Third Pathfinder Indian Ocean Security Conference (PFIOSC)

28th & 29th February 2024

Organized by Pathfinder Foundation

Sponsored by the Embassy of Japan and the U.S. Embassy

AGENDA

Day 1 Wednesday, 28th February

0930 - 0950   Arrival of Guests & Registration

1000 - 1010   **Opening Remarks**
Ambassador (Retd.) Bernard Goonetilleke
Co-Chair, Pathfinder Indian Ocean Security Conference and Chairman,
Pathfinder Foundation, Sri Lanka

1010 – 1025   **Keynote Speech**
H. E. Ranil Wickremesinghe
The President of the Democratic Socialist Republic of Sri Lanka

1025 – 1035   **Introductory Remarks**
Ambassador (Retd.) Shivshankar Menon
Co-Chair, Pathfinder Indian Ocean Security Conference, Sri Lanka

1035 - 1045   **Group Photograph with the President**

1045 - 1055   **Special Remarks**
H. E. Julie Chung, Ambassador of USA to Sri Lanka

1055 - 1105   **Special Remarks**
H. E. HAYASHI Makoto
Deputy Director-General / Deputy Assistant Minister, Southeast
and Southwest Asian Affairs Department, Ministry of Foreign
Affairs, Japan

1105 - 1135   **Group Photograph & tea break**

1135 - 1315   **Session 1 - Indo-Pacific strategy and its implications on the Indian Ocean community**

1135 - 1140   **Moderator**
Amb. (Retd.) Ahmed Jawad
Director-Centre for Indo-Lanka Initiatives, Pathfinder Foundation.

1140 - 1210   **Main Presenter**
Mr. Kim Heriot-Darragh
Research Fellow, Perth USAsia Centre, University of Western Australia

1210 - 1230   **Panelist – 1**

Ambassador (Retd.) H.M.G.S Palihakkara
Former Foreign Secretary and Sri Lanka's Ambassador and Permanent Representative to the United Nations

1230 - 1250	**Panelist – 2**
	Dr. Liu Zongyi
	Senior Fellow, Director of the Center for South Asia Studies, Shanghai Institutes for International Studies (SIIS)
1250 - 1315	**Open Discussion**
1315 - 1445	**Lunch break**
1445 - 1610	**Session 2 - Underwater Domain Awareness: Security and economic dimensions**
1445- 1450	**Moderator**
	Admiral Jayantha Perera, former Commander of the Sri Lanka Navy
1450 - 1520	**Main Presenter**
	Dr. (Cdr.) Arnab Das, Founder & Director, Maritime Research Centre, Pune, India
1520 - 1535	**Panelist – 1**
	Rear Admiral Dimuthu Gunawardena (Retd) Former Actg. Director General and Director (Communications and Publications) Institute of National Security Studies Sri Lanka (INSS)
1535 - 1550	**Panelist – 2**
	Prof. Jeffrey Payne, Assistant Professor, Near East South Asia Center for Strategic Studies, National Defense University, Washington DC, USA
1550 - 1610	**Open Discussion**

- **End of Day 01** -

Day 2 Thursday, 29th February

1000 - 1125	**Session 3 - Climate change, maritime disaster management and blue-green economy**
1000 - 1005	**Moderator** Dr. Terny Pradeep Kumara, Professor of Oceanography, Dept. of Oceanography and Marine Geology, University of Ruhuna, Sri Lanka
1005 - 1035	**Main Presenter** Dr. Richard Jeo, Senior Vice President and Chief Field Officer, Asia-Pacific Field Division, Conservation International, Virginia, USA
1035 - 1050	**Panelist – 1** Dr. Athaulla Rasheed, Doctoral Researcher, Australia National University (ANU).
1050 - 1105	**Panelist – 2** Prof. Rashed Uz Zaman, Department of International Relations, University of Dhaka, Bangladesh.
1105 - 1125	**Open Discussion**
1125 – 1140	Tea break
1140 - 1200	**Closing Remarks**
1140 - 1150	Ambassador (Retd.) Bernard Goonetilleke Co-Chair, Pathfinder Indian Ocean Security Conference and Chairman, Pathfinder Foundation
1150 - 1200	Vote of Thanks by Amb. (Retd.) Ahmed A. Jawad Director-Centre for Indo-Lanka Initiatives, Pathfinder Foundation
1200	Lunch

- End of Conference -

OPENING SESSION

OPENING REMARKS

Ambassador (Retd.) Bernard Goonetilleke
Co-Chair, Pathfinder Indian Ocean Security Conference and Chairman, Pathfinder Foundation

Your Excellency President Wickremesinghe, Your Excellencies representing the diplomatic missions based in Colombo, Ambassador Shivshankar Menon, Co-Chair of the Conference, Mr. Milinda Moragoda, Founder of Pathfinder Foundation, distinguished participants.

I wish to warmly welcome participants from the Indian Ocean region and beyond attending today's hybrid event in person and virtually. Pathfinder Foundation, an apolitical and not-for-profit think tank, commenced its work in 2008. Security and strategic issues have been the Foundation's particular area of focus. In pursuit of our interest, we have focused on all aspects of the Indian Ocean and the vibrant Bay of Bengal. In that process, over the years, we have conducted numerous events, such as conferences, seminars, workshops, etc., in association with local and foreign academic institutions and think tanks.

The Third Indian Ocean Security Conference follows the previous two meetings held in 2020 and 2022. Those endeavours reflect the Foundation's abiding interest in fostering dialogues on ocean-based issues. Another ongoing focus of ours is the annual Bay of Bengal Maritime Dialogue, co-hosted with the Swiss-based Centre for Humanitarian Dialogue. The next Dialogue will be held in Colombo three months from now.

In 2017 and 2018, Pathfinder hosted two regional meetings known as 'Trincomalee Consultations' focusing on issues relating to the Bay of Bengal. It was also an attempt to focus on Trincomalee, which has one of the largest natural harbours in the world and to identify the role it could play in providing services to the Bay of Bengal community. In July 2023 Sri Lanka signed an MoU with India to develop the long-neglected Trincomalee harbour and its outlying areas. Meanwhile, President Wickremesinghe, in his earlier capacity as Prime Minister, engaged the services of Surbana Jurong, a Singapore-based state-owned consultancy company, to design a blueprint to develop Trincomalee, which project we hope will take off soon.

In 2018, the Foundation also launched an Occasional Paper to stimulate interest in 'A Code of Conduct for the Indian Ocean' as an extension to the Djibouti Code of Conduct covering the western Indian Ocean. All these activities demonstrate our continuous interest in the ocean, which provides access and livelihood to millions of people living on the shores of the vast Indian Ocean.

Of all the oceans in the world, the Indian Ocean plays a pivotal role in providing economic prosperity, security and environmental well-being to millions of people living in the coastal areas of the Indian Ocean and the wider global community, thereby conceding a preeminent position to the Indian Ocean. Considering this waterbody's importance, we must recognize its pivotal role in global trade and commerce as a veritable storehouse of natural resources onshore and offshore and in ensuring international security and stability. It is no wonder why some ports in Sri Lanka, such as Maha Thota (Maha Thiththa), Trincomalee, Galle and Colombo, were coveted by Arabs, Ethiopians, Persians, Greeks, Romans, Chinese and Europeans over the centuries.

Today, the Indian Ocean is expanding, albeit metaphorically, to embrace the Pacific, which is not a geographical unit but a strategic construction. In that process, it has been baptized as 'Indo-Pacific'. Although the Indo-Pacific concept dates back to the German geopolitician Karl Haushofer, who lived in the 1920s, the idea gained ground with the late Japanese Prime Minister Shinzo Abe's vision of a 'Free and Open Indo-Pacific', which he elaborated in Kenya in 2016 after having outlined the hypothesis in a speech made in the Indian parliament nine years earlier. Since then, the U.S. and its allies, having realized the strategic advantage of combining the two oceans, have enthusiastically embraced and promoted the concept of a free and open Indo-Pacific.

Some may question the motivation for Sri Lanka's deep interest in the Indian Ocean. In size and population, Sri Lanka is considerably smaller than some of its South Asian neighbours. However, our island has been rewarded with a strategically important geographical position in the Indian Ocean to offset that deficiency. Sitting adjacent to the vital sea line of communication connecting the east with the west, Sri Lanka's strategic importance with its deep-water port facilities in the eastern, western and southern coastlines, was described as an 'aircraft carrier parked 14 miles off the Indian coast' by our Co-Chairman Ambassador Menon in his book "Choices". The EEZ of Sri Lanka covers 510,000 sq. kilometres, and in keeping with the 1982 Law of the Sea Convention, Sri Lanka's jurisdiction over the Continental Shelf will surpass its landmass at least by twenty times. Against such a scenario, it is only natural for Sri Lanka to demonstrate its abiding interest in the vast ocean surrounding the island.

Now, to turn our focus on the conference, we will first discuss "The Indo-Pacific strategy and its implications to the Indian Ocean community." We hope our focus will allow participants to understand how the Indo-Pacific Strategy will impact the populace living on the shores of the Indian Ocean.

Maritime Domain Awareness is a subject that has gained much interest recently. The Indian Ocean covers approximately 70.5 million square kilometres, which is, by any standard, a vast area. Countries in the IOR will naturally find it beyond their means to effectively police this enormous expanse of water. While these shortcomings over maritime domain awareness are being addressed, there is scant knowledge of what goes on beneath the surface of this vast body of water. Lack of resources and scarcity of technical know-how prevent the Asian and African countries representing the global south from investing in the development of underwater capability and benefiting from the Blue Economic opportunities the Indian Ocean could provide. Session 2 of our event is devoted to Underwater Domain Awareness's security and economic dimensions, which will allow us to understand issues relating to the subject matter. The third session will cover three broad areas: Climate Change, Disaster Management and Blue-Green Economy.

With this, I will conclude my opening remarks. While wishing the conference success, on behalf of the Pathfinder Foundation, I would like to express my sincere appreciation to President Wickremesinghe for gracing the occasion despite his busy schedule.

MAIN POINTS FROM THE KEYNOTE SPEECH
by
H. E. Ranil Wickremesinghe
President of the Democratic Socialist Republic of Sri Lanka

- Sri Lanka's dedication to maintaining a strategic position aimed at ensuring the absence of major power rivalries and upholding freedom of navigation in the Indian Ocean?

- The island's commitment to freedom of navigation has prompted our country to engage in operations as guardians of prosperity in the Red Sea.

- The significance of the Suez Canal was particularly evident during the Six-Day War, when its closure for eight years negatively impacted the Colombo port, emphasizing the necessity of ensuring unrestricted navigation.

- Emerging issues, including security concerns in the undersea domain, have highlighted the need for a reassessment of approaches. The belief that the global economic future lies in the Indian Ocean and the importance of understanding Sri Lanka's role within the broader Indo-Pacific framework are important factors that require recognition.

- Dynamics of the Indo-Pacific, originating from post-World War II arrangements such as the San Francisco system and the Shanghai Communiqué, have evolved, leading to questions about the country's positioning and potential involvement in regional conflicts. The conference, attended by delegates representing several nations, underscores the significance of the Indian Ocean and its role in global security and supply chain resilience.

- It is imperative to reconcile varying viewpoints on the Indo-Pacific, particularly regarding its geographical limits and implications for maritime security. Sri Lanka opposes the idea of confining the Indo-Pacific to India's western boundary, stressing its wider territorial concerns that stretches to the African coast. This stance diverges sharply from China's expansive outlook, prompting scrutiny of these contrasting approaches' underlying motives and potential repercussions.

- The importance of addressing emerging developments in the Indian Ocean amid complex geopolitical dynamics cannot be over-emphasized. This includes China's growing presence in the Indian Ocean Region, bolstered by infrastructure projects like the China-Pakistan Economic Corridor (CPEC) and agreements with Sri Lanka concerning connectivity and harbour development. Furthermore, the evolution of economic corridors such as the India-Middle East, Europe Economic Corridor (IMEC) highlights the changing geopolitical landscape, emphasizing the need for long-term strategic planning.

- The interconnectedness of regional dynamics and the potential implications for maritime security and diplomacy as evidenced by the recent conflict in Gaza, considering the arc of Islam stretching from the Middle East to Indonesia, and the need for nuanced approaches to crisis management, considering geopolitical complexities and cultural sensitivities.

