plastics and plastic pellets, together with other cargo, caught fire approximately nine nautical miles (16 kilometres) off the coast of Colombo Port.

The Sri Lanka Navy, Airforce and Coast Guard, supported by the Indian Navy, worked to contain the fire for nearly two weeks.

Chemical spills and plastic pellets caused massive damage to the nearby coastline, natural marine environment and ecosystem, including damage to many popular tourist areas. The plastic pellets used to make polyethylene bags and other plastic products caused fatal damage to sea turtles, dolphins and whales. It was estimated that the livelihoods of 16,500 fishers and their families was affected.

The Marine Environment Protection Authority (MEPA), stated this was Sri Lanka's worst environmental disaster in its history with unimaginable consequences to the marine environment. The situation was brought under control by 1 June 2021.

Marine plastics and other marine pollution

The Sri Lankan economy depends substantially on its marine and coastal environments, and plastic pollution is a matter of considerable concern, affecting various geographical settings, from remote islands to densely populated urban regions. The country's solid waste management systems are struggling to keep pace with growing urban populations.

As noted above, Sri Lanka faced its worst maritime ecological disaster in 2021 when the *X-Press Pearl* container ship caught fire and off Colombo, spilling plastic pellets into the seabed and beaches off western Sri Lanka. It was the worst plastic marine pollution event in the world.[65]

The total marine litter status of Sri Lanka has not been evaluated to date, but Sri Lanka is among the top countries contributing to marine debris. Collection and recycling are not performed fast enough, considering the 20 million shopping bags, 15 million lunch sheets and about 10 million empty bottles entering the Sri Lankan environment every day. The local population lacks awareness about the dangers of marine litter and how to prevent it.

According to some studies, most of the debris present in the oceans around Sri Lanka is sourced from Sri Lanka, with only a smaller fraction from foreign or maritime sources.[66] However, certain parts of the Sri Lankan coastline may receive debris sourced in India during the monsoon seasons. The primary components of marine litter are packaging materials and consumer products, followed by waste from fisheries, with 80 per cent of marine debris being plastic materials. Sri Lanka has steadily increased its import of plastic, straining the national waste management system. Microplastic pollution is a main cause of rapidly declining fishing stocks along the Sri Lankan coast.

The intensity of plastic pollution along Sri Lanka's coast has risen during the past decade. The country produces 1.59 million tonnes of plastic waste a year, much of which ends up in the ocean. In 2017, Sri Lanka banned the manufacture of Styrofoam and polythene products under 20 microns thick. But the implementation and enforcement of the ban has been inadequate. Sri Lankan Government bodies are examining alternative waste management schemes. While a recycling program operates along the southwest coast, Sri Lanka is now trying to encourage more efficient plastic waste management and is moving toward a gradual fade out of plastic production.

There is little hard data on oil or chemical pollution from marine- and land-based sources. MEPA has recently had some important successes in prosecuting commercial vessels in respect of oil spills that have been detected through satellite imagery provided by the French CLS (Collect Localisation Satellites) company and funded by the French government.[67]

3.6 Port security and cybersecurity

The physical security of Sri Lankan ports was managed by the Sri Lanka Navy during the civil war. Since then, port security has been handed over to the Sri Lankan Ports Authority, and the Navy's involvement in port security has been reduced to responsibility for the ISPS code and security measures to protect its own ships and bases.

As Sri Lanka further develops its ports, cybersecurity is assuming greater importance. With ships and ports becoming more automated and digitised, they are becoming increasingly susceptible to cyber-attacks on their information or operational technology or via ransomware.

In its 2022 Annual Report, the Indian Information Fusion Centre-Indian Ocean Region (IFC-IOR) reported five cyber-attacks, with one occurring at the Jawaharlal Nehru Port Container Terminal in Mumbai. This attack affected the management information systems, which impacted container loading/unloading operations, leading to congestion in the port area.[68]

3.7 Climate change

Sri Lanka's greenhouse gas emissions are minor, less than one per cent of the global contribution. But as a small tropical island nation, it is one of the most vulnerable nations to the adverse effects of climate change. The consequences of climate change, such as rising temperatures, rainfall variability, and increased sea levels, are critically affecting almost all economic sectors of the country.[69]

Sri Lanka has a 1,700 kilometre-long coastline, which in most parts is a low-lying belt. About 40 per cent of the country's population is concentrated in townships in the coastal zone. The country's coastline, including major cities such as Colombo and Galle, is exposed to sea-level rise and coastal erosion, which puts infrastructure at risk, displaces communities, and disrupts livelihoods.

The island is experiencing more frequent and extreme weather events, including cyclones and heavy rainfall, which lead to flooding, landslides, and property damage. Sri Lanka regularly experiences very high temperatures, which can develop into hazardous heatwaves. It also experiences an annual probability of severe droughts of about 4 per cent because of these adverse increases in temperature. Sri Lanka is mostly impacted by sea level rises resulting from these thermal expansions, leading to coastal erosion, the intrusion of salinity, and shoreline retreat. The intrusion of saltwater into freshwater sources intensifies the shortage of clean drinking water.

Irregular monsoons and shifting rainfall patterns impact agriculture, the backbone of Sri Lanka's economy, with prolonged droughts intensifying water scarcity issues. According to the Climate Risk Index 2021, Sri Lanka ranks among the countries most affected by climate change in terms of extreme weather events. Between 2000 and 2019, Sri Lanka witnessed 19 major floods, affecting over 12 million people.

Sri Lanka's coastline has been experiencing an average erosion rate of 0.3 to 0.6 meters per year, resulting in the displacement of coastal communities. The sea level rise at the rate of 1.5 millimetres/year to 3 millimetres/year over the past 100 years and warming of the sea are impacting Sri Lanka's fisheries sector (around 300,000 families make their living out of fisheries in coastal and offshore waters), while rising waters are impacting the small-scale fishers' physical infrastructure. Sea level rise is also resulting in the loss of coastal habitats, with increasing storm surges and disaster events damaging reefs, leading to a reduction in fish breeding and feeding grounds. Meanwhile, ocean acidification is making it more difficult for shellfish, crabs, lobsters, and corals to build calcium carbonate shells, causing stocks to diminish.

Inland fisheries in the Northern, Northwestern, North Central, and Eastern provinces are subject to high risks from climate change impacts. In the marine fisheries sector, Kalpitiya, a coastal town located in the western region of Puttalam District, has 43 fishery landing sites, providing livelihoods to approximately 6,000 people. They are highly vulnerable to sea level rise, particularly in the Northern and Eastern provinces, where coastal fishing populations face the highest risks.

Sri Lanka's latest adaptation plan identifies agriculture, fisheries, water, human health, coastal and marine, ecosystems and biodiversity, infrastructure, and human settlements as the most vulnerable sectors in terms of climate change.[70]

Sri Lanka is in the process of strengthening its policy related to climate change, including through a new Climate Act, a new National Environment Act and renewing the National Biodiversity Strategic Action Plan 2016 to 2022.[71]

National climate change policies and related plans

In 2008 the Sri Lanka Ministry of Mahaweli Development and Environment recognised the risks and established the Climate Change Secretariat (CCS), leading to a series of climate change mitigation and adaptation policy actions. The CCS takes the lead on climate change matters in government and engaging external stakeholders.

- National Climate Change Adaptation Strategy 2010.
- National Policy on Climate Change 2023.
- National Adaptation Plan for Climate Change Impacts in Sri Lanka 2016-2025.
- National Environmental Action Plan 2022-2030.
- National Environment Policy June 2022.
- Nationally Determined Contributions Implementation Plan 2021-2030, 2023.
- Capacity Assessment and Action Plan for Developing Capacity for Compliance with Global Conventions on Biodiversity, Climate Change, and Land Degradation 2007.
- Coastal Zone Management Plan 2018.
- Comprehensive Disaster Management Program 2014-2018.
- Climate Prosperity Plan 2022. Launched at 27th Conference of the Parties of the UNFCCC (COP 27), it aims to "galvanise climate protection against key risks" and promote risk-informed investment. It includes a commitment to developing a strategy of accelerated adaptation of sectors most exposed to climate risks such as fisheries, together with a comprehensive risk financing strategy.
- Carbon New Zero Roadmap and Strategic Plan Synthesis Report 2050, Sri Lanka, 2023.

While the CCS has implemented and coordinated intergovernmental programs, it is also closely engaged with the public. The CCS has established itself as a strong mechanism to respond to climate change, working with the National Experts Committee on Climate Change Adaptation and the National Experts Committee on Climate Change Mitigation. In 2022, Sri Lanka presented two noteworthy climate change proposals on the global stage. First, the establishment of an International Climate Change University, a research and development platform dedicated to advancing climate mitigation actions. Second, it introduced the Tropical Belt Climate Ambition Project, which centres on biodiversity, conservation, renewable energy adoption, nature-based solutions, and pollution control within the tropical belt. This project aims to make a positive global impact in the fight against climate change. In 2023, Sri Lanka's President, Wickremesinghe, launched the Climate Justice Forum at COP28 Dubai to gather support for vulnerable nations hit by climate change-led disasters.[72]

In recent years, Sri Lanka has been investing in more integrated coastal management programs, including more resilient infrastructure in coastal areas such as flood-resistant buildings, encouraging community-based organisations to implement climate adaptation strategies, as well as developing early warning systems for extreme weather events to enhance the ability of communities to better respond to climate-induced risks. In Sri Lanka, there is also a national natural disaster insurance scheme.

The island country has established 2030 targets to achieve 70 per cent renewable energy in electricity generation and expects to achieve carbon neutrality by 2050.