- The importance of embracing the Indian Ocean's identity and historical significance highlights the need for cooperation among major powers rather than competition. In this process, Sri Lanka's vision for the region as a hub for economic growth extending beyond India to Africa plays a prominent role. Regarding the resurgence of Asia's influence, particularly China's pivot to the Indian Ocean and the impact of the Belt and Road Initiative, the necessity of re-evaluating traditional power structures and alliances comes to the fore. Also, Russia's eastward shift and the evolving dynamics between Iran and Saudi Arabia further complicate the geopolitical landscape, calling for nuanced diplomacy and strategic foresight.

- In conclusion, President Wickremesinghe reiterated Sri Lanka's commitment to promoting stability and cooperation in the Indian Ocean region, stressed the importance of maintaining an inclusive approach that respects the historical significance of the Indian Ocean and highlighted the need for cooperation among diverse stakeholders for long-term peace and prosperity.

INTRODUCTORY REMARKS

Ambassador (Retd.) Shivshankar Menon
Co-Chair, Pathfinder Indian Ocean Security Conference

Your Excellency Ranil Wickremesinghe, President of Sri Lanka, High Commissioner Milinda Moragoda, Ambassador Bernard Goonetilleke, Chair of the Pathfinder Foundation, Excellencies, Ladies and Gentlemen.

I am honoured to be here at the third phase of the Pathfinder Indian Ocean Security Conference and delighted to see old friends and new ones here in Colombo. My particular thanks go to the Pathfinder Foundation for the excellent arrangements and preparations they made for us.

I. Protecting the Global Commons
Your Foundation has truly lived up to its name as a pathfinder in the matter of Indian Ocean security. When Pathfinder started this series of conversations and meetings over five years ago, the situation in the Indian Ocean was much calmer than today. The Indian Ocean region has always been a diverse and plural part of the world. Historically, the Indian Ocean has also been an ocean of peace, partly because of its open geography and because it was central to world trade. It has become so again. Perhaps because of that, and due to developments in global geopolitics, today, the Indian Ocean region is even more central and plural, while the situation has become somewhat complicated. In the process, threats to the global commons have multiplied, and security, in the broadest sense, is now at risk.

Consider just the most recent headlines. Houthi attacks on shipping in the Red Sea and the resumption of piracy off the Horn of Africa by Al-Shabab affiliated pirates have led, according to some accounts, to the rerouting of 90% of container ships that would usually use the Red Sea route. In normal times, the Red Sea route accounted for about 1/3rd of all global container traffic and 40% of all trade between Asia and Europe. Meanwhile, container transportation costs have tripled or quadrupled for some routes.

There are also more significant issues that should concern us in maritime Asia. These include challenges to international law, as expressed in UNCLOS 1982, which we all negotiated with such difficulty. Several countries feel that their sovereignty and independence are threatened. A host of illegal activities enhance transnational and non-traditional threats. The effects of climate change on the ocean and livelihoods, not just for fishermen, and natural disasters, add to our challenges.

II. Overlay of Geopolitics and Great Power Rivalry
The overlay of geopolitics and the great power rivalry they have now acquired makes these issues more dangerous and harder to solve. In effect, negotiating and making concessions necessary to arrive at peaceful solutions have become more difficult at a time of great power rivalry and when authoritarian leaders who base their legitimacy on nationalism or ultranationalism are in power in many of the more powerful states. We are in what I like to call a world between orders, where all the great powers are dissatisfied and revisionist in one way or another. And in the absence of an accepted international order, several powers see, or think they see opportunity: Russia in Ukraine, the Houthis in the Red Sea, Hamas in Israel, Israel in Gaza—the list is long and getting longer. Indeed, great power rivalry creates balancing opportunities for middle powers and others not available in more settled orders. The admiral heading INDOPACOM is in Nepal this week, a landlocked country!

III. Solutions
What might one do about this situation that introduces uncertainty into our quest for development, security, and prosperity?

I do not believe that we can still depend on the U.N. and the multilateral system. The constituent units of the multilateral system are sovereign member-states. When those member states are quarrelling, it is unfair to blame the multilateral system or expect much from it. There has not been a binding international agreement on any issue of real consequence

for over a decade and a half. (Someone might say Paris. I say that an agreement to set your targets and refuse to let the world monitor them is hardly an internationally binding agreement.) Be happy that we got UNCLOS when we did. Now, protect it from being harmed by the powerful.

Instead of old-style multilateralism, what we see is the increasing emergence of plurilateral solutions. I use the mantra of issue-based coalitions of the willing and able. What Sri Lanka has done for Indian Ocean security in the Colombo Security Conclave is a creative and practical approach that should be pursued and emulated in other geographies. There are now several plurilateral groupings, including IORA, the Indian Ocean Naval Symposium, the Quad and others. They all need to be made more effective.

There are also ad hoc measures taken by some members of the international community, mostly reactive, such as the 'Operation Prosperity Guardian' in the Red Sea, in which twenty countries participate, of which only one, Bahrain, is local and borders the Red Sea. This demonstrates how important this ocean is to global interests. It also suggests the lack of a local order or limited local interest and capability. India has undertaken what may be its largest naval deployment to the waters off Somalia in response to the recent attacks on shipping and attempts at piracy. Interestingly, some of the most significant global trading powers whose interests are affected by the spiralling violence in West Asia and the Western Indian Ocean are absent from these ad hoc arrangements. I can only ascribe this to their limited diplomatic and military capability or an absence of interest in working with others due to great power rivalry.

So, in many ways, the issues discussed in the next two days are a microcosm of what the world faces in other contexts and on other issues.

As you can see from what I have said, my thoughts on what we might do are quite limited and not particularly optimistic. I do not see a clear way forward. That is why I hope your deliberations at this conference will help us find solutions. You have gathered a high level of expertise that come from a wide range of countries, all of which share a strong interest in the peace and security of the sea lanes we depend on in the Indian Ocean.

I wish you every success in your deliberations. I am confident that, like its two predecessors, this conference will be productive, meaningful and successful.

SPECIAL REMARKS

H. E. Julie Chung
Ambassador of the United States of America in Sri Lanka

Good morning. His Excellency President Wickremesinghe, Deputy Director-General Makoto, my fellow diplomatic colleagues, distinguished panelists and participants from think tanks and the academia, it is a privilege and honor for me to take part in the opening of this third Indian Ocean Security Conference. A special thanks to the Pathfinder Foundation and co-chair Ambassadors Goonetilleke and Menon for their continued leadership in fostering the ongoing constructive dialogue on peace and security across the Indian Ocean region and to Ambassador Milinda Moragoda for his dedication. Before I begin, I would like to challenge Pathfinder and the organizers: when I looked at the agenda for this conference, I noticed I'm the only woman speaking among the panelists and moderators. I know there are hundreds of qualified female experts in international affairs who would love to join this discussion, so I urge you to look at gender diversity in next year's conference participants.

I had the pleasure of speaking at the second iteration of this very conference back in March 2022, not long after I first arrived in my very first public speech as Ambassador. At that time, I said our vision for the Indo-Pacific recognizes that much of the planet's future will be based on what happens in this region. And I also said then, this is why Sri Lanka, located at the heart of the Indo-Pacific, can act now to seize a leading role in this future. Two years later, I believe this affirmation more than ever. The President said Sri Lanka does not want to be a battleground for great power competition in his remarks just now. In my opinion, the question is not to ask whether Sri Lanka is a "battleground" because that makes Sri Lanka seem to take on a passive role, but rather how can Sri Lanka best assert its identity and sovereignty to shape its future destiny and the region.

At that same time, two years ago, the United States launched its Indo-Pacific Strategy, which focuses on promoting a free and open Indo-Pacific that is connected, prosperous, secure, and resilient. The IPS seeks to galvanize bilateral and multilateral relationships across the Indo-Pacific region. For Sri Lanka, that means focusing on its immediate Indian Ocean neighbors and environs. But why limit yourself there? It also means building or expanding connections within and beyond the Indian Ocean region, helping to facilitate linkages and relationships with distant partners as well. Oceans see no borders, and it only makes sense for Sri Lanka to broaden its strategic influence to encompass both the Indian and Pacific Oceans. That will be a core theme of my remarks today.

We know that some of these Indo-Pacific linkages already exist in Sri Lanka. I recently helped launch a U.S. government-funded ports capacity-building program by the Colombo Plan. It will send experts to study ports in the United States and help build cyber security capabilities. It will give the Sri Lanka Ports Authority the know-how and technical expertise to innovate port operations and expose SLPA staff to the latest international standards and best practices. This week, we are hosting a cyber security workshop to build upon these efforts. This will help secure valuable infrastructure from cyber and ransomware attacks, which is important for national security. The Colombo Plan, founded and headquartered here in Colombo, is a decades-old development platform with member states across East Asia, South Asia, the Middle East, and as far west as the United States and Chile.

In addition, Sri Lanka is the current chair of IORA, the Indian Ocean Rim Association. IORA is the only diplomatic ministerial-level platform in the Indian Ocean Region and includes Dialogue Partners from Europe and East Asia. As the sitting chair, Sri Lanka is in a position to drive interregional cooperation on economic development and political dialogue for the next two years. Needless to say, Sri Lanka is already playing that outsized role in helping to shape global policy. Acknowledging the value of being a part of the larger global community, Sri Lanka is pursuing membership in the Regional Comprehensive Economic Partnership (RCEP). This move matters to Sri Lanka because it would enhance economic ties and make it easier to trade goods and services with RCEP's Asia-Pacific member countries. More importantly, by doing this, Sri Lanka strengthens its role as a bridge between nations in the Indian Ocean and Pacific Ocean regions, and the United States sees this as a win-win for economic growth and regional stability.

You have also gathered here today to discuss Indian Ocean security. The United States continues to play an active role in strengthening Sri Lanka's capacity to protect its territorial waters. We have donated three former U.S. Coast Guard Cutters to the Sri Lanka Navy and provided various other security assistance. Just last Friday, we had the pleasure of welcoming U.S. Deputy Secretary of State Richard Verma, who announced the planned donation of a fourth Coast Guard Cutter to the Sri Lanka Navy. This demonstrates our continued commitment to bolster Sri Lanka's capacity to advance freedom of navigation by addressing key maritime challenges, including piracy, drug smuggling, human trafficking, and illegal, unreported and unregulated fishing.

We recently witnessed Sri Lanka addressing global challenges head-on and broadening its role on the world stage by sending one of those donated cutters to support Operation Prosperity Guardian. The Sri Lanka Navy joined a multinational coalition of naval vessels in the Red Sea, Gulf of Aden, and the Arabian Sea from over a dozen countries to help safeguard the freedom of navigation and protect the busy sea lanes of commercial ship traffic from Houthi attacks. This is a clear demonstration of Sri Lanka playing an active role in helping to secure the global supply chain that benefits both Sri Lanka and economies around the world. Thanking Sri Lanka for this leadership was an important message conveyed during the recent visits of U.S. Deputy Secretary of State Richard Verma and others.

Another aspect of the IPS is to promote resiliency to 21st-century transnational threats, which includes disruptions to global supply chains. Sri Lanka plays a vital role in facilitating the steady flow of goods as it hosts the only transshipment hub in South Asia. These supply chains represent the commercial lifelines for economies across the region and around the world. Not only is Sri Lanka contributing to protect those lifelines, but the Port of Colombo is facilitating that supply chain resilience by providing the storage and logistical movement of that essential cargo. The United States government, through $553 million in financing from the U.S. International Development Finance Corporation, is helping to further expand the Port of Colombo's capacity by nearly 50 per cent through the construction of the West Container Terminal. This Sri Lanka-India joint project will enhance Sri Lanka's status on the world stage as the home of a vital transshipment hub essential to the flow of global trade.

In addressing a different form of transnational threats, the strategy specifically recognizes that the Indo-Pacific is the epicenter of the climate crisis, but it is also essential to climate solutions. While the impacts of climate change know no boundaries, Sri Lanka and the rest of the island nations across the Indo-Pacific are disproportionately threatened by rising sea levels, increasing water temperatures, depleting fish populations, eroding coastlines, and erratic weather patterns. Sri Lanka and its fellow island states are fighting a common cause and must join forces to face these climate-related challenges together. The United States is committed to supporting countries across the Indo-Pacific in protecting the environment, reducing emissions, and accelerating clean energy.

Let me conclude by quoting President Biden on the IPS: "The future of each of our nations—and indeed the world—depends on a Free and Open Indo-Pacific enduring and flourishing in the decades ahead". Sri Lanka is positioned to seize a leading role as I had hoped two years ago, not play a passive role, and even expand upon it across the greater Indo-Pacific. I can assure you the United States stands in support of this island nation as it looks beyond the horizon of the Indian Ocean and forges greater ties in collaboration with the rest of the world.

SPECIAL REMARKS

H. E. HAYASHI Makoto
Deputy Director-General / Deputy Assistant Minister, Southeast and Southwest Asian Affairs Department, Ministry of Foreign Affairs, Japan

I am honoured to participate in the Indian Ocean Security Conference organized by the Pathfinder Foundation and supported by the governments of Japan and the United States. I would like to express my respect to the Pathfinder Foundation and all those involved for their continued diligence in addressing security, economic, environmental and other issues in the Indian Ocean and for realizing today's third conference.

The recent spread of COVID-19, the crisis in Ukraine and the Houthi attacks on ships in the Red Sea have exposed the vulnerability of the global supply chain. The Indian Ocean has long been an important trade route and source of economic development for Asia, the Pacific, the Middle East, Africa and the European region. In recent years, the international community has become increasingly divided and confrontational, and the Indian Ocean region is no exception. The Indian Ocean must be a place where diverse nations can coexist and prosper together under the rule of law.

With this in mind, Japan is promoting a "Free and Open Indo-Pacific" as a common vision to guide the international community, including the Indo-Pacific region, towards cooperation. Today, I would like to introduce the basic concept of FOIP and Japan's latest initiatives.

Japan has long emphasized the importance of the idea that the Indian and Pacific Oceans should be seen as a whole and that these oceans should be free and open, as then Prime Minister Abe delivered a speech on the 'Confluence of the Two Seas' of the Indian and Pacific Oceans to the Indian Parliament in 2007. Bringing these ideas to fruition, a Free and Open Indo-Pacific (FOIP) was announced in 2016, with its basic principles of defending 'freedom' and the 'rule of law', finding universality in diverse values, and promoting cooperation through dialogue.

The new National Security Strategy, formulated in December 2022, also places diplomacy under this FOIP vision as a top priority. In practical terms, this strategy represents a major shift in Japan's post-war security policy, and a FOIP can be seen as a pillar of this strategy.

In March 2023, Prime Minister Kishida announced a new plan for a FOIP during his visit to India. Based on the basic principles of the FOIP, the new plan sets out four new pillars of cooperation: principles for peace and rules for prosperity, addressing challenges in an Indo-Pacific way, multi-layered connectivity, and expanding efforts for security and safe use from 'sea' to 'air'.

To implement the new plan, Prime Minister Kishida announced to mobilize more than $75 billion in public and private funds in the Indo-Pacific region by 2030.

The fourth pillar of the new plan of FOIP will be of particular interest to you. This is the security and safe-use initiative, which extends from 'sea' to 'air'. It aims to ensure the security and stability of the 'high seas' as a whole, linking the security and stable use of the skies with the 'sea routes' that are the focus of the 'Free and Open Indo-Pacific'.

I would like to take this opportunity at an important international conference to reiterate the importance of the "three principles of the rule of law at sea", namely (i) making and clarifying claims based on international law, (ii) not using force or coercion in trying to drive their claims; and (iii) seeking to settle disputes by peaceful means. A law exists to protect the vulnerable, and the rule of law at sea protects the sea from geopolitical risks.

Last year, based on these three principles, which it has long advocated, Japan formally adopted the position that it is permissible to preserve the existing baselines and maritime zones established in accordance with UNCLOS, notwithstanding the regression of coastlines due to sea-level rise caused by climate change.

Support is also being provided to strengthen countries' maritime law enforcement capacity through human resource development, enhanced cooperation between maritime security agencies and joint training with national coastguards to protect the freedom of the seas. Last year, a fire-fighting vessel and maritime security equipment were provided to the Maldives as grant assistance to strengthen its law enforcement capacity.

In addition, to protect the 'sea lanes' that are the arteries of logistics, Japan has been making efforts, including support for capacity-building to combat IUU (illegal, unreported and unregulated) fishing, support for strengthening the maritime law enforcement capacity of coastal states, support for the management of maritime zones of jurisdiction and the development of electronic nautical charts.

In order to expand efforts for security cooperation, Japan has developed legal infrastructure with countries in the Indo-Pacific region. In April 2023, Japan established a new framework for grant assistance, Official Security Assistance (OSA). This is a cooperation programme that targets the armed forces and other related organizations of friendly countries as beneficiaries and provides materials and equipment as well as assistance for infrastructure development based on their security needs.

Last year, the first year of the OSA, Japan signed and exchanged E/Ns with the Philippines, Malaysia, Bangladesh and Fiji to provide coastal surveillance radar systems and rescue and security vessels to help maintain and strengthen maritime security in the Indo-Pacific region.

At the same time as promoting such efforts, countries must also work together to address the growing risk of marine pollution due to increased economic activity in the oceans. In this regard, and in relation to maritime disaster management, which is an element of the theme of this conference, Japan has assisted the Sri Lankan Coast Guard in improving its oil spill response capabilities.

In light of the theme of this conference, I have focused on the fourth pillar of the new FOIP and introduced various initiatives. Still, I would like to reiterate that in ensuring maritime security and the rule of law, measures for multi-layered connectivity and economic prosperity in the Indo-Pacific are also essential and that the FOIP is an inclusive concept that encompasses these measures.

Japan will continue to actively promote multifaceted efforts to realize the FOIP, including the development of an Industrial Value Chain connecting the Bay of Bengal with North Eastern region of India, which aims to improve organic connectivity across the Bay of Bengal region, as well as the debt restructuring process of Sri Lanka, where Japan co-chaired a meeting of creditor countries with India and France as part of efforts towards transparent and comparable development finances, and reached a basic agreement with the Sri Lankan government in last November.

Finally, as we have often stated, a FOIP is not against any particular country or idea but is open and inclusive. Under this FOIP philosophy, we intend to strengthen our cooperation with the countries of the Indo-Pacific region further by promoting concrete cooperation through the New Plan to overcome the various challenges facing the international community.

I hope that today's meeting will be vibrant and, together with the results of previous meetings, will contribute to the stable development of the Indian Ocean in the future.

WORKING SESSIONS

INDO-PACIFIC STRATEGY AND ITS IMPLICATIONS ON THE INDIAN OCEAN COMMUNITY

Kim Heriot-Darragh
Research Fellow, Perth USAsia Centre, University of Western Australia

Summary
Freedom of navigation is one of the most heavily cited principles in discussions on global security. Recent events in the Red Sea have given it a heightened profile – as have maritime disputes in the South China Sea and elsewhere. Most countries agree that the international community should protect navigational freedoms. But their preferences for how far those freedoms extend and how they should be balanced with other interests differ more than the mainstream commentary acknowledges. Such differences present little need for concern unless states seek to influence them using coercion or force. However, policymakers should be conscious of divergent interpretations when advocating for their national interests. And they should be prepared for the possibility that some Indo-Pacific states might seek to assert their claims more vehemently – though peacefully – in coming decades. Though not assured, this is a plausible response to the region increasingly turning its attention to crowded and contested waters, improving their maritime domain awareness, and regional leaders' growing intellectual focus on preserving maritime rights.

Introduction
Western government speeches and joint statements with Indo-Pacific partners frequently call for freedom of navigation and support for a 'rules-based order.'[1] Both concepts are articulated in key strategic documents between Australia and India[2] and are a frequent feature of Quad statements.[3] The beauty of these broad terms – especially freedom of navigation – is that they offer an important foundation of agreement. Most countries tend to acknowledge that commercial shipping is vital for the global economy and must be protected. Where it is not, there is a decisive international response, as was driven home recently when shipping in the Red Sea was threatened.[4] Consistent public affirmations in support of freedom of navigation also have political benefits for states seeking to signal concern over China's coercive behaviour in maritime disputes.

However, there can be limits to that utility. There is far less regional agreement on how to define freedom of navigation – particularly regarding foreign military activities in various maritime zones – than many government statements imply. This is commonly understood by sea power and the law of the sea specialists, but it isn't always as consistently understood in the broader strategic analytic community or potentially even among some government officials tasked with advocating their country's maritime interests abroad.

The Indo-Pacific's divergent approaches to freedom of navigation
The Indo-Pacific is one of the world's most diverse and complex regions. Rigorously parsing its many diverging maritime legal claims is best left to those with more expertise than the author. However, one straightforward way for laypersons to appreciate the extent of diversity in freedom of navigation positions is to examine which regional states were subjected to US Freedom of Navigation Operations (FONOPs) over the last decade. As part of the FONOPs program, the US Navy deliberately operates in waters where it judges the coastal state has made excessive maritime claims that

[1] "Rules-based order: tracking a decade of policy evolution," Lowy Institute, accessed 4 January, 2024, https://interactives.lowyinstitute.org/features/rules-based-order/.
[2] "Joint Statement: Second Australia-India 2+2 Ministerial Dialogue, New Delhi," news release, 20 November, 2023, https://www.foreignminister.gov.au/minister/penny-wong/media-release/joint-statement-second-australia-india-22-ministerial-dialogue-new-delhi#:~:text=Both%20sides%20welcomed%20the%20positive,and%20prosperity%20of%20our%20region.
[3] "Quad Joint Leaders' Statement," White House, updated 24 May 2022, 2022, accessed 3 January 2024, 2024, https://www.whitehouse.gov/briefing-room/statements-releases/2022/05/24/quad-joint-leaders-statement/.
[4] "U.S. and U.K. Launch Massive Bomb Strikes on Houthis in Retaliation for Red Sea Attacks," Time Magazine, updated 12 January, 2024, accessed 15 January, 2024, https://time.com/6554728/us-uk-strikes-houthi-rebels-yemen-red-sea/.

limit vessels' right to freedom of navigation.[5] According to US Defense Department summaries,[6] some of the countries whose claims have been challenged include:

- China, for claiming jurisdiction over the airspace above its Exclusive Economic Zone (EEZ), requiring foreign warships to seek permission before entering its EEZ, and requiring foreign military vessels to seek permission before entering its territorial waters.

- Cambodia, for requiring foreign military vessels to seek permission before entering territorial waters.

- India for claiming that foreign vessels should seek permission or notify it before conducting military exercises in its EEZ, claiming a security jurisdiction in its contiguous zone, and requiring vessels to seek permission before transiting territorial waters.

- Indonesia, for requiring permission before foreign navy vessels transit its territorial waters.

- The Maldives, for requiring all foreign vessels to seek permission before entering its EEZ and, by extension, its territorial waters.

- Malaysia, for claiming foreign states should seek permission or notify coastal states before conducting exercises in its EEZ, and for claiming that nuclear-powered ships require authorization before entering its territorial sea.

- Myanmar, for claiming a security jurisdiction in its Contiguous Zone, in which it claims the right to restrict or exclude warships and military aircraft – and for claiming such vessels require permission before transiting its territorial waters.

- Pakistan, for requiring all foreign navies to seek permission before conducting military exercises or manoeuvres in its EEZ.

- Sri Lanka for requiring warships to seek permission before transiting its territorial waters and for claiming a security jurisdiction in its contiguous zone.

- Thailand, for requiring foreign vessels to seek permission before conducting military exercises in its EEZ.

- Vietnam, for similarly claiming a security jurisdiction in its Contiguous Zone and requiring foreign military vessels to seek permission before entering territorial waters.

- And, though not relating specifically to the law of the sea, it is worth noting India's Air Defence Identification Zones have come under scrutiny for seeking to extend jurisdiction beyond its territorial waters.

By contrast, the US and others, including Australia, argue that naval vessels are permitted to transit through another state's territorial waters without notification so long as they are conducting 'innocent passage.' They refute the idea that countries are permitted to exert jurisdiction in their contiguous zone, unless enforcing a limited range of fiscal, immigration, sanitary and customs regulations. And they see EEZs as zones in which coastal states' exclusive rights to economic resources are balanced with the international community's right to exercise high-seas freedoms. Essentially, they point out that whereas UNCLOS articulates restrictions on foreign military activities in another country's territorial waters, it articulates no such limitations in relation to EEZs.[7]

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[6] "DoD Annual Freedom of Navigation (FON) Reports," US Department of Defense 2022, accessed 4 November, 2023, https://policy.defense.gov/OUSDP-Offices/FON/.