Section Four: Maritime Governance and Domain Awareness

This section provides an assessment of Sri Lanka's current level of MDA and details the agencies with governance responsibilities in the maritime domain. It has the following subsections:

4.1 Overview of Sri Lanka's current level of MDA

As in most countries, there are many agencies in Sri Lanka with responsibilities in the maritime domain, with around 15 agencies actively contributing to the country's maritime domain awareness. This reflects the complex nature of maritime affairs and the wide range of maritime interests and threats.

Overall, we are impressed by Sri Lanka's steady progress in recent years to enhance its maritime security, including in MDA. All consultations undertaken during the course of this study showed that relevant agencies and officials recognised there were a range of problems and gaps in maritime security and MDA, and that there was a need for further action.

While the current level of MDA is good, there has been an unsurprising lag in development as the country emerged from a 30-year civil conflict in 2008. However, in some areas it has been quick to adapt to modern MDA ecosystems, processes and institutions. The Sri Lanka Navy has recently established its own IFC and MRCC, both of which utilise the latest MDA satellite and AI-based tools, including Sea Vision, Skylight and IORIS, along with their own network of vessels, coastal radar and shore observation posts. The Sri Lanka Air Force has a very limited maritime patrol aircraft capability, although this is set to grow with assistance from Australia and the United States.

The Department of Fisheries has also established a Fisheries Monitoring Centre (FMC) which utilises its own Vessel Management System employing BlueTraker technology funded by the Australian Government. This is in addition to the other MDA satellite-based tools used by the IFC and MRCC.

The Sri Lankan Port Authority also has a Vessel Traffic Management System (VTMS) in Colombo Port that integrates X and S band radar along with AIS data, CCTV and VHF radio. It is understood that Hambantota Port will be establishing a VTMS, but the other SLPA ports do not have this facility.

There is currently no centralised MDA system or institution in Sri Lanka that collects, fuses and analyses information from relevant agencies regarding the maritime domain. While this it is certainly an aspiration of the Sri Lanka Navy's IFC, it would need to be physically expanded to accommodate the various agency representatives.

There is sharing of VMS data between Department of Fisheries and the Sri Lanka Navy under a MoU (which is then shared to the Sri Lanka Coast Guard, which remains under Sri Lanka Navy operational control). However, coordinating the actions of the other agencies in the maritime domain or promoting the sharing of information between these agencies is a difficult task. There is no single agency that is responsible for coordinating strategy or policies in the maritime domain.

This could be solved if Sri Lanka were to develop a national oceans policy or a national maritime security strategy that provided agencies with guidance on their responsibilities or roles in addressing various maritime challenges or threats.

4.2 Sri Lanka Navy

The Sri Lanka Navy is Sri Lanka's principal agency with responsibility for security in the maritime domain.

It has a small fleet of ships, including five Advanced Offshore Patrol Vessels; three Offshore Patrol Vessels; two Bay-class Patrol Boats; two Fast Missile Vessels and other smaller Fast Attack and Littoral Attack craft. The larger vessels have generally seen previous service with the United States Coast Guard, Indian Navy or Coast Guard, ABF, and the People's Liberation Army Navy. Fast Attack craft are manufactured in Sri Lanka and Israel. The research team were advised that only one or two Sri Lanka Navy vessels were offshore each day, largely reflecting the availability of vessels.

The Sri Lanka Navy currently has 55,000 personnel (including a small Marine Corps), but like the other two services, it is coming under pressure to reduce its numbers following the end of the civil conflict. There is a proposal to scale back the Sri Lanka Navy to 40,000 personnel, with 5,000 seconded to the Sri Lanka Coast Guard (which currently has 1,300 personnel). These force structure changes are detailed in the Sri Lanka Navy's proposal for *Sri Lanka Navy's Strategy 2030 & Beyond* which was provided to the Government in March 2024. The proposal followed a national and regional threat analysis, which considered Sri Lanka's maritime sphere and climate change-related challenges, future Humanitarian Assistance, and Disaster Response (HADR) needs, the use and protection of sovereign seabed resources, and national objectives such as future inroads into the blue economy.[73]

The Sri Lanka Navy's official website, https://www.navy.lk/index/sea-ops.html provides comprehensive details of the Sri Lanka Navy's achievements in relation to drug trafficking and IUU fishing apprehensions.

Maritime Rescue Coordination Centre

The Sri Lanka Navy operates an MRCC, which was established with assistance from India. MRCC Colombo can be identified as one of the most resourceful bodies that have access to MDA tools to actively engage SAR facilities. According to 2022 records, it observed 331 incidents, with an average of 27 incidents per month. MRCC Colombo also operates in collaboration with other MRCCs. It collects maritime distress calls and coordinates SAR operations, and issues necessary broadcasts needed for alerting maritime traffic. Data on accidents are kept in records – which is an important source of information for ongoing activities concerning MRCCs.[74]

The Sri Lanka Navy plays a key role in maritime safety and security which involves dealing with the massive SAR region allocated by the International Maritime Organisation and the International Civil Aviation Organisation. The MRCC will play an important role in coordinating SAR operations involving Sri Lanka Navy. However, Sri Lanka Navy also plays an active role in SAR operations. This involves formulating SAR related plans required for its coastal deployment – the bases, detachment, and observation points. This is part of the Sri Lanka Navy's MDA efforts and systems.[75]

The Sri Lanka Navy intends to develop a National Search and Rescue Plan and a National Casualty Management Plan.

Information Fusion Centre

The Sri Lanka Navy's IFC was established with assistance from Japan and the United Nations Office on Drugs and Crime (UNODC). The Sri Lanka Navy states that although the IFC is staffed by Naval personnel, it connects with some 12-14 Sri Lankan stakeholders, and it sends weekly bulletins to more than 35 agencies.

The IFC communicates with IFC-IOR (Delhi), IFC Singapore, and RMIFC (Madagascar) by email through points of contact. Sharing of analysis is viewed as being more important than operational information.

The MRCC and IFC are both located at Sri Lanka Naval Headquarters in Colombo Fort and operate under the same Sri Lanka Navy Director. Naval personnel are currently posted to the centres for terms of 18 months and the Sri Lanka Navy says it intends to rotate personnel between operations rooms, the MRCC and IFC to increase specialist expertise.

The need for security clearances makes it difficult for non-military or foreign personnel to visit the facilities. Naval Headquarters is due to be moved to the new Defence Headquarters Complex in Sri Jayawardenapura Kotte later in 2024, but it is proposed that the MRCC and IFC will remain at Colombo Fort.[76] This will be an opportunity to increase the involvement of civilian and foreign officials in the MRCC and IFC.

Hydrographic surveying

With the coming into effect of the National Hydrographic Act in March 2024, Sri Lanka's Ministry of Defence has regained overall responsibility for maintaining this underwater aspect of MDA, with the Sri Lanka Navy having a leading role. Despite being situated adjacent to one of the world's busiest sea lanes, Sri Lanka's waters are poorly chartered, in many cases relying on colonial era charts.

In recent years, there have been public controversies over the visits of Chinese research vessels to Sri Lankan waters, most recently the visit of the *Shi Yan 6* to Colombo in October 2023. This followed an earlier call by the Chinese research vessel *Yuan Wang 5* (which is used for satellite/missile tracking) in Hambantota in August 2022. These visits are a matter of particular sensitivity to India given the location of Indian submarine facilities and missile testing areas in the Bay of Bengal.

For several years, Chinese hydrographic research in and around Sri Lanka has been pursued under an MoU between the University of Ruhuna in southern Sri Lanka and the South China Sea Institute of Oceanology (SCSIO) of the Chinese Academy of Sciences. This established a China-Sri Lanka Joint Center for Research and Education (CSL-CER), including a marine environment lab. According to information provided to the project team, it was later found that the Ruhuna University CSL-CER institute was, in effect, being used as a platform for China to undertake hydrographic surveys of Sri Lankan waters. It has also been claimed that the Chinese partner did not hand over all data from those surveys to Sri Lanka.

India has also carried out hydrographic survey work in Sri Lankan waters, and has published 10 paper charts and four Electronic Navigation Charts without formal Sri Lankan Government approval.[77]

Indian and United States protests about the *Shi Yan 6* visit led to the Sri Lankan Government adopting formal guidelines known as a SOP in respect of visits by all foreign warships and research vessels. At the same time, the government announced a moratorium on visits by foreign research vessels until the end of 2024.

Following a port call by a German research vessel in March 2024, the moratorium was clarified to only apply to research activities by foreign vessels, and not port calls for replenishment purposes only.[78] The SOP requires applications for port visits or joint research to be made six months in advance and that resource surveys would not be considered.

The Sri Lankan Foreign Minister recently commented that the government would consider later in 2024 whether the moratorium should be lifted or continued. He said that the moratorium could not be kept in effect indefinitely as it negatively affected the country's interests, and that Sri Lanka would consider reviewing it once it was comfortable with sovereign capacity building. However, as a 'neutral and non-aligned country', Sri Lanka could not have different rules for different countries and thus China will also have equal opportunities just like any country.[79]

In February 2024, the Sri Lankan Government also announced the establishment of a Defence Ministry-led committee to examine the terms of all agreements between Sri Lankan and foreign government and academic institutes, including in relation to marine research in Sri Lankan waters.

It should be noted that UNCLOS Article 246 (3) requires parties to establish rules and procedures ensuring the 'consent' to conduct marine scientific research activities in the EEZ and continental shelf of the coastal state 'will not be delayed or denied unreasonably'. No such provision is set out in Sri Lanka's domestic legal system.

Under the National Hydrographic Act, a new National Hydrographic Office has now been established under the Ministry of Defence with a legal mandate to ensure closer Sri Lankan control over hydrographic data. The new National Hydrographic Office will have responsibility for supervising the hydrographic activities undertaken by the Sri Lanka Navy and NARA. The Sri Lanka Navy has some 70 hydrographers (Category A or B trained) who are largely trained in Goa, India.

The Act is also intended to fast-track a National Charting Program. Some interlocutors believe that enhanced national control over charting and hydrographic data could bring significant economic benefits to Sri Lanka through the production and licensing of Electronic Navigation Charts that are used by commercial vessels passing Sri Lanka's waters.

It has also been argued that improved hydrographic and oceanographic data will assist in Sri Lanka's efforts in marine spatial planning and bolster its claims to an extended continental shelf.[80] We understand that the National Hydrographic Office is in discussions with Australia, the United States, Japan, the United Kingdom and France regarding enhancing capabilities. There is currently an MoU with the UK Hydrographic Office regarding the publication of charts.

However, more may need to be done than just developing national capabilities. Better national planning of hydrographic/oceanographic activities is required. Sri Lanka's former Chief Hydrographer, RADM (retd.) YN Jayarathna has recently argued that: "More than the equipment, I would say what we need most is strategic guidance on how and what to do with ocean science for Sri Lanka. Once we have strategic guidance, everything else will gradually fall into place. Marine science and related equipment that are used for it are costly. Our national budget may not be able to fund them effectively."[81]

Coastal surveillance system

The Sri Lanka Navy operates an extensive coastal surveillance system, with numerous 'Coastal Observation Points' (COPS) and radar stations located around the country. Naval personnel from COPS also conduct ground patrols in coastal areas. This system was originally established during the civil war, but now provides an effective nationwide system of coastal surveillance.

The Sri Lanka Navy has advised that it is in the process of reducing the number of COPs and that their capabilities need to be improved, while reducing the need for personnel. This will require improved radars and optical sensors. The deployment of new/refurbished HF Surface Wave radar equipment, which would have a range out to 200 nautical miles from the coastline, has been delayed due to financial constraints. The effectiveness of COPs could also be significantly enhanced by the use of UAVs, ATVs and night vision equipment.

4.3 Sri Lanka Coast Guard

The Sri Lanka Coast Guard is Sri Lanka's principal maritime law enforcement agency and was established in 2010 pursuant to the Department of Coast Guard Act No 41 of 2009. Despite being subject to its own legal responsibilities, it effectively acts as an auxiliary force to the Sri Lanka Navy and is largely under the Navy's operational control.

It is also a Sri Lankan non-ministerial government department tasked with coast guard duties within the maritime zones and territorial waters of Sri Lanka. It comes under the purview of the Ministry of Defence and its members are all Naval personnel. Part II of the Coast Guard Act lists the following as functions of the Sri Lanka Coast Guard:

- prevent illegal fishing in the coastal areas of Sri Lanka, and protect fishermen, rendering whatever assistance is needed at sea
- assist Sri Lanka Customs and other authorities to combat anti-smuggling and anti-immigration operations
- prevent and manage piracy
- cooperate with law enforcement and the armed forces in anti-terror measures in the maritime zones and territorial waters of the country
- prevent the cross-border movement of narcotics by sea
- assist in ensuring the safety of life and property at sea
- participate in search and rescue operations in times of natural catastrophe and assist in salvage operations after such catastrophes and other accidents at sea
- assist in the preservation and protection of the maritime and marine environment, including the implementation and monitoring of measures required for the prevention and control of marine pollution and other disasters which occur at sea, and in the conservation of marine species
- disseminate information including warnings by radio or any other means in times of natural catastrophes; and
- perform any additional/auxiliary functions that may be temporarily assigned to it by the State.

The Sri Lanka Coast Guard has four regional headquarters around Sri Lanka, as well as other smaller posts, including 26 fisheries monitoring posts. It currently has around 1,300 personnel, all of whom are on secondment from the Sri Lanka Navy for two years. They are supposed to receive some five weeks training in areas such as maritime law enforcement and vessel boarding on entry to the Sri Lanka Coast Guard , although we understand that training places are limited. The Sri Lanka Coast Guard appears to have limited resources and does not have a substantial independent training budget. Anecdotal evidence suggests the Coast Guard lacks sufficient funds to maintain full access to the Marine Traffic or Weather applications.

Limited training and constant churn in personnel will likely have a significant adverse impact on the ability to build specialist coast guard skills and experience.

The Sri Lanka Coast Guard currently operates two Offshore Patrol Vessels, two Fast Patrol Vessels and around 25 other patrol craft of various types (including three Stabicraft donated by Australia). The Coast Guard also operates some 12 UAVs donated by the ABF. These are short range (with an endurance of 30 minutes), and are used to monitor coastal beaches.

Larger Coast Guard vessels are under the operational control of the Sri Lanka Navy as part of an 'Integrated Maritime Border Control System'. It also depends on the Sri Lanka Navy for logistics. In practice, it essentially acts as an auxiliary force and there are no clear delineations of responsibility with the Sri Lanka Navy.

The Sri Lanka Coast Guard does maintain its own operations room in its HQ, including access to SeaVision and Skylight. It has requested access to information from the Fisheries Monitoring Centre (including BlueTraker), which currently only goes to the Sri Lanka Navy. In also maintains CCTV surveillance of 21 fishing harbours. It does not currently have direct access to IORIS.

As previously noted, we understand that the Sri Lanka Navy's *Strategy 2030* planning document calls for a reduction in the overall Sri Lanka Navy/Coast Guard force size to 40,000 personnel, of which 5,000 would be coast guard personnel. This would involve a very substantial increase in the size of the Sri Lanka Coast Guard. There are no plans to develop a separate logistics/training system for the Coast Guard .

The Sri Lanka Coast Guard has an MoU with the Indian Coast Guard that permits the Indian Coast Guard to operate in Sri Lankan waters upon request. There are also MoUs with Japan and Australia (in relation to people smuggling and transnational crime).

4.4 Sri Lanka Air Force

The Sri Lanka Air Force has long had a focus on land-based operations, reflecting its role during the civil conflict. Consequently, its maritime surveillance capabilities are very basic. The Commander of the Sri Lanka Air Force, Air Marshall Udeni Rajapaksa, informed us that he recognises that a significant effort will be needed in developing the Air Force's maritime capabilities.

The Sri Lanka Air Force first acquired a dedicated maritime surveillance capability with the transfer from India of a Dornier 228 aircraft in August 2022. India provided a substitute Dornier aircraft in 2023 when the original was returned for maintenance.[82] The Dornier is flown and maintained by Sri Lanka Air Force crews under the supervision of Indian engineers. The lease of Indian Dornier aircraft is a temporary arrangement while two new Dornier aircraft are built in India – one to be donated by India and the other purchased by Sri Lanka.[83] The Dornier is currently stationed at Trincomalee on Sri Lanka's east coast.

We have been advised that maritime aerial surveillance is currently conducted within a limited area in the Sri Lankan SAR region and that Sri Lanka Navy observers accompany flights.

The United States is also gifting a newly built Beechcraft King Air 360ER (along with a pilot and maintenance training package), which will be equipped with radar and forward-looking infra red sensors. Australia is gifting a used Beechcraft King Air 350 (along with a training package for two pilots). It is not yet clear what sensors will be included with this aircraft.

These aircraft will provide the Sri Lanka Air Force with a basic maritime surveillance capability. However, it is not clear what mechanisms will be put in place for information sharing with other Sri Lankan agencies, especially the IFC and MRCC operated by the Sri Lanka Navy.

The Sri Lanka Air Force operates drones, but none in the maritime domain,[84] although it is engaging with the Arthur C Clark Institute for Modern Technologies to develop new capabilities. It is understood that the Sri Lanka Navy is separately investigating the acquisition of a ship-launched UAV capability.

4.5 Ministry of Ports, Shipping and Aviation

This ministry has a wide portfolio, overseeing the Merchant Shipping Secretariat, the Sri Lanka Port Authority, the Ceylon Shipping Corporation Limited and the Sri Lanka Port Management and Consultancy Services Limited. According to the ministry, its mission is: "Formulating more appropriate policy framework and efficient mechanisms that will lead to the provision of competitive and qualitative port and shipping services to fulfil the local and international requirements in the field of maritime activities for national economic development".[85]

A draft National Policy for the Maritime and Logistics Sectors was presented to the Government in 2019, although based on publicly available information, it is uncertain that the policy was accepted. A key aim was for Sri Lankan ports to transform themselves from 'regional trans-shipment hubs' to 'Global Maritime Hubs' in the face of competition from emerging new regional trans-shipment ports, as well as global competitors. A prime example of a potential competitor would be the port hub India is aiming to establish on Great Nicobar Island.

According to officials, the lack of a legal framework properly demarcating legal responsibilities between the ministry and the Sri Lanka Navy is an issue. An example quoted was that the Sri Lanka Navy still undertakes port security audits and has responsibility for administering and implementing the ISPS code. It is understood that this is a remnant of the civil conflict, when the Sri Lanka Navy assumed all port security responsibilities.

Other issues include the detection of contraband material within trans-shipped containers, specifically radioactive material. Sri Lanka became a part of the US-led Container Security Initiative in 2003 and recently received a scanner capable of detecting radioactive material. The officials also had concerns over human trafficking after Sri Lankan nationals were recently found inside a container on arrival in Malaysia.

The ministry is also dealing with the International Maritime Organisation (IMO) on the subject of whale interactions near the TSS south of Dondra Head. With 40,000 vessels moving through this TSS every year, and an increasing whale population, collisions have occurred. Environmental agencies have approached the IMO to have the TSS reviewed and potentially moved further offshore. The Sri Lankan Government strongly opposed this idea, claiming it would drive traffic away from the ports of Colombo and Hambantota.