Though the US's interests in defending freedom of navigation are multifaceted, it is important to acknowledge that its willingness to invest heavily in a program to uphold military navigational rights stems in part from its reliance on open access to waters throughout the world.[8] If some of the world's more restrictive approaches to freedom of navigation gained traction, the US's ability to respond to military contingencies – from humanitarian assistance to high-intensity conflict – would be significantly complicated.[9] Likewise, if the US were to relinquish its pattern of consistently navigating where international law allows, then resuming such activities when operationally necessary rather than routine would risk being perceived by potential adversaries as provocative and escalatory. Though Australia's naval ambitions are more modest, its own need to utilize Indonesia's archipelagic sea lanes for naval activities has prompted occasional disagreement with Jakarta.[10]

Could more states seek to assert their stance on freedom of navigation?
That the extent of divergence in Indo-Pacific approaches to freedom of navigation is under-appreciated is understandable. Most government officials have had little reason to follow such niche legal debates. They focus on China's position on freedom of navigation because its behaviour in maritime disputes draws disproportionate scrutiny. As a growing power, Beijing's behaviour sets precedents for how disputes are resolved and has potent implications for the China-US military balance, as well as how neighbouring countries take Beijing's interests into account when making sovereign decisions. There is less imperative to monitor freedom of navigation claims of smaller states whose behaviour elicits less concern.

However, one additional reason may help explain why many commentators and officials do not think much beyond China when it comes to conflicting freedom of navigation stances. Some regional states, despite having declared restrictions on foreign military activities in their maritime zones – and having reflected those restrictions in policy and doctrine – may not have historically sought to uphold their claims frequently in practice by issuing radio challenges to transiting vessels or frequently protesting when foreign states fall afoul of their claims. And we should be open to the possibility that those priorities are shifting as the region increasingly turns its focus to the oceans.

From an internal security to a growing maritime focus
The Indo-Pacific strategic environment looked very different two decades ago. Regional states contended with numerous priorities, including the need to address poverty and economic development – and to tackle internal security threats like insurgencies and counterterrorism. Though the maritime environment was always vital to the region, the oceans weren't as crowded as they are now. And though the South China Sea has been a sticking point for decades – and even a theatre of conflict at times, leading to astonishing losses – it wasn't always the same global flashpoint it is now.
Indo-Pacific military capabilities reflected that focus – and, to a large extent, still do.[11] In many regional states, defence investment skews heavily toward armies rather than navies. Those armies often hold greater institutional influence than their counterpart air and naval forces. The Indian Army serves as a stark example: it makes up roughly 1 or 1.2 million of the total 1.4 million personnel, including the Indian Navy and Indian Air Force.[12] That weight of numbers reflects India's strong focus on continental defence on land rather than projecting power through its navy. India's experience may be particularly extreme, but it is not uncommon.

For many states, the need to promote their preferred freedom of navigation norms likely did not feature prominently or consistently at senior political and bureaucratic levels. With higher priorities to address, many states' maritime awareness – in terms of attention and capabilities – has been inconsistent. It is entirely conceivable that the US could

[8] Amitai Etzioni, "Freedom of Navigation Assertions: the United States as the World's Policeman,," Armed Forces & Society 7 (2015).
[9] William J Aceves, "The Freedom of Navigation Program: a Study of the Relationship Between Law and Politics," Hastings International and Comparative Law Review 19, no. 2 (1966).

[11] Abdul Rahman; Priyandita Yaacob, Gatra; Laksmi, Sylvia, Southeast Asia's Security Landscape: Lessons for the ADF (Australian Army Research Centre, 2023).

have conducted a FONOP in another country's maritime zones without being noticed (at least, until announcing it or publishing public summaries).

Today, the Indo-Pacific's waters are more crowded than ever. Growing populations call for sustained economic development and states to look further outward to sea for opportunities. There is more competition for resources, more fishing and commercial vessels, and heightened environmental concerns.

There are also more military and coast guard vessels than ever before. China-US naval competition and disputes in the South China Sea and East China Sea have brought the world's attention to contested Indo-Pacific waters. All of this has brought more attention to the US's freedom of navigation program, which in some ways has become a symbol for the US's broader responses to China and its broader advocacy for a rules-based order.

Consequently, Indo-Pacific states have been investing in maritime domain awareness – highlighted by the establishment of Information Fusion Centres in Singapore and India, staffed by navy personnel from various countries who share information to enhance regional maritime awareness. It is also reflected in individual countries' steady investment in military capabilities to help them detect and respond to activities off their coast. [13][14][15]

All of this translates into a perspective shift in the Indo-Pacific. The discourse around freedom of navigation norms is no longer a niche subject confined to expert circles but requires consistent attention from political leaders and senior officials. I saw that shift occur as an official in my country, Australia. As a maritime focused-country, it had deep expertise on the law of the sea issues – but that knowledge tended to rest within expert siloes. As Australia's strategic environment became more heavily dependent on upholding maritime norms, more government officials began engaging with the law of the sea.

Consistency is key
Consistency can be crucial when states are pursuing their international relations. And it's particularly important for a country's stance on international law. If a state claims that foreign navy vessels should seek clearance before conducting exercises in its EEZ but does not consistently articulate that stance or challenge vessels it sees as flouting that rule, then it risks weakening the political and legal strength of its claims. The same risk exists for states that conduct activities off another country's coastline that it would not permit on its own. As more Indo-Pacific leaders become more invested in maritime issues, they may seek to reconcile their claims with their behaviour.

As more states follow this interest with investments of attention and resources, the incentive for consistency between claims and behaviour will grow. Some states may stay the path, maintaining their claims without investing heavily in asserting them. Others may seek to align their claims more closely with global, and particularly US-supported, claims. However, we should not discount the possibility that some Indo-Pacific states may also double down on asserting their freedom of navigation positions more consistently – by challenging foreign ships and aircraft entering their maritime zones and routinely protesting perceived breaches. This option may be appealing to countries whose waters abut contested areas. Likewise, countries such as India, which seeks to discourage China's navy from venturing into its sphere of influence, may seek to retain the ability to permit or deny foreign navies from conducting military manoeuvres in its EEZ.

How would we know if more states were asserting their claims?
Apart from public announcements and changes to legislation, the strongest indicator that Indo-Pacific states are becoming more assertive in defending their freedom of navigation claims would be more frequent or more assertive

[13] https://www.australiandefence.com.au/defence/air/malaysia-s-new-maritime-surveillance-capability-unveiled
https://www.iseas.edu.sg/articles-commentaries/iseas-perspective/2023-96-vietnams-quest-for-enhanced-maritime-domain-awareness-by-bich-tran/
[14] https://www.lowyinstitute.org/the-interpreter/myanmar-s-evolving-maritime-security-landscape
[15] https://www.pmc.gov.au/resources/quad-leaders-summit-2023/indo-pacific-partnership-maritime-domain-awareness#:~:text=Purpose%20of%20IPMDA&text=IPMDA%20harnesses%20innovative%20technology%2C%20such,occurring%20in%20their%20maritime%20zones.

radio challenges to foreign military vessels and aircraft. More frequent diplomatic protests would be a similarly important signal. We cannot assume such interactions would be publicized, and most states would likely prefer to keep it that way.

One indicator we can monitor is changes to, or renewed institutional focus on, the mandates and functions of maritime authorities – especially those related to maritime security coordination bodies. Such bodies are often tasked with reconciling roles and filling gaps between multiple agencies. India recently established a National Maritime Security Coordinator, and its maritime security architecture continues to evolve. Such evolutions throughout the Indo-Pacific are important to watch for what they tell us about coastal state priorities.

Another potential data point is the location of multinational naval exercises, which can indirectly provide insight into how open certain regional waters are. Where countries may once have been comfortable conducting an exercise in an area overlapping with a neighbouring state's EEZ, they may be increasingly cautious to do so for fear of setting precedents for what is allowed in their maritime zones.

Ambiguity can be helpful – to a point
There is nothing inherently wrong with groupings like the Quad or bilateral partners continuing to insert references to their support for freedom of navigation in joint statements. Nor is there an urgent need to reconcile every aspect of the region's divergent positions. Debates over specific aspects of the law of the sea matter – but more important is demonstrating adherence to deeper values that the rules-based order ostensibly represents peaceful management of disputes without coercion and in a way that respects the sovereign agency of all concerned states.

However, in continuing to cite regional support for freedom of navigation, officials must recognize that divergences exist and find ways of constructively addressing them in parallel. Otherwise, they risk setting up unrealistic expectations of cohesion and unhelpful surprise when differences inevitably emerge. The angry Indian public reaction to the U.S. Navy entering India's EEZ to protest aspects of Delhi's maritime claims is an example worth noting: it prompted confusion among strategic commentators, some of whom appeared confused by the U.S.'s motives[16] and demonstrated the potential for such misunderstandings to become irritants in otherwise close and growing relationships.[17] China would quickly seize examples where it perceives states like Australia and the U.S. to criticize Beijing for its freedom of navigation stance but imply agreement with countries like India (whose stance mirrors that of China in key respects).

This ambiguity can also lead to confusion about various countries' intent. It is not uncommon for observers to assume that the US's Freedom of Navigation Operations (FONOPs) in the South China Sea are an attempt to challenge China's sovereignty over contested features[18] – but the law of the sea does not determine who owns what territory. FONOPs typically do not take a stance on which country has rights to what feature but instead are designed to underscore that the international community's right to freedom of navigation should be protected regardless of who 'owns' the feature. Despite this, commentators in regional states may be prone to interpreting FONOPs through the lens of their own country's assumptions and claims. If they would interpret a FONOP off their coastline as an affront to their sovereignty, they may be prone to assuming Washington's intent when conducting FONOPs in contested waters reflects that intent.

Recommendations
If countries like Australia are not consistently monitoring these developments, they should be. Though our consciousness of the maritime domain is growing, there is more room to break down silos between maritime law experts and the broader defence and foreign affairs community tasked with advocating Australia's preferred norms. Though

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[17] Find reference that both shows the US and India 'agree' on FON, and a good citation for the FON.

Canberra's support for programs in which legal scholars provide training and convene discussions on the law of the sea abroad is laudable, it might consider placing similar emphasis on developing similar awareness within its bureaucracy. After all, it is difficult for a diplomat without the law of the sea expertise to uphold the rules-based order if they don't have a clear sense of what Australia thinks the rules are.

The US and Australia might also think more carefully about advocating for freedom of navigation norms. As the 2021 controversy in India showed, the range of people paying close attention to these developments has expanded beyond narrow law of the sea experts to broader audiences, including journalists, strategic commentators and interested citizens. These groups can potentially help or hinder deeper relations with counterpart states. To a non-expert, a foreign naval vessel entering an EEZ without clearance may sound indistinguishable from the concept of a foreign vessel entering another country's territory. Without careful communication, this could exacerbate sensitivities fuelled by historical experiences of colonialism and gunboat diplomacy. If a FONOP is perceived to be the manifestation of power projection and bullying, then it becomes easier for observers to suggest FONOPs are an affront to the rules-based order, not a symbol of it. Finding more effective means of communicating the US's position tailored to specific cultural and political audiences could be helpful.

Many states will be reluctant to engage in diplomatic initiatives that could be seen to re-open the United Nations Convention on the Law of the Sea for negotiation; they should take heed of Sri Lankan Prime Minister Dr Ranil Wickremesinghe's call for greater consensus building on freedom of navigation in South Asia. It is a reminder that there are natural limits to agreeing on broad principles without addressing the divergencies beneath them. More than that, it may be an opportunity for the Indo-Pacific to demonstrate that states can manage their differences constructively without coercion or damaging their broader relationships. That is, after all, the essence of the rules-based order we would like to see in our neighbourhoods.

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PANELIST

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The declared core philosophy central to the Indo-Pacific strategy (IPS), which is the open, free Indo-Pacific in which a rules-based order prevails, is naturally attractive to most countries in the region, both developed and developing, Including Sri Lanka. These laudable and widely shared norms are supposed to promote and protect common security, democratic, and sovereign agency of the many while hopefully also helping to create level playing situations. IPS also promotes useful, sectoral work in the maritime security domain, cooperation in IUU fishing, disasters and transnational threats. However, whether the core philosophy's objective and principles it espouses have been matched in state practice, whose and what rules one is talking about, the absence of an internationally agreed order, how equitably accessible the freedom of navigation is, and how open the powers that be in the IPS realm for enlightened international cooperation as against zero-sum contestations, are all questions that remain in the realm of controversy and debate.