Merchant Shipping Secretariat

The Merchant Shipping Secretariat is the shipping administration arm of Sri Lanka and has overall responsibility for overseeing maritime concerns. The activities of the Merchant Shipping Secretariat are governed by the Merchant Shipping Act No.52 of 1971[86], Licensing of Shipping Agents Act No. 10 of 1972[87] and the relevant clauses of the Admiralty Jurisdiction Act No. 40 of 1983[88].

It has responsibilities for ensuring the safety of life and property at sea, maritime education, training, examination and certification, registration of ships under Sri Lanka flag, licensing of shipping agents, container depot operators, container terminal operators, container freight stations, freight forwarders and implementing provisions of all applicable international maritime conventions and national regulations. This includes the checking of ships for compliance with Sri Lankan and international safety regulations (flag state and port state control).

Although the Merchant Shipping Secretariat has responsibility for the regulation of commercial shipping, we understand that neither it nor any other Sri Lankan agency has responsibility for registration or licensing of pleasure craft (although craft used for tourism purposes must be registered under the Sri Lankan Tourism Development Authority).

Sri Lanka Ports Authority

The Sri Lanka Ports Authority (SLPA) has responsibility under the Sri Lanka Ports Authority Act No51 1979 in respect of major ports in Sri Lanka including Colombo, Galle, Trincomalee and KKS. Hambantota Port is managed by a private partnership with China Merchants Port Holdings, although an SLPA official acts as Deputy Harbour Master.

The SLPA's primary roles under the Act include:

- provision of efficient and regular service for stevedoring, shipping and trans-shipping, landing and warehousing, wharfage, the supply of water, fuel and electricity to vessels, for handling petroleum, petroleum products and lubricating oils to and from vessels and between bunkers and depots, for pilotage and mooring of vessels, for diving and underwater ship repairs and any other services
- regulation and control of navigation within the limits of and the approaches to the ports
- maintenance of port installations and promotion of the use, improvement and development of the specified ports
- co-ordination and regulation of all activities within any specified port excluding the functions of the Customs Department
- establishment and maintenance on and off the coast of Sri Lanka such lights and other means for the guidance and protection of vessels as are necessary for navigation in and out of the specified ports.

To improve the digitisation of Colombo Port, the SLPA is implementing a Port Community System. This open electronic platform will connect the existing systems and databases of various companies and organisations, enabling the secure and efficient exchange and consolidation of operational data across the port network.

Colombo Port utilises the Navis Terminal Control System, and ministry personnel advised that the SLPA is still working towards fulfilling the IMO guidelines regarding the cyber-security of this system.

Ceylon Shipping Corporation Limited

Ceylon Shipping Corporation Limited (CSCL)[89] is Sri Lanka's national sea carrier, operating two bulk cargo vessels. When these ships are not under charter, they are used to provide coal for Sri Lanka's one coal-fired power station at Lakvijaya.

Following Cabinet approval on 27 March 2024, Sri Lanka is now planning to boost the registration of vessels under the Sri Lankan flag.[90] Sri Lanka currently ranks 88th among 173 countries in terms of ship registration. The aim is to enhance competitiveness in the maritime domain and leverage Sri Lanka's strategic position to attract more commercial vessels.

Sri Lanka Port Management and Consultancy Services Limited

Sri Lanka Port Management and Consultancy Services Limited is another Government-owned limited liability company that essentially provides port services that are not delivered by SLPA. These include:

- provision of terminal operators at the East Container Terminal
- SLPA waste management
- personnel for loading/unloading at JCT
- container monitoring at JCT
- intra-terminal container transport.

4.6 Department of Fisheries and Aquatic Resources

DFAR is the responsible department within the Ministry of Fisheries and Aquatic Resources Development with principal responsibility for the monitoring, control and surveillance of fisheries.

Sri Lanka is party to the following international conventions to support the sustainability of fisheries:

- United Nations Convention on the Law of the Sea of 10 December 1982 (UNCLOS)
- FAO Code of Conduct for Responsible Fisheries (CCRF)
- Sri Lanka is a founder member of the IOTC and ratified the IOTC agreement in 1994
- Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (UN Fish Stocks Agreement)
- UN FAO agreement on Port State Measures (PSM.
- Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas (FAO Compliance Agreement)
- Sri Lanka National Plan of Action – IUU in line with the FAO International Plan of Action (IPOA) to prevent, deter and eliminate IUU fishing

Since coming off the EU 'red card' restricted list in 2016, DFAR has worked very hard to ensure that it fulfils all of Sri Lanka's international obligations.

There appears to be a low level of cooperation with Sri Lanka's regional neighbours, with no MoUs in place. However, this situation may improve with the initiation of the BOB-SAN. Fish stock assessment processes appear to be limited and focussed on Sri Lanka's IOTC obligations only.

Sri Lanka is attempting to incorporate different practices within the tuna long-lining industry to match foreign vessels on the high seas fishing with deeper rigs and bringing in larger catches, which are often trans-shipped through Colombo. Sri Lanka prohibits foreign fishing in its EEZ.

Fisheries Monitoring Centre

DFAR has recently established an FMC, with Australian assistance providing 4,800 BlueTraker VMS transponders, monitoring equipment and software. The FMC is used to monitor all of Sri Lanka's multi-day fishing fleet. The FMC also incorporates data from the satellite-based systems SeaVision, Skylight and IORIS.

Data from the FMC is shared with the Sri Lanka Navy's MRCC and IFC via a specific MoU. It is understood a separate MoU is being negotiated to provide limited information to Australia.

In line with international conventions, FMC personnel state that they contact Sri Lankan trawlers when they become aware that they are operating in the EEZ of other countries.

While the BlueTraker VMS has a simple messaging capability, secondary communication with trawlers is conducted from DFAR's 21 local radio stations operating High Frequency Single Side-Band (HF SSB) systems.

In January 2024, the FMC played a key role in the rescue of a Sri Lankan trawler that had been hijacked by Somali-based pirates near Seychelles. The VMS tracker continued to operate, allowing Sri Lankan authorities to guide rescuers to the hijacked vessel.

DFAR does have concerns about security of BlueTraker data, with recent incidents of local harbour masters providing location data to drug smugglers to benefit their ventures.

While DFAR is content with the new FMC, it believes there is a requirement for a Fisheries response/enforcement vessel and a need for Sri Lanka to develop its own national maritime surveillance capability devoted to fisheries management. DFAR staff used the example of Seychelles, which has acquired large, long-range drones.

As noted previously, the biggest threat faced by Sri Lanka in fisheries is illegal fishing by Indian trawlers in the Palk Strait. DFAR is frustrated as the matter is discussed at numerous fora, including the Joint Commission and Maritime Boundary Line meetings, and while India says there will be further policing by the Indian Coast Guard, this is still to occur.

Dynamite fishing by Sri Lankan fishers on the east coast is another IUU fishing concern for DFAR. The Sri Lanka Navy has proposed detecting explosive fishing by installing hydrophone devices in relevant areas.

Sri Lanka's in-shore fishing fleet (less than 10.3 metres/34 feet) is not yet fitted with trackers and the opportunity exists for them to utilise the Nemo VMS system or equivalent (i.e. an inexpensive VMS system designed for smaller fishing vessels that uses a mobile satellite VMS transceiver).[91]

4.7 Marine Environmental Protection Authority

MEPA is an independent agency under the purview of the State Minister of Coast Conservation and Low-Lying Lands Development. It has powers under the Marine Pollution Prevention Act No. 35 of 2008.

Under the Act, MEPA has the responsibility: "To formulate and execute a scheme of work for the prevention, reduction, control and management of pollution arising out of ship-based activity and shore-based maritime-related activity in the territorial waters of Sri Lanka or any other maritime zone declared at a future date under such law, its foreshore and the coastal zone of Sri Lanka."[92]

The weakness of this system was highlighted during the *X-Press Pearl* incident in 2021, when the responses of many Sri Lankan agencies, including MEPA, were criticised over a lack of coordination and effectiveness. This was seen as having contributed to the scale of the disaster, which saw large amounts of chemicals and plastics covering large portions of Sri Lanka's coastline.

Although MEPA has overall legal jurisdiction under the Act for coordinating responses to maritime accidents, it lacks the resources or practical authority to play such a role. Until MEPA is properly resourced, Sri Lanka's responses to future maritime accidents will likely be led by the Sri Lanka Navy.

Responsibilities of various agencies and response processes in respect of maritime environmental accidents are set out under the National Oil Spill Contingency Plan. However, as MEPA officials pointed out, this does not explicitly address chemical or plastics spills, as was the case in the *X-Press Pearl* incident.

MEPA is having some success with the engagement of the French satellite company CLS in identifying oil spills, which allows Sri Lanka to bring prosecution cases against the responsible agencies.

MEPA cooperates with neighbouring countries in accordance with the SAARC Draft Memorandum of Understanding For Co-operation on the response to Marine oil and chemical spills in the South Asia Region. There are no bilateral MoUs with foreign counterpart agencies.

In September 2023, the EU provided a report on a National Action Plan for Disaster Preparedness and MEPA also expects to receive assistance from the Netherlands.

4.8 National Aquatic Resources Research and Development Agency

NARA is Sri Lanka's principal national institute responsible for carrying out and coordinating the research, development and management activities of aquatic resources.[93] It operates under the National Aquatic Resources Research and Development Agency Act No. 54 of 1981. Its responsibilities include:

- oceanography and hydrography
- improvement and development of fishing craft, fishing gear and equipment, and fishing methods
- the social and economic aspects of the fishing industry, including the welfare of fishermen and their dependent
- the processing, preservation and marketing of fish and aquatic products, and
- the development, management and conservation of aquatic resources in the inland waters, coastal wetlands and off-shore areas.