Any discussion of The IPS impact, whether you evaluate it in terms of the response from the countries of the region or in terms of the interest of the IPS advocacy countries, such discussion cannot proceed without reckoning with the increasingly adversarial contestation between China and the United States, sometimes along with US Allies. How the Indian Ocean states, the littorals in particular, perceive and respond to the IPS has become a function of the success or failure of these countries to maintain an equilibrium in their relations with these two powers.

In the case of Sri Lanka's economic recovery, the U.S. Assistant Secretary of State, Donald Lu, recently described the progress made by Sri Lanka as the greatest comeback story of recent times. He stated that under IPS auspices, India, Japan, France, and the U.S. coordinated action to help Sri Lanka, and it was the IPS coordination that eventually persuaded China to join the IMF pathway for the recovery process. From the beginning, China's relevance in the IPS has remained clear and precise? US senior officials in different fora have maintained what they call the consequential relationship, with China being a central element of IPS.

In this context, several complex and wide-ranging responses have been elicited and debated in academic and analytical realms in the last several years.

- Firstly, those who reacted positively to working with the IPS as an alliance or a framework, which is the US-led Western and Asian alliance, were concerned about the US's declining interest in the Pacific and rising China coupled with associated power rivalry.

- Secondly, those who reacted negatively, characterizing the IPS as a superimposing or trans-positioning of the Euro-Atlantic Cold War model, of some kind of adversarial contestation in economic and security domains accompanied by the inevitable arms race into the Asia Pacific region. The IPS was claimed to be a kind of euphemism designed to contain China's sovereign right to achieve its economic and strategic success, exploiting its competitive and comparative advantages. While China, Russia and North Korea, with varying nuances, appear to be primarily associated with this group of negative reactions to IPS, several countries in the global South looking to exploit China's economic and technological outreach found these postures resonating with them.

- Thirdly are the countries that can be described as having mixed feelings about the IPS's impact on security, stability, prosperity and the right to self-determination of regional countries. While these states accept and indeed value and even promote the sanctity of the IPS goals, such as an open, free and rules-based order where freedom of navigation is assured, they have hesitated to accept all those positive and negative ideologies about it claimed by the two contender groups above. They represent the large majority and potential of the emerging markets and production capacities, especially ASEAN and many developing economies, including Sri Lanka. Although IPS's major players continue to reiterate what is known as the ASEAN centrality

to the IPS success, ASEAN, too, continues to express concern and even reservations about the adversarial drift in the IPS wake and the dangers of militarization, nuclear proliferation concerns in a region where ten ASEAN countries have declared a nuclear weapon free zone.

In these groupings in the IPS, India brings to the table a unique set of credentials and corresponding nuances in its approach to IPS. As the largest democracy and the only one that is enjoying a consistently robust growth rate and having acquired indigenously developed nuclear and space capability, India, with its well-advanced strategic partnership with the US, obviously has a significant interest in IPS goals and would undoubtedly like to advance the agency it has in the IPS. This is also a counterbalance to aggressive power projections of China, the country with which India shares a long and very tense border.

India also has strategic initiatives such as SAGAR, Neighborhood First Policy, and an impressive inventory of complex defence technology military partnerships with both the advocates of the IPS and its opponents, such as Russia. India has an interesting binary and emphasizes that its strategic partnership with the US is not a military alignment against any country, including China, dictated by India's strategic autonomy and national interest. Staying out of AUKUS, leaving open space for working with China on issues ranging from climate change, and economic matters to conflict prevention, is a complex and nuanced approach of India.

The evolving situation in the Indo-Pacific has a complex contrast, and it is pretty evident that the IPS touches important centres of wealth and power, offering promise for cooperation to many emerging markets and developing countries in the region. The region has achieved phenomenal growth and wealth creation, yet it faces formidable challenges of sustainability and wealth distribution; also, a visible abundance of prosperity is confronted by security challenges with flash points and choke points remaining. Many countries, Sri Lanka included, don't want to be clustered onto the side of any power since they want to benefit from all sides to ensure the well-being of their people.

PANELIST

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As for the Pacific Strategy and its implications on the Indian Ocean Community, there is a view that it is an initiative by the United States to maintain its global hegemony, from military alliances to exclusive economic and trade groups, which has seriously affected the political situation and strategic stability and to a certain extent, and has a destructive effect on the global supply chain, disrupting normal economic and trade cooperation in the region. Over the past few years, people in most countries in the region have come to a clear understanding of the Indo Pacific strategy.

The Indo Pacific strategy has stimulated strategic opportunism of a few states in the Asia Pacific and the Indian Ocean region. Some attempt to contain China while promoting the transfer of regional industrial and supply chains to their own countries, thereby achieving their economic takeoff and rise to power. These states have hidden ambitions for strategic opportunity.

The Indian Ocean is an integral part of the IPS. Since its implementation, it has seriously disrupted the economic and social development of the region. Overall, the Indian Ocean Region is stretching resources and has a large population, but its economic and social development is relatively backward. Certain countries have severe problems with their economic structure, and their economies often fall into cyclical turbulence. For example, in the past three years, due to the interest rate increase of the Federal Reserve and the conflict between Russia and Ukraine, many economies in the in the Indian Ocean Region have been facing a crisis in economic and social governance.

The regional countries lack funding, technological capacity and know-how to support the development of their economies. China initiated the BRI in South Asia and the Indian Ocean countries to support their infrastructure development. Regional countries face many non-traditional security issues, such as piracy, coastal erosion, ocean pollution, and climate change. The rising sea level is a severe problem for smaller states such as Maldives. Regarding economic development, there is a lack of coordination among regional states. Intra-trade accounts for only about seven per cent of the total trade volume of the countries in the region, and conflicts exist between states.

There are many regional cooperation organizations in the region, but they cannot solve these problems. Many regional cooperative mechanisms have significant exclusivity and geopolitical implications. Observation is that the development of the economy in the Indian Ocean Region requires the introduction of external resources beyond the region, not just funding but also technology and knowledge.

Geopolitical competition is the most severe challenge and threat to regional economic development. So, how do we promote peace, stability and development in the Indian Ocean region? The IOR is an international common except for the inland waters and exclusive economic zones of coastal countries. The Indian Ocean is the most important global energy and trade route. As the global economic gravity shifts towards the Asia Pacific region, the importance of the Indian Ocean sea routes will further increase. The Indian Ocean economy is a part of the global economy, and the rise and fall of this will have an impact on the global economy. Regional peace and sustainability are prerequisites for the development and cooperation of the economy. States in the Indian Ocean region should unite to reject geopolitical competition and use that focus on geo-economic cooperation. Similarly, the Indian Ocean coastal countries should unite to establish an open, inclusive, equal and democratic regional security architecture and reject exclusive military groups and cooperation in the Indian Ocean region, which can begin from non-traditional security. China will continue to promote cooperation with countries in the IOR by fostering economic and social development.

OPEN FLOOR DISCUSSION

- The question focused on the challenge faced by littoral states like Sri Lanka to maintain equilibrium between nations engaged in power rivalry (US, China, and India) while pursuing economic development. The response emphasized the difficulty for countries like Sri Lanka to stay out of power rivalries whilst aiming to maintain commercial, non-strategic relationships with major powers to avoid being perceived as aligning with any military power. Singapore's approach of not being on the wrong side of a power rivalry was cited as an example. It was also emphasized that Sri Lanka seeks to avoid security or military alliances and maintain sovereignty. Strategic challenges for Sri Lanka with the increasing presence of China and India in the Indian Ocean were highlighted, and a suggestion was made that Sri Lanka should return to its traditional foreign policy of non-alignment and neutrality to maintain sovereignty. The need for Sri Lanka to balance relationships with significant powers while avoiding pressure to take sides and to be allowed space to navigate its strategic dilemmas independently was underscored.

- The South China Sea issue and freedom of navigation being stable despite territorial disputes were mentioned, emphasizing China's non-interference policy and the importance of maritime cooperation for Sri Lanka's development. Although territorial sovereignty disputes exist between China and other coastal countries, it was pointed out that the overall situation in the South China Sea remains stable for exercising freedom of navigation. The South China Sea was described as the lifeline of China's maritime trade, which is why it does not allow any obstacles to the freedom and security of navigation concerning the directional navigation rights that countries enjoy in accordance with international law. It was, however, noted that China firmly rejects any countries' provocation and threat against Chinese sovereignty and security in the name of freedom of navigation.

- It is recommended that Sri Lanka maintain good relations with India due to its proximity and influence and advocate a balanced foreign policy similar to Bangladesh, which maintains good relations with India and China. Sri Lanka was encouraged to leverage ocean resources and build maritime research capabilities with international collaboration. It was highlighted that in recent years, China and Sri Lanka have collaborated on joint scientific research and maritime cooperation, with China providing technical equipment, sharing research outcomes and providing expert training for Sri Lanka, which was encouraged to build its capacity by strengthening scientific research capabilities which require collaboration with other countries in the region and beyond.

- Sri Lanka has been often forced into a zero-sum situation, and other states must respect Sri Lanka's neutrality. All interlocutors with Sri Lanka must understand the challenges faced by the country and help Sri Lanka navigate the dilemma without putting too much pressure on the government to take sides. There is a belief that Sri Lanka has acted maturely in the past and can manage such dilemmas. Therefore, more space should be given to navigate this terrain.

UNDERWATER DOMAIN AWARENESS (UDA): SECURITY AND ECONOMIC DIMENSTIONS

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Introduction

Maritime Domain Awareness (MDA), as defined by the International Maritime Organization (IMO), is the effective understanding of anything associated with the maritime domain that could impact the security, safety, economy, or environment. The maritime domain is defined as all areas and things of, on, under, relating to, adjacent to, or bordering on a sea, ocean, or other navigable waterways, including all maritime-related activities, infrastructure, people, cargo, vessels and other conveyances. As part of the MDA infrastructure, the technical committee of the IMO introduced the Automated Identification System (AIS), which monitors the movement of merchant vessels that connect the global commons.

The MDA picked up massive momentum after the 9/11 incident in the United States (US). The US establishment made it a top priority to maximize the MDA and it became an integral part of their global war against terror. AIS was made compulsory onboard all seagoing vessels above 300 tons, and all kinds of data analytics were encouraged to build intelligence to monitor any suspicious movement of vessels at sea. In the Indian Ocean Region (IOR), the 26/11 incident became a trigger, and the Indian authorities, guided by their naval forces, established massive infrastructure to build enhanced MDA. They went all-out to get international support to build their Information Management and Analysis Center (IMAC) at Gurugram, near Delhi. The IMAC was extended to the Information Fusion Center – Indian Ocean Region (IFC-IOR) to provide MDA for the entire IOR with multiple partner nations from the region, deputing Liaison officers to exchange information seamlessly. The IMAC became a formidable instrument to monitor piracy and maritime terror.

The conventional MDA, globally, remained an event-driven and security-driven formulation. The most significant limitation has been that it has remained on the surface, with the least visible underwater component. It may be noted that most of the resources and threats originate in the underwater domain, and such myopic appreciation of the MDA is highly disturbing. The security-driven formulation always limits the resources available from the security budget. Security establishments are highly sensitive to data sharing, so other stakeholders find it hard to participate in a whole-nation approach. It may also be pointed out that acoustics is the most effective means for Underwater Domain Awareness (UDA), and we hardly see acoustic capacity & capability building in the larger MDA initiative.

The maximum UDA efforts happened during the Cold War era, and the two superpowers could build massive amounts of technology & know-how largely driven by their military establishments. Unquestioned budget allocation was possible, and no regulatory restrictions were put on defence projects. However, post-Cold War period, even in the US, most of their mega defence projects got shut down because of lack of funds and defence projects were asked to submit Environment Impact Statements (EIS). Point Sur Naval Facility was shut down, the Sound Surveillance System (SOSUS) was drastically reduced in size and reach, Surveillance Towed Array Sensor System-Low Frequency Active (SURTASS-LFA) was forced to submit EIS and many more such examples are there to justify the changing geopolitical realities.

Given their socio-economic and socio-political priorities, the Global South cannot afford to invest in strategic security projects. The post-pandemic era has even worsened their situation. The vast Blue Economic opportunities are waiting to be exploited; however, the lack of UDA has not allowed us to venture there. If allowed a free hand, the extra-regional powers will destroy the ecosystem to an irreversible level. Climate change risk management is already a major concern. The multiple and frequent extreme weather events originating from oceans are only the tip of the iceberg. Still, the concern is that all our future development plans will be in jeopardy. Massive blue economic opportunities like fisheries & aquaculture, minerals and connectivity are waiting to be exploited; however, sustainability is critical.

Indian Ocean Region (IOR)

The global community has identified the Indo-Pacific strategic space as the de-facto arena for power play. More and more extra-regional powers are deploying their strategic assets in the region, often leading to confrontation with the local powers. The changing global order from a unipolar to a multipolar construct is causing serious geostrategic and geoeconomic confrontations. The region's small and developing nations have traditionally depended on the extra-regional powers for strategic support on multiple counts. It is a complex interplay of geopolitics, geoeconomics and geostrategy. It is important to note that the Indo-Pacific, by definition, covers the tropical waters of the Indian and Pacific Oceans.

The tropical waters present unique characteristics in terms of rich bio-diversity and also massive amounts of underwater minerals that can contribute to unimaginable economic growth and prosperity for the human race. However, the tropical waters are also known for sub-optimal Sonar performance for any kind of UDA effort. Performance degradation is at an order of 60%, making any imported technology without customization redundant. The UDA effort during the Cold War era was in the temperate and polar waters around Greenland, Iceland & United Kingdom (GIUK) gap. This is a major limitation when we look at the West-driven UDA across the world. Here, the West refers to the North Atlantic Treaty Organization (NATO), led by the US. These powers invested heavily during the Cold War period in UDA and could significantly contain the uncertainties of the underwater domain to enhance sonar performance in the GIUK gap. Now, they are in an overdrive to maximize their Return on Investment (ROI) by pushing this hardware to the developing world in the Indo-Pacific at a very high cost. The demographics do not allow them to deploy human resources to customize their products for the local tropical conditions.

The West ensured that the regional players always remained fragmented and disorganized to take advantage of the vast tropical resources. They kept them dependent on any strategic capability in spite of being a tropical paradise. The security bogey was always played to distract them from focusing on developing indigenous capabilities. The non-state actors were encouraged and supported to ensure a volatile security environment and fragmented geopolitical reality. Governance mechanisms remained pre-modern, with myopic attempts at day-to-day firefighting, bereft of long-term planning and strategic thinking. Sovereign nations were kept hostage to the great power rivalry rather than allowing them to build strategic capabilities. Blue economy has remained an alien term for small island nations surrounded by the Oceans.

The confrontation between the US and China has become an ugly example of great power rivalry at the cost of the world's well-being. The Pacific part of the Indo-Pacific has become a war zone with regular aggression from both sides. There are repeated attempts from both sides to undermine established rules of engagement, leading to flare-ups that impact international trade and commerce. The Indo part of the Indo-Pacific has a better chance for the regional players to collaborate and work on pilot projects for enhanced UDA. The IOR is considered relatively neutral, where global players can invest in building governance mechanisms and climate-resilient models. A sustainable blue economy has a better chance of being tried and established in the IOR. India is emerging as a global power with sound democratic values and a massive talent pool of young aspirational population. The government of India also backs up the maritime outlook with massive policy announcements, such as the Security and Growth for All in the Region (SAGAR) vision. The SAGAR vision is complemented by mega projects to support maritime capacity & capability building at an unprecedented scale. These mega projects include Sagarmala, Inland Water Transport, Gati Shakti, Digital India, Skill India and more.

The IOR also boasts of a rich maritime heritage of a few centuries. The entire sub-continent was well known for its maritime capacity & capabilities. The traditional knowledge and practices ensured economic progress and the seagoing abilities of an exceptional order. The pre-industrial era saw maritime know-how being transferred to the West from these regions. Their ability to manage the tropical waters and thrive was unprecedented; however, the subjugation by the European powers in the last few centuries has undermined this local expertise. There is a strong case to map the modern tools onto the traditional knowledge & practices to build sustainable blue economy and strong strategic security measures.

INDIAN OCEAN REGION (IOR)

PACIFIC OCEAN

INDIAN OCEAN

Indo-Pacific space

Indo-Pacific by definition is the Tropical Waters of the Indian and Pacific Ocean.

The **Indo-Pacific** strategic space is identified as the **de-facto arena** for power play by the Global community.

IT IS A COMPLEX INTERPLAY OF

GEOPOLITICS

GEOECONOMICS

GEOSTRATEGY

THE TROPICAL WATERS HAS

UNIQUE CHARACTERISTICS

RICH BIO-DIVERSITY

UNDERWATER MINERALS

This can contribute to unimaginable economic growth and prosperity for the human race.

NATO invested heavily during the Cold War period on **UDA**

They reduced underwater uncertainties to boost sonar performance in the **GIUK gap**.

Now they are in a overdrive to maximise their **Return on Investment (ROI)**, by pushing these hardware to the developing world in the Indo-Pacific at **Very High Cost**.

Demographics prevent them from deploying human resources to tailor products for local tropical conditions.

GIUK GAP

ATLANTIC OCEAN

PACIFIC OCEAN

NATO Member Countries

THE WEST ENSURED THAT THE REGIONAL PLAYERS -

Always remained **Fragmented** & **Unorganized.**

They kept them **dependent** for any strategic capability, inspite of being a tropical paradise.

The **Non-State Actors** were encouraged and supported to make sure a **Volatile Security Environment** and **Fragmented Geopolitical Reality**.

Sovereign nations were kept **hostage** to the great power rivalry, rather than allowing them to build **strategic capabilities**.

Blue Economy has remained an alien term for **Small Island Nations** surrounded by the Oceans.

The great power rivalry between the **US** and **China** at the cost of well-being of the entire universe.

Underwater Domain Awareness (UDA) globally

The true realization of the UDA requires an institutionalized framework to ensure nuanced policy & technology interventions along with acoustic capacity & capability building across the stakeholders. The four stakeholders include strategic security, blue economy, sustainability & climate change risk management and science & technology. All these stakeholders need to work towards pooling resources and synergizing their efforts for building effective UDA. Let us look at how the UDA has evolved globally over the last century.

The Titanic disaster of April 1912 could be considered the first major warning for lack of UDA. However, it was only the military requirement during the Cold War era that led to massive mobilization of funds, scientific investigation, academia, policy support and more. The first nuclear submarine Nautilus was planned for launch in 1952 and being a strategic submarine, the Scripps Institution of Oceanography initiated a Snapping Shrimp mapping of the entire world. This was a massive effort at a time when the ecosystem was still evolving in terms of the associate technologies like sensors, data acquisition systems, computational infrastructure and more. The team had to almost start from scratch. Their findings revealed that the Snapping Shrimps' habitat is the tropical waters. Their vocalization overlaps with the submarine passive sonar spectrum, and the intensity is loud enough to swamp the sonar. Strategic submarine deployments received significant input from such studies; however, these studies also gave humankind enough input on tropical ecosystems and shrimp behaviour. Recent studies undertaken by our team revealed that there are 14 subspecies of Snapping Shrimps in the IOR, and each of these subspecies has its unique vocalization triggered by varied factors.

The Sound Surveillance System (SOSUS) was the first major Cold War era infrastructure to collect continuous underwater data for monitoring Russian Submarines threatening US interests. It was a massive underwater sensor network that monitored large areas continuously. In the early sixties, the naval personnel monitoring the recordings reported eerie sounds that led to the naval leadership reaching out to a marine biologist at the academia for investigation. Roger Payne revealed that the eerie sound was from a humpback whale singing. A top-secret naval project was opened up for collaboration with academia, and the data was utilized to understand marine mammal behaviour in the wild. It was a significant milestone for UDA, far beyond the military applications. Towards the later part of the Cold War period, the SOSUS data was shared with academia to undertake studies on varied aspects of the UDA.

The post-Cold War period saw a massive backlash against the military establishments on multiple counts. The funding was challenged, the environmental degradations due to military projects were scrutinized, and the exclusive military infrastructure was questioned. The collaborative approach was established with academia leading the way. Towards the end of the last century, the US strategic community realized that the Chinese had developed massive submarine capabilities that could threaten their hegemon. They knew that the Chinese had developed submarine capabilities that could threaten their interests in the tropical waters of the South China Sea (SCS) and the East China Sea (ECS). The Office of Naval Research (ONR) commissioned the University of Washington and five other universities in the US to initiate what was called ASIAEX in the year 2000. The ASIAEX was a massive Shallow Water Acoustic Measurement (SWAM) exercise to build effective UDA in the tropical waters of the SCS and ECS. The project's first phase comprised Modelling & Simulation (M&S), which the six US universities undertook on their own; however, in the second phase, which involved field experimental validation, they sought the involvement of local partners. Academia from China, Hong Kong, Taiwan and others participated, along with the six from the US. The entire SWAMs under ASIAEX continued for four years, and a massive amount of underwater data was collected for enhanced UDA. The US Navy followed the ASIAEX and made it an institutionalized UDA initiative. They regularly deployed underwater drones and acoustic arrays in the SCS & ECS

The covert US agenda was known to the Chinese, but they joined to learn and build their program. In 2015, the Chinese announced what was referred to as the "Under Water Great Wall" (UGW) Project. This was a massive underwater lab for developing sensors and network protocols. Experts believe such a mega project requires at least two decades of work. The announcement of the UGW was followed by belligerence by the Chinese on multiple fronts. They captured

a US drone launched from USS Bowditch (T-AGS-62) in 2016 and challenged the US deployment of such a drone in the SCS for data collection. This was followed by the US confronting the US naval fleet in the SCS and preventing them from undertaking their so-called Freedom of Navigation voyages. The Chinese have been systematically undertaking massive research engagements in the IOR as well. In 2018, the Chinese were known to have conducted 24 such sailings in IOR compared to 26 by the other six nations, including the US, France, India and others.

The MH-370 search became another major geopolitical event for UDA. The Malaysian Airline had over 95% Chinese passengers onboard; however, the West tasked the Australians to lead the search in the Southern Indian Ocean. The entire global effort was supported by the West to deploy Autonomous Underwater Vehicles (AUVs) at a massive scale. The AUV deployment was preceded by the development of underwater charts with the requisite resolution. This task took over a year before the actual search could be initiated. It also indicates the importance and nuances of the UDA initiative on a global scale.

Acoustic capacity & capability building

The UDA initiative has to be primarily supported by acoustic capacity & capability building. This will entail Modelling & Simulation (M&S) backed by field experimental validation. The term SWAMs is used more often in tropical waters because such waters acoustically behave like shallow, irrespective of the actual depth of the water column. The depth of the axis determines the acoustic behaviour, and the refraction of the sound propagation around the axis ensures the concentration of the acoustic energy. The depth of the sound axis near the poles is 50 meters, compared to the equator, where it is 2000 meters. The hypsometric definition of shallow vs deep is based on the continental shelf, which extends up to 200 nautical miles, and the depth at the edge is 200 meters. So, anything above 200 nautical miles is considered deep and below is referred to as shallow, as per the hypsometric definition. In the temperate and polar regions, the hypsometric and acoustic definitions gave identical results. However, in the entirety of tropical waters, they are characterized by multiple interactions with the two boundaries, namely the surface and the bottom, carrying all their fluctuations. This leads to significant deterioration of the source signal when recorded at the receiver.

Acoustic capacity & capability building from a signal processing perspective will mean modelling the acoustic propagation for simulating the underwater channel characteristics and the ambient noise mapping to compute the Signal to Noise Ratio (SNR). Once these models are built and their efficacy established, we can simulate all kinds of scenarios across spatial and temporal scales. Field experimental data collection is highly resource-intensive and should only be used to validate these models. The models are typically fed with real-time data from the above water sources that are easily accessible. The acoustic propagation model is generated using mathematical models with boundary conditions that solve the typical wave equation. The Greens Function has been used with multiple variations. In temperate or polar waters, the Ray Theory worked well, which is far simpler and easily implementable; however, in tropical waters, the higher frequencies are attenuated significantly, so the low-frequency models need wave theory solutions. The acoustic propagation is impacted mainly by the underwater parameters, namely temperature, salinity, depth, bottom type, bottom profile and more. These parameters are now available online in real-time and can be fed to a Parabolic Equation (PE) based model for computing the underwater channel output. Ambient noise mapping depends on the spectrum of the application. The low frequency below 1 kHz is predominantly distant noise, and the spectral band from 3 to 15 kHz is based on wind. Biological noise from varied marine species is spread across the entire band. The source noise has to propagate across the underwater channel and get modified based on the channel conditions to be characterized as ambient noise at the receiver.