NARA has several field offices located around Sri Lanka. Its northern field office, located near Jaffna, is currently involved in the development of an aquaculture industry in the northern province, including the cultivation of sea cucumbers.

NARA has eight hydrographers, and operates a 25-metre vessel with oceanographic and hydrographic instruments on board.

NARA has recently faced criticism over hydrographic survey activities. The Sri Lanka Navy had responsibility for hydrographic surveys until the early 1980s, however, these were transferred to NARA in the early years of the civil conflict. NARA has been criticised for failing to maintain sufficient control of civil hydrographic activities, leading to a Chinese entity undertaking hydrographic surveys of Sir Lankan waters and retaining the data. This led to a recent reorganisation of responsibilities under which the Ministry of Defence assumed overall responsibility for hydrographic activities and data.

4.9 Department of Immigration and Emigration

The Department of Immigration and Emigration has responsibility, among other things, for departures of Sri Lankan citizens from Sri Lanka, by air or sea. A surge of irregular departures by sea during and after the end of the civil conflict became a significant source of concern for Australia. Over the course of many years, Australian agencies such as the Australian Federal Police (AFP) and ABF have developed a very close relationship with the department as they prevent and manage potential maritime human smuggling ventures.

4.10 Sri Lankan Police

The Sri Lankan Police has principal responsibility in the areas of people smuggling and the smuggling of illegal narcotics into Sri Lanka. The AFP has a very close relationship with this agency.

The Police Narcotics Branch is responsible for narcotics. The Sri Lanka Police has a small marine division[94] with four rigid inflatable boats (RIBs) and also includes a vessel donated by the Japanese government.

The police actively share information with foreign counterparts, including through the SAARC Drug Offenses Monitoring Desk and the SAARC Terrorist Offenses Monitoring Desk (both located in Colombo).

4.11 Customs

Sri Lankan Customs operate under the Customs Ordinance of 1870. Customs and excise duties is a major contributor to the Sri Lankan budget.

Customs previously operated its own vessels as part of its Marine Division, but these were all transferred to the Sri Lanka Navy at the beginning of the civil conflict. Customs has re-established the Marine Division as an organisational division. However, it lacks a vessel to patrol harbours or northern waters. Consequently, Customs relies on the Sri Lanka Navy and Coast Guard for transport and enforcement. Smuggled goods include narcotics, tobacco and gold, with the Palk Strait the most vulnerable area.

On-water arrests and confiscation of smuggled good is carried out by the Sri Lanka Navy and Coast Guard — Section 127 of the Customs Ordinance[95] gives Sri Lanka Navy/Coast Guard officers legal authority to make arrests for Customs violations, but they must then hand over to a Customs Officer for prosecution.

Under the Sri Lankan Customs Ordinance, where smuggled goods are confiscated, the forfeited goods are sold and the proceeds shared between the Sri Lankan Government, the Customs Officers Compensation Fund and the Customs Officers involved in the confiscation. Where on-water arrests are made by Sri Lanka Navy or Coast Guard vessels, a portion of the reward is shared with those officers. It is understood that relevant sharing percentages are being revised.[96]

Coordination between Customs and the Sri Lanka Navy is very weak, with Customs not maintaining an Operations Room. There is no coordination with the Sri Lanka Navy, nor is there any formal mechanism for information sharing with the Sri Lanka Navy, Fisheries or other agencies.

UNODC provides maritime law enforcement training to Customs, while further training has been received as part of the Container Control Programme along with training in chemical analysis/narcotics detection.

Customs has MoUs with India, Maldives, Russia, Turkey and Australia for information sharing and mutual customs matters. However, officials state that Sri Lankan Customs rarely share information with their Indian counterparts — the Directorate of Revenue Intelligence (DRI).

4.12 Attorney-General's Department

The Attorney-General's Department plays a coordinating role in governing maritime security procedures and establishing collective efforts among national agencies, particularly in prosecuting perpetrators. Sri Lanka faces complex maritime threats that require clear guidelines and SOPs to help national agencies address these threats and support authorities in undertaking prosecutions. As part of these efforts, the Attorney-General's Department and UNODC Global Maritime Crime Programme (GMCP) have organised a brainstorming session on a Collaborative Framework for Evidence Collection at Sea and Chain of Custody Procedures in Sri Lanka.[97] The framework provides guideline for agencies to bridge the gap between maritime operations at sea and subsequent prosecution.

4.13 Telecommunications Regulatory Commission

The Telecommunications Regulatory Commission of Sri Lanka (TRC) is the agency expected to have responsibilities to regulate and protect undersea cables. However, it does not currently have powers in this respect.

The Submarine Cable Protection and Resilience Framework was issued in 2021.[98] It was developed with the support of Japan and UNODC, in consultation with the International Cable Protection Committee. However, the framework does not yet have legislative backing.

There have been plans for several years to amend the Telecommunications Act to provide the TRC with legal authority to regulate undersea cables and implement the framework. However, as at August 2024, necessary the amendments had not been made. Consequently, there does not appear to be adequate legal powers for Sri Lankan authorities to prevent interference with cables in Sri Lankan waters, nor is there a system for reporting damage to cables.

4.14 Ministry of Wildlife Resources and Forest Resources Conservation

There are two key departments within the ministry associated with Sri Lanka's maritime domain, the Department of Wildlife Conservation and the Department of Coast Conservation and Coastal Resource Management.

The Department of Coast Conservation and Coastal Resource Management was first established in 1988 following the enacting of the first Coast Conservation Act No 57. The Act requires having a survey of the Coastal Zone and a Coastal Zone Management Plan. The most recent 2024 Plan was released in March 2024.[99]

The specific objectives of the department are:[100]

- improve the status of coastal environment
- develop and manage the shoreline
- improve the living standards of coastal communities
- promote and facilitate economic development based upon coastal resources
- safeguard coastal infrastructure and risk reduction of coastal communities.

The Department of Wildlife Conservation is the organisation responsible for the protection of fauna and flora and the establishment and management of marine protected areas in Sri Lanka. The department implements the Fauna and Flora Protection Ordinance. To fulfil the requirements of protecting marine species and managing the marine protected areas, the department established the Marine Management Unit under the Natural Resources Management Division, with the support of the International Union for Conservation of Nature in 2015.

4.15 Department of Meteorology

Tropical cyclones and typhoons, flash floods, storm surges, and coastal inundation are some of the extreme events that concern Sri Lanka's meteorological services. Good preparation, well-designed early warning systems and effective responses from Sri Lanka's Department of Meteorology, a statutory body under the purview of the Disaster Management Division, Ministry of Defence, have helped to mitigate the impact of a number of extreme events.[101]

The Meteorology Department plays a vital role in providing time-critical and relevant data and information services to the Sri Lankan Government, communities and international partners.[102] The department provides weather, climate, and ocean forecasting services that support key economic areas including agriculture, aviation, shipping, forestry, fishing, water resource management, energy, transportation and tourism. It is focused on improving weather services, in particular to support the safety and efficiency of various national sectors, including warnings and management, (including the exchange of near real-time weather data) and forecasting.

The department provides information products and services to improve the quality of critical decisions made in sectors sensitive to the extremes of weather, climate, water and oceans. Its services help to improve protection of the natural environment, enable safe and efficient transportation, and improve the safety of life and property. Timely information on extreme weather events (through early warning systems and climate outlooks) reduces the loss of life and property.

The department's weather and climate services are essential to ensuring the safe and cost-effective operation of aviation and commercial shipping.

Reliable weather services are also crucial for coastal fishing, recreational boating, and cruise ships. The global focus on climate change will heighten the importance of the department's work to sustain long-term climate observation and predictions of severe weather and climate events. This will require the department to continue investing in the installation and maintenance of infrastructure.

In this context, the department's performance report two years ago found that the Department of Meteorology in Sri Lanka has a long way to go to reach the technology and computer modelling currently available in developed countries. Lack of sufficient qualified human resources is another challenge for the department. Strengthening the atmospheric observation network, a key factor in weather forecasting, is also essential for more accurate forecasting. It is also essential to carry out relevant new studies and research, given the increasing difficulty of weather forecasting due to climate change. The inadequacy of qualified meteorologists is a significant challenge.[103]

4.16 Ministry of Foreign Affairs

The Ministry of Foreign Affairs has an Oceans Affairs, Environment, and Climate Division that facilitates contacts between relevant Sri Lankan agencies with responsibilities in the maritime domain and their foreign counterparts. The division also promotes Sri Lanka's role in international, regional, and sub-regional organisations within the spheres of ocean affairs, environment and climate change. The ministry participates in national joint programs to strengthen collaboration between national agencies in MDA and contributes to enhancing the SOPs to foster cooperation among national agencies.[104]

Section Five: International cooperation in maritime domain awareness

It is commonly said that no country, however rich or powerful, can achieve effective MDA by itself. International cooperation, principally with neighbours and other regional states, is a crucial element in achieving effective MDA. However, with few exceptions, maritime security cooperation between Sri Lanka and neighbouring states, including the sharing of maritime domain information, remains limited, whether through bilateral or plurilateral arrangements. This is largely a function of the lack of effective or reliable bilateral and regional mechanisms to overcome potential issues with trust between interested parties.

This section reviews the current state of Sri Lanka's international cooperation in MDA and includes the following subsections:

5.1 Operational cooperation with neighbouring states

5.1.1 Sri Lanka-India cooperation

Sri Lanka-India cooperation in maritime security is rooted in the two countries' close relations and shared regional interests. India asserts that the Indian Navy is a 'net-security provider'[105] for the Indian Ocean region, which includes close cooperation with India's neighbours. Indian maritime security capability assistance to Sri Lanka is detailed below in section 5.3.1.

There is regular operational cooperation between the Sri Lanka Navy and Indian Navy and between the Sri Lankan and Indian coast guards in matters such as maritime accidents, search and rescue and hydrographic surveys.

The responses to recent maritime accidents involving the MT *New Diamond* (a very large crude carrier that caught fire off the west coast of Sri Lanka in September 2020) and *X-Press Pearl* (as noted earlier, this container ship caught fire and sank off Colombo in February 2021) included significant involvement from Indian Navy and Coast Guard vessels, including specialist fire and spill equipment.

The Sri Lankan and Indian navies, coast guards and air forces also cooperate in maritime search and rescue operations. In October 2023, the Sri Lanka Navy, Sri Lanka Air Force and an Indian Navy helicopter, undertook a SAR exercise off Colombo.[106]

The Indian Navy has also previously carried out hydrographic survey activities in Sri Lankan waters, including in cooperation with the Sri Lanka Navy.[107]

Cooperation with the Indian Coast Guard in respect of Indian fishing vessels operating illegally in Sri Lankan waters in the Palk Strait appears to be more limited. It is understood that while the Indian Coast Guard acts to prevent Indian fishing vessels bottom trawling in Indian waters, it declines to take action against Indian fishing vessels operating in Sri Lankan waters.

The Indian Navy and Coast Guard also undertake trilateral exercises with Sri Lanka and Maldives, noted below.

5.1.2 Sri Lanka-Maldives cooperation

Sri Lanka-Maldives cooperation in maritime security is rooted in close neighbourly relations between the two countries. The National Security Advisor-level meeting and the regional maritime engagements such as *Dosti* trilateral exercises[108] remain important platforms for enhancing maritime security engagements between Sri Lanka and Maldives.

The Sri Lanka Navy and Coast Guard undertake trilateral exercises with the Maldives Coast Guard and Indian Navy and Coast Guard as part of Exercise *Dosti*. This is a biennial exercise, with the most recent version held in February 2024. The bilateral engagement between Maldives and Sri Lanka is complementary to the regional efforts involving India as a key security partner and provider.

The Sri Lankan Police state that there is cooperation with their Maldives counterparts in relation to narcotics smuggling. There does not appear to be operational cooperation between Sri Lankan and Maldives fisheries authorities, although the Sri Lankan Ministry of Fisheries states that where it becomes aware that Sri Lankan trawlers have entered another country's EEZ, it will warn that vessel. Although not publicly reported, we are aware that Maldivian authorities, including the Maldives Police and Coast Guard, will communicate and coordinate with Sri Lankan counterparts about Sri Lankan fishing vessels caught fishing illegally in Maldives waters.

There have been recent discussions between the Sri Lankan and Maldives defence ministers regarding enhanced security cooperation between the two countries,[109] which could potentially include cooperation in hydrographic surveys. Defence cooperation between the two countries has focussed on strengthening cooperation and exchanges in the areas of military training, strategic partnerships and security initiatives.[110]

5.1.3 Sri Lanka-Bangladesh cooperation

There is political cooperation between Sri Lanka and Bangladesh bilaterally and through multilateral bodies such as BIMSTEC and IORA to explore avenues of further strengthening maritime engagements between the two countries. Such dialogue includes discussion on maritime cooperation, the blue economy, climate change and prevention of over-exploitation of marine resources.[111]

However, operational cooperation with Bangladesh appears to be minimal. Two Bangladesh coast guard vessels visited Sri Lanka in 2017[112] but we are not otherwise aware of any operational cooperation between Sri Lankan and Bangladesh maritime agencies.

5.2 Sri Lanka and Regional Information Fusion Centres

Sri Lanka's waters and the Bay of Bengal fall within the areas of responsibility of two regional information fusion centres: the Information Fusion Centre-Indian Ocean Region, sponsored by India, and the Information Fusion Centre, sponsored by Singapore.

The two centres could potentially be valuable mechanisms for sharing information on the maritime domain — including information on vessels of interest — between Sri Lanka and neighbouring states. However, in practice, information sharing arrangements are rudimentary , limiting their usefulness for the sharing of real-time tactical intelligence on the maritime domain, although they do fill useful functions in the collection and collation of reports on incidents at sea.

Participation in such regional arrangements also carries political sensitivities for Sri Lanka and other countries, reflecting their desire to have sovereign MDA capabilities.

5.2.1 Information Fusion Centre-Indian Ocean Region (IFC-IOR)

The Indian Navy established the IFC-IOR in 2018 as a regional information fusion centre with an area of responsibility covering much of the Indian Ocean, including the Bay of Bengal area.[113] It is in Gurgaon, near Delhi, and is co-located with the Indian Navy's Information Management and Analysis Centre, which is the nodal point for India's national MDA capabilities.

The IFC-IOR is intended to collate information collected from around the Indian Ocean, including from AIS data and various current or planned bilateral 'white shipping' agreements between India and some 22 countries.[114] Those agreements are intended to facilitate the transfer of data on non-military shipping from partner countries for use in the IFC-IOR. Partner countries can access information from the centre principally through international liaison officers posted to Gurgaon from 12 partner countries that do not include Sri Lanka.[115] In practice, mechanisms for sharing information remain quite rudimentary. Sri Lanka has posted a liaison officer to the IFC-IOR.

5.2.2 Information Fusion Centre (IFC) Singapore

The IFC was established in 2009 by the Singapore Navy. It is located at the Changi Naval Base, co-located with Singapore's national MDA centre. Its area of interest includes the eastern Indian Ocean and the Bay of Bengal. Some 20 partner countries (which do not include Sri Lanka)[116] have posted international liaison officers to the IFC. In practice, arrangements for information sharing remain rudimentary (for example, by email). The centre also engages closely with the shipping industry and other stakeholders, including information fusion centres, intergovernmental organisations and non-government organisations.

5.2.3 Regional Maritime Information Fusion Centre (RMIFC) Madagascar

The RMIFC was established with support from the EU-funded MASE program. Its area of interest includes the western Indian Ocean, west of the southern tip of India. The RMIFC works in conjunction with the Regional Coordination Operations Centre, based in Seychelles. The RMIFC/RCOC are important coordinating agencies for Sri Lanka in responding to threats emanating from the western Indian Ocean (e.g. drug traffickers) or to Sri Lankan interests in the western Indian Ocean (e.g. Sri Lankan fishers). Although Sri Lanka has a communications channel with the RMIFC, it has not posted a liaison officer there.

5.3 International capability assistance

Sri Lanka also receives assistance in building its MDA capabilities from India, Australia, the United States, Japan, several European countries and UN agencies.

5.3.1 Capability assistance from India

India provides extensive training to the Sri Lankan Armed Forces, including the Sri Lanka Navy and Coast Guard. The Sri Lankan and Indian navies conduct annual bilateral *SLINEX* exercises that focus on enhancing mutual cooperation, understanding, and best practice exchanges in jointly undertaking maritime operations.[117]

India provided communications and IT equipment for the MRCC, although based on the project team's research, it is our understanding that offers to provide coastal radars and coastal cameras were declined, with the Sri Lanka Navy acquiring off-the-shelf commercial equipment instead.[118]

India and Sri Lanka agreed that India would gift a Dornier-228 aircraft to the Sri Lanka Air Force for use in maritime aerial surveillance (which occurred in August 2022) and the Sri Lanka Air Force would purchase a second Dornier. In August 2023, India provided a replacement aircraft while the original Dornier was undergoing annual maintenance in India.[119]

India has offered to supply Indian-built Advanced Light Helicopters (ALH) to the Sri Lanka Navy.[120] However, the Sri Lanka Navy is investigating the acquisition of ship-borne vertical take off and landing drones.

India has also sent a delegation to study the Sri Lanka Navy's use of COPs around the Sri Lanka Coastline, which may include radar and coastal cameras.

5.3.2 Capability assistance from Australia

Australia is a valued and trusted partner to Sri Lanka in building capabilities, particularly in the maritime domain. This began more than a decade ago with a principal focus on countering human smuggling, but has since expanded to include other types of maritime capabilities.

In addition to a Defence Advisor, officers from the ABF, AFP and other Home Affairs officers are stationed in Colombo. Relationships with counterpart Sri Lankan officials appear to be close and productive, with Australia being seen as a trusted partner.

The first significant Australian defence and security assistance in recent times involved the gifting of two Bay-class Offshore Patrol Vessels to the Sri Lanka Navy in 2014. Australia is now providing maintenance to these vessels.

The ABF gifted some 4,200 VMS devices to the Sri Lankan Fisheries Ministry for distribution free of charge to all of Sri Lanka's multi-day fishing fleet, along with equipment to establish a Fisheries Management Centre. In addition, the ABF provided a subscription to SecondScreen software that is used to monitor the VMS devices.[121] This subscription continues until the end of 2024.

The AFP provides training to the Sri Lankan Police to combat people smuggling. Most recently, this included assistance in establishing a new office for the Police's Human Trafficking, Smuggling Investigations and Maritime Crime Investigations Division in Trincomalee.[122]

The Australian Maritime Safety Authority provides access to the INMARSAT safety broadcast for the MRCC.

Following the *X-Press Pearl* disaster in 2021, the Australian Maritime Safety Authority provided spill response equipment to Sri Lanka.[123] Australia has also offered to provide assistance in establishing a Sri Lankan disaster management centre, although that initiative has not yet proceeded.