Acoustic characterization across applications has to be evaluated based on the Source-Path-Receiver model. The source signal based on the application needs to be characterized in terms of amplitude, frequency and phase. The source signals must be passed through the acoustic propagation model between the source & receiver location. Then, the output of the underwater channel model has to compete with the ambient noise to be recorded at the receiver. The pre-processing at the receiver has to clean the received signal and attempt to make it as close to the original source signal as possible.

A critical dimension of experimental validation is the infrastructure requirement and the software capabilities. To see, understand, and share is a three-step formulation to manage the entire field of experimental validation. To see is the sensor and the platform that will carry the sensors to the desired location. The sensors must be of appropriate specifications to truthfully record the source signal. The platform will include surface vs sub-surface, manned vs unmanned, automated vs manual vessels with adequate manoeuvrability. Autonomous Underwater Vehicles (AUVs) with mind-boggling variations are now available in the market, but customization to the application-specific requirement is highly critical. Understanding translates to pre-processing, processing and post-processing to make the acquired data provide actionable inputs. The tropical distortions, both in terms of the propagation and ambient noise, need to be mitigated. Then, high-end signal processing algorithms will process the clean signal based on the application requirements. Post-processing will mean undertaking specific corrective actions to compensate for the errors due to recording and processing. Sharing will require making the actionable inputs available to the user in real-time and in a user-friendly format. There are smart displays and even handheld devices that can present the inputs. User-specific inputs and application-specific information must be understood and provided. The users may include policy makers at the apex level stakeholders at the mid-level, who need actional inputs in real time and then the associated eco-system components that can provide the right kind of tools.

Digital transformation & Marine Spatial Planning (MSP)

Digital transformation has become the de-facto governance tool across any domain. The global community has recognized Marine Spatial Planning (MSP) as a critical Ocean Governance tool. The MSP is a manifestation of the digital transformation in the maritime domain. This being the Decade of the Ocean Sciences for Sustainable Development, declared by the United Nations, the MSP has been declared the governance tool to manage the water bodies. The UN's Intergovernmental Ocean Commission (IOC) is working towards making MSP a universally accepted governance mechanism.

MSP is the spatio-temporal mapping of real-time resources, threats, climate change risk assessment and sustainability concerns to effectively achieve economic, ecological and social objectives through governance mechanisms. The scale of the spatio-temporal mapping should be significant enough to account for the statistically meaningful analysis. Digital Twin is also a term for MSP across the marine and freshwater systems. The input parameters that impact the underwater scenario need to be sourced, and the processing should be computationally fast enough to provide real-time output.

Multiple versions of MSP are propagated by varied entities across the scientific and corporate communities. We often encounter a hardware-intensive MSP realization, where sensors are deployed based on their effective range to cover a particular spatial area. Tropical waters with a known sub-optimal sensor range could mean deploying many sensors to cover a particular area. This approach will result in massive resource deployment, sometimes making the entire project unviable. The global south may be unable to afford such a resource-intensive approach. At times, the West also deliberately advocate such an approach to push their hardware to maximize their Return on Investment (ROI) at the cost of severe economic hardship for the developing nations.

The advancement in high-end data analytics and modelling techniques allows us to use an alternate, cost-effective and efficient approach regarding resource deployments. Modelling & Simulation (M&S) are undertaken first to build the MSP using land-based data, and then only select locations are identified for field experimental validation. Sensor deployment can validate multiple MSP applications given the same spectral range and spatial locations. We will explain this approach using a specific example in tropical waters.

The low-frequency ambient noise (below 1 kHz) is an important input for the assessment of Acoustic Habitat Degradation causing the stranding of big whales and the deployment of passive sonars to detect submarines in the region. The low-frequency ambient noise is predominantly due to shipping traffic. With the increasing shipping traffic, this ambient noise component has been increasing at an alarming rate of 3 dB per decade since 1950 (accurate data is available from two global locations). The Automatic Identification System (AIS) details the shipping traffic in any region. The Classification Society database can provide us with inputs on the machinery details onboard the specific ships identified from the AIS. Combining these two land-based databases and using signal processing algorithms, we can compute the Underwater Radiated Noise (URN) from the ships in the region. The entire IOR has been divided into grids of 1x1 latitude/longitude, and the URN at the source has been computed. The underwater acoustic propagation for the same instant is computed using another algorithm using real-time underwater channel parameters like temperature, salinity, bottom type & bottom profile and many more. The Source and the Path inputs are combined to generate the realistic MSP for low-frequency ambient noise. Figure 1 below provides the low-frequency ambient noise map for the IOR. This map shows an average of four years of data up to 2015.
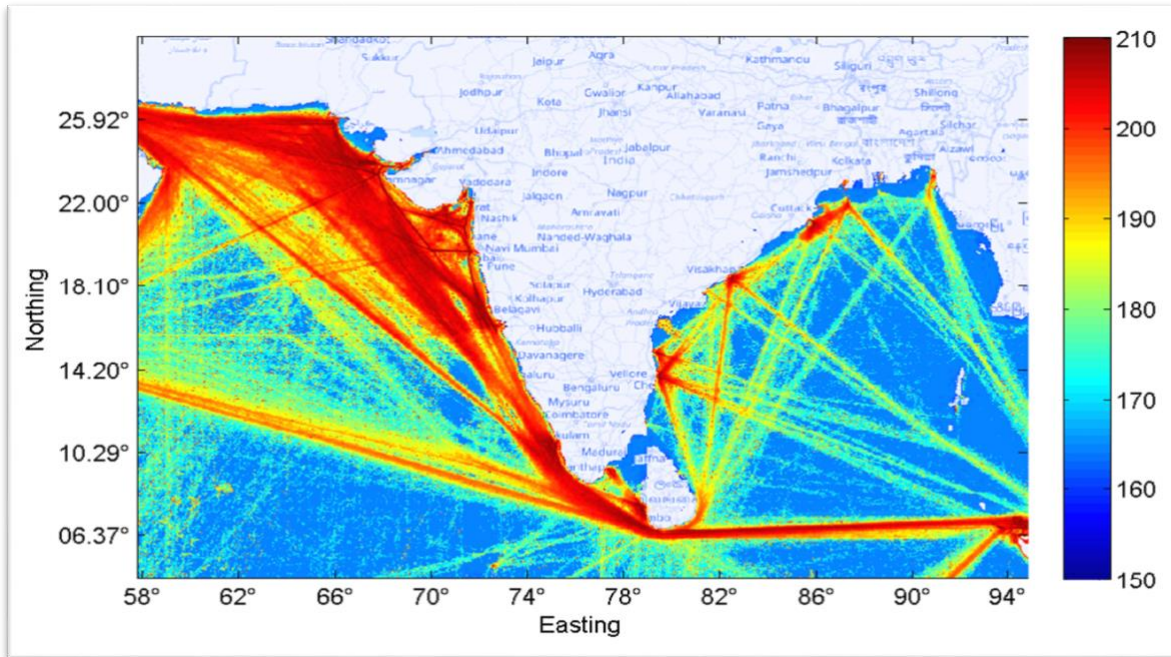
Figure-1 MSP for Underwater Noise due to Shipping Traffic in the IOR.

The field experimental sensor validation must be done at select locations with critical outputs based on the intensity value and fluctuations. A couple of iterations of the field validation and fine-tuning of the algorithms will provide us with an MSP model that will give near-accurate output. Such an approach will be unimaginably cost-effective and provide infinite resolution and data across the spatial and temporal scales of past and future using Artificial Intelligence (AI) tools. Unimaginable dimensions of the applications can be analyzed across sectors. The same template can be used across varied applications and locations for marine and freshwater systems.

Conclusion & way ahead

The Underwater Domain Awareness (UDA) framework proposed by the Maritime Research Center (MRC) and M/S NirDhwani Technology Pvt. Ltd. (NDT) is a structured, comprehensive and inclusive concept for safe, secure, sustainable growth for all in the tropical waters of the IOR and beyond. Figure 2 provides a schematic representation of the UDA framework. The underlying requirement for all the stakeholders is to know the developments in the undersea domain, make sense of them, and then respond effectively and efficiently to them before they take the shape of an event.
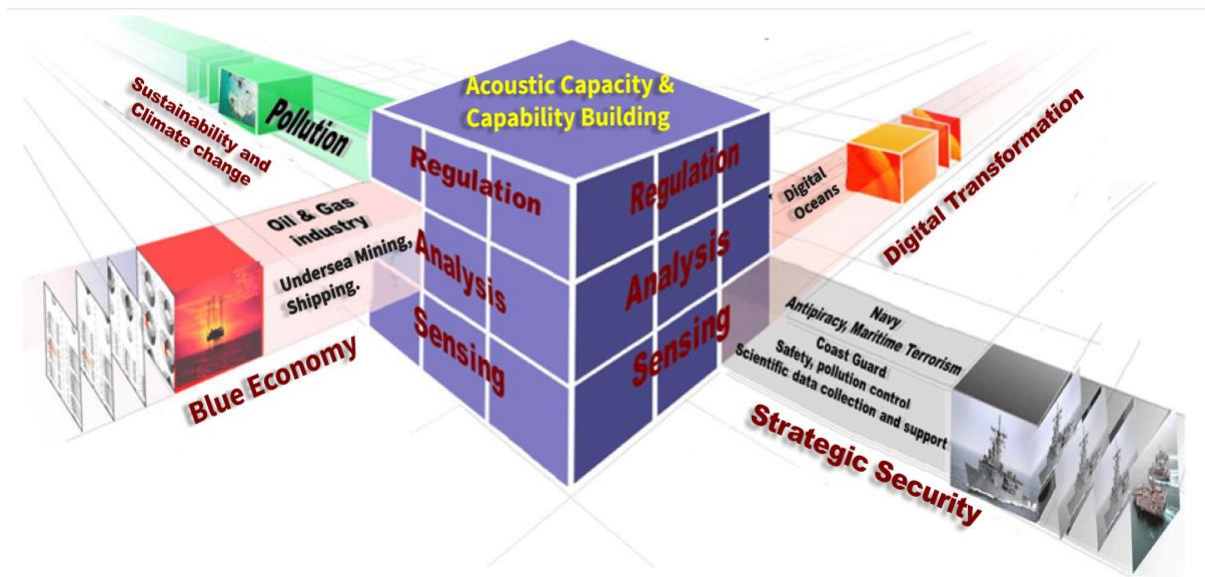
Figure 2 Schematic Representation of the UDA Framework

The UDA framework must be understood in its horizontal and vertical construct on a comprehensive scale. The horizontal construct would be the resource availability in terms of technology, infrastructure, capacity and capability, specific to the stakeholders or otherwise. The stakeholders represented by the four faces of the cube will have their particular requirements. However, the core will retain the acoustic capacity and capability. The vertical construct is the hierarchy of establishing a comprehensive UDA. The first level, or the ground level, would be sensing the underwater domain for threats, resources, and activities. The second level would be making sense of the data generated to plan security strategies, conservation plans and resource utilization plans. The next level would be formulating and monitoring local, national, and global regulatory frameworks.

The figure above provides a comprehensive way for stakeholders to engage and interact. The individual cubes represent specific aspects that need to be addressed. The User-academic-industry partnership can be seamlessly formulated based on user requirements, academic inputs, and the industry interface represented by the specific cube. It will enable a more focused approach and structured interactive framework. Given the appropriate impetus, the UDA framework can address multiple challenges the global community faces today. Meaningful engagement for the students & young professionals is probably the most critical aspect that deserves attention. Multi-disciplinary and multi-functional entities can interact and contribute to synergize their efforts towards a larger goal.

The smaller cubes also represent the projects in which the students and young professionals can participate. The vast demographic bulge and the aspirational young population need to be given meaningful engagement as a career option. The formulation and execution of these projects will make them more employable by allowing them to be directly involved in real-world problem-solving. The coastal & riverine communities will be able to benefit directly from this digital transformation. The financial institutions can lend to these communities for their traditional professions and make them prosperous in their location. Migration for jobs will be minimized, and ownership of the local ecosystem will encourage sustainable growth.

The regional nations collaborating to build sustainable blue economic modules will minimize geopolitical fragmentation. The seamless synergy among these nations for economic growth and prosperity will further minimize strategic security confrontations. The non-state actors will find less support from nation-states. Thus, the unnecessary spending on Western military hardware will be reduced. The strategic investment in a sustainable blue economy and enhanced

governance through digital transformation will allow peace and prosperity. The extra-regional powers will find it hard to push their vested interest at the cost of the local well-being.