During the 2022 economic crisis, Australia offered A$20 million to fund fuel for the Sri Lanka Navy, which is still being disbursed.

Australia has announced that it will gift a Beechcraft King Air KA350 aircraft to the Sri Lanka Air Force, and we understand that training will also be provided for two pilots. It is not clear what sensors the aircraft will come equipped with.

Australia is also providing a shallow water multi-beam echo sounder to the Sri Lanka Navy to enhance hydrographic capabilities.[124]

5.3.3 Capability assistance from the United States

The United States is a major defence partner for Sri Lanka. Recent defence assistance programs executed or currently being executed include:

- one newly built King Air 360ER to the Sri Lanka Air Force for maritime surveillance. The package will include training for two pilots and maintainers. We understand that the plane will be equipped with radar and forward-looking infra red sensors
- one 64-metre medium-endurance cutter from the US Coast Guard to the Sri Lanka Navy. This will be the fourth such vessel
- SeaVision MDA accounts to the Sri Lanka Navy (15 accounts) as well as to the Sri Lanka Coast Guard and the Sri Lanka Air Force, along with training
- hydrographic assistance to the Sri Lanka Navy, including Category A and B training in the US. The US is also exploring providing a deepwater multibeam echo sounder for hydrographic surveys, although it is yet to be determined what vessel this would be fitted to
- engagements with the Sri Lanka Navy Special Boat Squadron
- the Sri Lanka Navy also advises that the US has assisted significantly in developing the Sri Lanka Navy Marines.

Other US agencies also provide security assistance, including:

- the US Department of State's Export Control and Related Border Security (EXBS) Program
- the US Justice Department provides assistance in anti-narcotics, including training for Sri Lanka Navy, Coast Guard and Police
- the US Department of Energy has an MoU with the Sri Lankan Government to provide VBSS and CBRN equipment to counter drug trafficking
- the US Joint Interagency Task Force West (JITFW) provides anti-narcotics training for the Sri Lanka Navy, Sri Lanka Coast Guard and Police.
- the US DOJ 'Ship in a box' training program at SL Coast Guard training base at Kirinda.

Forthcoming planned and resourced programs include:

- ground-based multi-spectrum maritime surveillance system (including radars, cameras, microwave links and associated infrastructure) at eight sites
- Cooperation Afloat Readiness and Training (CARAT) — a bilateral exercise focused on maritime security, MDA and information sharing in April 2024
- Southeast Asia Cooperation and Training (SEACAT). Information sharing with Indo-Pacific partners, scheduled for August 2024
- Sri Lanka Navy participation in the RIMPAC exercise in July 2024 (personnel only).

The United States will also make a decision in 2024-25 regarding the potential sale of up to two C-130J Hercules aircraft to the Sri Lanka Air Force, with potential delivery in 2026. The Sri Lanka Air Force has reportedly offered US$30 million contribution to the arrangement. These aircraft could be useful in supporting Sri Lankan UN peacekeeping contingents in Africa.

The United States is also giving considerable focus to assisting Sri Lanka in upgrading port processes and infrastructure. This included a US$550 million financing commitment from the US Development Finance Corporation for the construction of the new East Container Terminal at Colombo Port (to be owned by Adani). In addition, there are various programs related to port/container security.

5.3.4 Capability assistance from Japan

Japan is an active provider of maritime capability building for Sri Lanka,[125] focussing on maritime law enforcement and MDA. Funding is part of its Official Development Assistance, which has precluded direct support to the Sri Lankan military (although assistance could be given to the Sri Lanka Coast Guard). This included the following initiatives:

- maritime law enforcement training (through UNODC)
- facilities (Ship in the Box) at Trincomalee for VBSS training (through UNODC)
- assistance to establish the Information Fusion Centre in 2018/19. This included a monitoring system and IT equipment (through UNODC)
- training on MDA analysis for the Information Fusion Centre (through UNODC)
- maritime radar and surveillance equipment in Colombo, Hambantota and Western province (through UNODC)
- two patrol vessels for the Sri Lanka Coast Guard in 2018 (SLCGS Samudra Raksha and SLCGS Samaraksha)
- VTMS/AIS/weather radar equipment at Trincomalee Port
- weather radars
- fire control equipment and patrol boat at Trincomalee Port
- maritime search and rescue training in Japan for the Sri Lanka Air Force
- oil spill management training for the Sri Lanka Coast Guard.[126]

The Japanese Cabinet adopted an *MDA Concept* in December 2023. Future assistance efforts are expected to include:

- pollution control equipment (including four small vessels) for the Sri Lanka Coast Guard, valued at US$7 million in 2024
- two additional patrol vessels for the Sri Lanka Coast Guard
- funding of IOM for a project on human trafficking
- considering the supply of a shallow water multibeam echo sounder.

Japanese Maritime Self Defence Force vessels also regularly visit Sri Lanka and undertake joint training with the Sri Lanka Navy.

5.3.5 Capability assistance from European Countries and the European Union

France is the most active European partner in assisting Sri Lanka's maritime capabilities, having funded a 12-month contract for the French CLS company to provide satellite data (and analysis) to MEPA, the Sri Lanka Navy and Fisheries (it is hoped that this will be extended).[127] This has been used to detect several oil spills with a successful prosecution.[128]

France recently announced the funding for the establishment of a Regional Maritime Security Centre at General Sir John Kotelawala Defence University (KDU), including a facility at the Trincomalee Naval Academy. An MoU on this was about to be signed as at July 2024.

The Netherlands has aided MEPA in relation to its response arrangements about oil spills.

The United Kingdom is also undertaking several maritime security-related projects in Sri Lanka as part of a broader Bay of Bengal maritime security program.[129] The UK Ministry for the Environment has also signed an MoU with the Sri Lankan Department of the Environment to provide support for projects relating to marine biodiversity, marine pollution and sustainable seafood.[130]

In November 2023, an EU delegation provided a report on the National Action Plan for Disaster Preparedness.

The EU also aids Sri Lanka through the EU-funded CRIMARIO II program,[131] which offers the IORIS MDA information sharing platform around the Indo-Pacific. CRIMARIO has provided IORIS to the Sri Lanka Navy (including seven regional commands), Coast Guard, Fisheries and MEPA. CRIMARIO has established a 'regional community area' to facilitate information sharing between Sri Lanka, Bangladesh and Maldives.[132] (India has declined to participate in IORIS, although it may connect its own system through the Share-It system.)

5.3.6 Capability assistance from China

Although China's principal focus in defence cooperation with Sri Lanka appears to be with the Sri Lankan Army, there have been several initiatives in the maritime security space.

In 2019, China gifted a Type 053 PLAN frigate to the Sri Lanka Navy, which was recommissioned as SLNS *Parakramabahu*.[133] It is understood that its air defence and ASW equipment were removed prior to transfer, but it retained a combat management system. The *Parakramabahu* is now largely used as a training platform by the Sri Lanka Navy.

China has pursued several maritime-related initiatives with Sri Lankan research institutes. In 2015, the University of Ruhuna (in southern Sri Lanka) and the South China Sea Institute of Oceanology (SCSIO) of the Chinese Academy of Sciences established a China-Sri Lanka Joint Center for Research and Education (CSL-CER), including a marine environment lab, which has become a point of controversy in recent times. As discussed above, the Ruhuna University CSL-CER institute was in effect used as a platform for China to undertake hydrographic surveys of Sri Lankan waters and it has been claimed that the Chinese partner did not hand over all data from those surveys to Sri Lanka.

A proposal was made to establish a remote satellite receiving ground station at Ruhuna University to provide Generation 1 optical satellite imagery for studies in agriculture, irrigation, cloud pattern analysis, weather prediction, and coastal conservation.[134] However, we have been informed that the Sri Lankan Government vetoed the project.[135]

In February 2024, the Sri Lankan Government announced the establishment of a Defence Ministry-led committee to examine the terms of all agreements between Sri Lankan and foreign government and academic institutes.[136] A law was also passed establishing a new National Hydrographic Office under the Ministry of Defence with a mandate of ensuring closer Sri Lankan control over hydrographic data. This will take over principal responsibility for hydrography from NARA.

5.3.7 Capability assistance from the United Nations

The UNDP is assisting Sri Lanka with the development of a Maritime Spatial Plan, with the Sri Lankan Government setting aside funding for the development of the Plan in the 2023 National Budget, however its formulation is still to progress.[137]

The UNODC provides considerable assistance to Sri Lanka as part of its Global Maritime Crime Program, with a principal focus on drug smuggling (IUU fishing is not technically a crime).[138] The UNODC maintains regional offices in Colombo, with the UNODC Bangkok office providing training and mentoring on MDA.

UNODC provides or funds capability assistance and training to Sri Lankan agencies in the following areas:[139]

- IORIS (which is the EU-sponsored information sharing platform) and Skylight
- Maritime Enforcement training including VBSS
- limited Airbus satellite imagery for ad hoc training purposes and provides limited initial credits to users
- assistance to the Sri Lanka Navy to establish its Information Fusion Centre
- surface drones for Sri Lanka (as well as Bangladesh and Maldives)
- satellite phone interception device to allow law enforcement authorities to intercept Iridium satellite calls by narcotics smugglers.

5.4 Multilateral groupings relevant to the Bay of Bengal

The level of multilateral cooperation in the Bay of Bengal region is very low compared with other sub-regions in the Indo-Pacific.

5.4.1 Indian Ocean Rim Association (IORA)

IORA is the key political grouping of countries in the Indian Ocean region. Australia was one of the key sponsors in its establishment in 1997. However, for several reasons, including its size and diversity of members, lack of regional perspectives and institutional weaknesses, the group has had fewer achievements than

hoped.

Sri Lanka assumed the chair of IORA in October 2023. During its term as chair, Sri Lanka is likely to give considerable emphasis to maritime issues, including the blue economy. For some years, Sri Lanka co-chaired IORA's maritime safety and security working group that discusses safety and security issues, although maritime safety issues do not appear to be a significant priority for the grouping.[140]

Despite institutional weaknesses, IORA remains an important grouping for potential initiatives involving the Bay of Bengal through its convening function.

5.4.2 Indian Ocean Naval Symposium (IONS)

IONS provides a forum for senior naval representatives from the littoral states of the Indian Ocean region for discussions on regionally relevant maritime issues. The symposium has three central working groups: HADR; Maritime Security; and Information Sharing and Interoperability.

For several reasons, many would argue that IONS has found it difficult to achieve any significant outcomes; however, it remains a valuable venue for naval personnel to form relationships and discuss maritime security issues, particularly MDA and protocols around unplanned encounters at sea.

5.4.3 Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC)

BIMSTEC is the principal political grouping of countries around the Bay of Bengal.[141] In addition to Sri Lanka, its members include India, Bangladesh, Myanmar, Thailand, Bhutan, and Nepal. BIMSTEC was established in 1997 under the principal sponsorship of India and Thailand. The BIMSTEC secretariat is located in Dhaka.

Like IORA, BIMSTEC has had relatively few concrete achievements, reflecting its diversity of membership, lack of historical regional perspectives and institutional weaknesses. Despite being defined by the Bay of Bengal, it has given relatively little focus to the maritime domain. In recent years, BIMSTEC's effectiveness has also been hampered by tensions between Sri Lanka and Myanmar and by the Myanmar military coup.

In 2018, BIMSTEC adopted the Master Plan for Trade Connectivity (2018-2022), which is intended to facilitate the development of ports and maritime and inland water transport. It is also intended to facilitate multimodal and intermodal connectivity for landlocked states and regions through inland waterways, including through Sri Lanka.

5.4.4 Colombo Security Conclave

The Colombo Security Conclave is a regional security grouping established out of trilateral India-Sri Lanka-Maldives cooperation and now includes Mauritius and Bangladesh as members. It operates at national security adviser level and focuses on a range of security-related issues, many of them in the maritime domain. It intends to establish a secretariat in Colombo, with funding assistance from India.[142] Although Maldives did not send its national security adviser to the Colombo Conclave's last meeting in December 2023, we understand that Maldives intends to continue its participation in the grouping.

The Colombo Conclave is a potentially useful vehicle for enhanced cooperation on regional MDA.

5.4.5 Galle Dialogue

The Galle Dialogue is Sri Lanka's premiere regional maritime security conference, generally hosted annually by the Sri Lanka Navy. It is a key forum that brings together smaller Indian Ocean states with major powers from inside and outside the region. It provides an important forum for Indian Ocean island states to provide their perspectives.

We understand that it is not planned to hold a Galle Dialogue in 2024, but one is planned for 2025.

5.4.6 South Asian Association for Regional Cooperation (SAARC)

Sri Lanka is a member of SAARC, which was established in 1985 and brings together South Asian states. For some years, the organisation has been paralysed by India–Pakistan rivalries and has in many respects ceased to function as an effective group.

Nevertheless, some SAARC programs and arrangements continue, such as the SAARC Agreement on Rapid Response to Natural Disasters and the SAARC Coastal Zone Management Centre.

5.4.7 South Asia Co-operative Environment Programme (SACEP)

SACEP is an intergovernmental organisation established in 1982 with Sri Lanka and other South Asian states as members.[143] Its programs include the South Asia Seas Program (which is sponsored by the UNEP) and the Plastic Free Rivers and Seas for South Asia Project.

The South Asia Seas Program focuses on protecting and managing the marine environment and related coastal ecosystem of South Asia. Its four priority areas are managing the coastal zone, protecting the marine environment from land-based activities, human resources development and the development of national and regional oil- and chemical-spill contingency plans. This led to the signing of an MoU on a Regional Oil and Chemical Spill Contingency Plan in 2016. This plan was used in the *X-Press Pearl* shipping accident.

5.4.8 Bay of Bengal Programme

The Bay of Bengal Programme-Inter-Governmental Organisation (BOBP-IGO) is an intergovernmental organisation established in 2003 following on from the Bay of Bengal Programme of the UN Food and Agriculture Organization. Member countries include Sri Lanka, India, Maldives, and Bangladesh, while Indonesia, Malaysia, Myanmar, and Thailand are cooperating non-contracting parties. Its offices are located in Chennai.

BOBP-IGO describes itself as a regional fisheries advisory body of the countries bordering the Bay of Bengal region. It serves as the member countries' think tank on transboundary and contemporary national issues concerning fisheries management.[144]

BOBP-IGO is mandated to assist the member countries in increasing livelihood opportunities and improving the quality of life of small-scale and artisanal fisher folk in the Bay of Bengal region. The core objectives of BOBP-IGO are to increase awareness and knowledge of the needs, benefits and practices of marine fisheries management; enhance skills through training and education; transfer appropriate technologies and techniques for the development of small-scale fisheries; establish a regional information network; and promote women's participation in the marine fisheries value chain.

Key research themes pursued by BOBP-IGO include:

- Reimagining Regional Fisheries Management: Participatory Approaches for Near Real-time Stock Assessment
- Capturing the Hidden Harvest: A Framework for Small-Scale Multi-Species Fishery
- Shared Prosperity: Governance and Institutional Framework for Assessment and Management of Blue Economy in the Bay of Bengal
- Back to Basics: Revitalising Traditional Knowledge for Sustaining Fisheries Future
- Aquaculture-Fisheries Co-development for Stock Enhancement and Sea Ranching
- Insurance for Ameliorating the Climate Risks of Coastal Fishers of the Bay of Bengal Region
- Bay of Bengal Large Marine Ecosystem Project.

Appendix 1: Acronyms and abbreviations

AFMA	Australian Fisheries Management Authority
ABF	Australian Border Force
AFP	Australian Federal Police
AIS	automatic identification system
AMSA	Australian Maritime Safety Authority
AtoN	aids to navigation
BIMSTEC	Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation
BOBLME	Bay of Bengal Large Marine Ecosystem Project
BOBP-IGO	Bay of Bengal Programme – Inter-Governmental Organisation
COP	common operating picture
EEZ	Exclusive Economic Zone
FAO	Food and Agriculture Organization of the UN
GDP	gross domestic product
GMDSS	Global Maritime Distress and Safety System
GPS	Global Positioning System
HADR	humanitarian assistance and disaster relief
IFC	Information Fusion Centre (Singapore)
IFC-IOR	Information Fusion Centre—Indian Ocean Region
IMO	International Maritime Organization
IORA	Indian Ocean Rim Association
IOTC	Indian Ocean Tuna Commission
IUU	Illegal, Unreported and Unregulated Fishing
MCS	monitoring, control and surveillance
MDA	maritime domain awareness
MoU	memorandum of understanding
MPA	marine protected area
MRCC	maritime rescue and coordination centre
OPV	offshore patrol vessel
Quad	Quadrilateral Security Dialogue

SAARC	South Asian Association for Regional Cooperation
SACEP	South Asia Co-operative Environment Programme
SAR	search and rescue
SDG	Sustainable Development Goal
SLCG	Sri Lanka Coast Guard
SOLAS	safety of life at sea
TEU	twenty-foot equivalent unit
UN	United Nations
UNCLOS	UN Convention on the Law of the Sea
UNEP	UN Environment Programme
UNODC	UB Office on Drugs and Crime
US	United States
VTMS	vessel traffic management system

Appendix 2: List of major Conventions related to oceans governance – Sri Lanka

- United Nations Convention on the Law of the Sea (UNCLOS), 1982
- International Convention for the Prevention of Pollution from Ships, 1973/78 (MARPOL Convention)
- International Convention on Oil Pollution Preparedness, Response and Cooperation, 1990 (OPRC)
- International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention)
- Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (UN Fish Stocks Agreement)
- Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (PSMA)
- Convention on International Maritime Organization, 1948
- Convention on the International Regulations for Prevention of Collisions at Sea, 1972 (COLREGs)
- International Convention for the Safety of Life at Sea, 1974 (SOLAS)
- International Convention on the Control of Harmful Anti-fouling Systems on Ships, 2001
- Convention on Fishing and Conservation of the Living Resources of the High Seas – not ratified
- International Convention relating to intervention on the High Seas in cases of oil pollution casualties
- Agreement for the establishment of the Indian Ocean Tuna Commission
- South Asian Regional Seas Action Plan – not adopted or ratified
- International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1992
- Convention on the International Hydrographic Organization
- International Convention on Load Lines
- Memorandum of Understanding on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia
- Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation
- International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW)
- International Convention on Civil Liability for Bunker Oil Pollution Damage,

Appendix 3: List of selected national laws and policies related to oceans governance – Sri Lanka

- Maritime Zones Law No 22 of 1976
- Fisheries and Aquatic Resources Act No 2 of 1996
- Fisheries (Regulation of Foreign Fishing Boats) Act No. 59, 1979
- Merchant Shipping Act No 52 of 1971
- Petroleum Resources Act No. 26 of 2003
- Coast Conservation Act No 57 of 1981
- Telecommunications Act No. 25 of 1991
- National Hydrographic Act No 7 of 2024
- Marine Pollution Protection Act No 35 of 2008
- Carriage of Goods by Sea Act No 21 of 1982
- Sri Lanka Port Authority Act
- Coast Guard Act No 41 of 2009

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