The way forward will be a three-step formulation.

Outreach -The stakeholders, policymakers, practitioners, and the general public need to be sensitized to the nuances of the UDA framework. Workshops, seminars, roundtables, and many more short-exposure events will be required. Some of these have to be generic initially, and then more user-specific interactions are needed to identify the gaps.

Engage -The outreach must be followed by engagement at multiple levels. The policymakers will have to deliberate on the policy gaps to develop specific outlines of the UDA framework. Multiple line ministries and other coordination ministries must come together to build a new framework that will sync with contemporary realities. The stakeholders need to participate in this new frontier of human endeavour. They must develop their internal systems to keep pace with the changing opportunities. The students and young professionals must acquire the requisite skills and knowledge for this transformation. Multi-disciplinary research and innovation must be encouraged in academia and research institutes. Internships and fellowships must be announced to support meaningful engagement by the students and young professionals.

Sustain -The policy & technology interventions, along with acoustic capacity & capability building, will require massive efforts in medium-term and long-term projects to sustain this initiative and build momentum. Research projects, innovative entrepreneurial ventures, computational infrastructures, field experimental deployments, policy frameworks and multiple other efforts will have to be started to build a balanced and seamless ecosystem to sustain this new initiative. Stakeholders, venture capitalists and government agencies must fund and support the new projects. The policy framework must bring in new mechanisms to encourage the growth of this new initiative.

Setting up a Center of Excellence (CoE) with a unique structure will be the most effective way forward. The CoE will comprise five sub-centers: research, academia, skilling, incubation and policy. All five will work independently but coordinate seamlessly to support the UDA framework. The multi-lateral platforms like the Indian Ocean Rim Association (IORA), Indian Ocean Commission (IOC), Bay of Bengal Initiative for Science Technology and Economic Cooperation (BIMSTEC) and many more will do well to make the UDA framework an agenda point of their association. Setting up a CoE could be the high point of these multi-lateral platforms to support capacity & capability building in their jurisdiction. These groups are connected through the seas and have a massive demographic bulge of young, energetic and aspirational populations.

The concern of data confidentiality can be addressed by collaborating. Sensors and platforms can be imported initially to fast-track the UDA framework's realization. However, understanding the hardcore data analytics component should only be done by regional and national entities. No data sharing should be encouraged to avoid any misgivings. Sharing it must also be an Indigenous effort, as the local players can only make user-friendly displays. More meaningful and sustainable collaborations, even with the extra-regional players, can be built if we have clarity on the nature of the collaborations.

PANELIST

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Within the greater scope of maritime domain awareness, underwater domain awareness is a new and emerging concept that has stimulated the interest of naval analysts all over the globe. It rests on the idea that modern-day technology has rendered the sea transparent, making it possible for maritime agencies to track undersea activity. The technologies that underpin the concept are in the early stages of development, and naval planners are still grappling with its numerous challenges and dimensions. The degradation of sonars and other equipment obtained from the West is unsuitable for tropical waters. An adequate understanding of the underwater domain is also crucial to building and maintaining Sri Lanka's historical commitment to keeping the Indian Ocean a Zone of Peace. The Indian Ocean Zone of Peace was a declaration initiated by Sri Lanka at the 26th UN General Assembly in 1971, envisaging the great power rivalry on the surface and underwater domains of the Indian Ocean between the former USSR and the USA.

Acoustics is the most effective means for underwater domain awareness. Knowing activities that are taking place in the country's ocean space is a critical factor in ensuring maritime security and national security. The Sri Lankan ocean space comprises an EEZ that is eight times larger than the land, a continental margin around 21 times larger than the land and a search and rescue region about 27 times larger than the land area. The strategic location of Sri Lanka in the Indian Ocean not only makes the island a vital connecting node for East-West maritime traffic but also has the potential to monitor the entire ocean space that spans to the southern tip of the globe, which makes it a vast area to conduct effective surveillance by utilizing assets and sensors to prevent its use by illegal actors.

Having fought and won a separatist war which lasted for nearly three decades and brought peace to the country in 2009, the Sri Lanka Navy had many experiences in fighting the LTTE's Sea Tiger wing, which included an underwater attack group. This was successful in destroying many ships and craft with underwater suicide saboteurs, submersible vehicles and various types of sea mines. Realizing the geopolitical contest in the Indian Ocean, which impacts the island, the Sri Lanka Navy expanded its fleet to a blue water capability. It began commissioning more significant fleet assets equivalent to patrol frigates, termed advanced offshore patrol vessels. However, the sensors and platforms the Sri Lanka Navy has today can only conduct maritime surveillance on the surface. Apart from this limited capability, we are entirely blind to sub-surface activities that take place in terms of submarine operations. It should also be noted that except for Sri Lanka, many other nations in the neighbourhood have acquired submarines for their naval fleets, Bangladesh being the latest to induct in late 2016.

Even though Sri Lanka is an island nation, it needs to understand the ocean, its resources, threats, and the maritime and underwater domain to improve its engagement with the sea. Therefore, we urgently must build capacity for undersea awareness and overcome maritime blindness. This is important for detecting submarines and monitoring vital underwater data cables, which connect the island to the world. Concerning acoustic capacity building, the Navy has been training personnel in anti-submarine warfare since the times of the Royal Ceylon Navy in friendly countries like India, Pakistan and Bangladesh. Hence, the Navy has qualified staff to operate anti-submarine warfare-equipped platforms. The naval research and development unit, the marine wing functioning under the Centre for Defence Research and Development of the Ministry of Defence, is also conducting extensive research on a project to manufacture equipment to detect submarines and other underwater movement indigenously. Plans are also to acquire a Reliance class US Coast Guard Cutter in mid-2025 with complete SW capabilities, which will considerably enhance the Sri Lanka Navy's capacity for UDA.

The National Hydrography Office was established in 2023 to improve hydrographic survey techniques, data processing, methods and technologies used in the field. The office is empowered to provide necessary consultancy, assistance and information regarding such activities. The office is also used to create, manage and maintain a database of all hydrographic survey data, marine data and hydro spatial data. Concerning academic advancement and technical

knowledge, higher education institutes such as the University of Moratuwa have tested underwater, unmanned exploration vehicles to obtain information regarding water temperatures and opacity by installing corresponding sensors and conducting research for monitoring progress. Sri Lanka should continue allocating the budget for underwater domain awareness to establish a framework that could be initiated at all levels in different sectors. Multi-disciplinary research and innovation have to be encouraged in academia and research institutes, especially in underwater unmanned vehicles. The country needs to upscale the capacity of relevant departments in the Sri Lankan Navy and the Ministry of Foreign Affairs. Undertaking research on the maritime domain and subjects, such as maritime law, maritime security, oceanography, maritime economics and underwater data sharing among institutions between Sri Lanka and other regional countries without compromising national security for improving awareness of UDA as a multilateral collaboration, can be encouraged and enable partners to leverage each other's strengths and capabilities, through dialogues and discussions.

Exploration for hydrocarbons, oil and gas has been conducted over the years, covering the ocean area around Sri Lanka. A considerable amount of systemic data has been gathered indicating significant potential for both natural gas and oil in Sri Lankan sedimentary basins. A project on the multi-petroleum product pipeline between India and Sri Lanka is a cost-effective solution for India to support Sri Lanka's energy market. The project is envisaged to pump petrol, diesel and kerosene to Sri Lanka through an undersea pipeline. This is projected to have a significant distance of a subsea segment. There is also a proposal for high voltage, direct current interconnectivity between India and Sri Lanka for a thousand-megawatt power transfer. Mapping of the continental shelf around Sri Lanka is said to be carried out by the Geological Survey and Mines Bureau. Undersea telecommunications remain a vital requirement to be a key enabler in implementing the initiative and moving towards an inclusive, digital economy and smart Sri Lanka. The island is connected with the world through six submarine communication cables owned by three operators. At the micro and microeconomic level, communication via submarine cables will reduce transaction costs, increase market coverage, and provide job opportunities and income generation. In addition, it will foster economic growth and development.

Obtaining bilateral and multilateral assistance from regional countries and organizations for technology transformation and assistance in acoustic and capability building includes setting up a centre of excellence. In line with its latest vision statement, Sagar India can play a leading role in capacity building for regional countries of the IOR to realize the digital transformation in the underwater domain manifested as maritime spatial planning, which is a process that brings together multiple stakeholders, including the energy industry, conservation, recreation etc. to make informed and coordinated decisions about how to use marine resources sustainably. The UNDP, together with the Government of Sri Lanka, recently conducted a consultation on developing a roadmap towards a maritime spatial plan. The country's economic crisis has affected the progress of carrying out research and procurement of technology to improve awareness of the subsea areas surrounding the island. However, it is envisaged that Sri Lanka will be in a better position to progress in UDA positively within a couple of years. A proposal would be for the Government to establish Sri Lanka's blue resources through maritime spatial planning, the oceanic tool for the sustainable management of maritime areas.

PANELIST

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In terms of Undersea Domain Awareness (UDA), there needs to be a systematic, coordinated approach. UDA must address this issue through state stakeholders and in collaboration with the private sector, academic communities, and other relevant parties. UDA represents a significant challenge in the broader context of domain awareness. This challenge is not limited to underwater environments but extends to understanding and engaging with the world around us. Effective domain awareness involves gathering and analysing data, which then informs the development of policies and strategies.

The US has recognised that maritime security has evolved beyond traditional boundaries. Concepts like maritime domain awareness, which historically fell under security services such as the Navy, Coast Guard, and other maritime constabularies, are now relevant to a wider range of private interests and visionary communities. The current approach is an inter-agency effort across the US government to map out all relevant stakeholders and integrate accumulated data and experimentation. The goal is to develop a cohesive US strategy for domain awareness, including UDA, and to formulate appropriate policy guidelines and regulations.

The shipping industry is increasingly intersecting with the technological realm, where markets for innovation are rapidly expanding. Recognising this transformation, the US has been working to catch up with the evolving landscape of underwater domain awareness. This is not a recent development limited to the Biden or Trump administrations; it dates back to the Bush era and beyond. This effort involves securing agency support, fostering innovation through public-private partnerships, and creating frameworks for effective data aggregation and analysis. Such partnerships are essential for harnessing technological advancements and ensuring policymakers can make informed decisions.

The significant technical challenges associated with maritime domain awareness (MDA), particularly undersea domain awareness (UDA), are mentioned in the paper. These complexities can be daunting for policymakers who must navigate them without deep technical expertise. There is an educational component to this challenge, and it is crucial to educate people developing and managing this data and emphasise its importance to policymakers. The United States Department of Defence has explored various approaches to address this issue. One notable initiative is the Defence Innovation Unit (DIU), which significantly advances underwater domain awareness, particularly through public-private partnerships. The US is learning that the private sector can often be more agile and delve deeper into specific areas than government institutions. Partnering with private companies allows for the enhancement of capabilities and expands the community's interests.

From Washington's perspective, the focus is not only on internal development but also on collaboration with international partners. For the Indian Ocean region and South Asia specifically, adopting a locally driven approach is essential. This regional focus ensures solutions are tailored to these areas' unique needs and contexts. For UDA, capability development must align with the priorities of the region. The US recognises that regional interests should drive this development, and we are working to find the best ways to cooperate and coordinate to support a more comprehensive, stable, and secure surface and underwater domain. It has been rightly noted that this is a lesson the US is still learning, albeit gradually. Moving forward, the focus is improving how it supports and collaborates with regional partners.

In the incubation process related to UDA, there was an emphasis on the importance of involving youth and fostering innovation. With the decreasing barriers for innovators to enter the market and explore new ideas, it is essential to encourage and support these efforts. Fostering a dynamic, innovative environment is crucial for advancing UDA. A change in technology or maritime policy can involve pilot programs demonstrating proof of concept, which can then be scaled up and integrated with existing interagency frameworks. Practical applications and tools can be developed to

centralise, share, and access information. Experimentation with these tools by entrepreneurs and technology students highlights the different approaches to problem-solving compared to those traditionally used by security professionals or academics. It's invaluable to include these diverse perspectives in the conversation.

From a US perspective, information sharing has historically been associated with the security realm, often resulting in hesitation in sharing information. Government-approved mechanisms, such as fusion centres, are crucial and should continue to play a role. However, the amount of data that can now be collected on territorial waters—and even beneath them—using open-source tools and basic machine learning is extraordinary, even data which can be gathered online compared to a decade ago. The challenge is finding ways to link these diverse inputs together effectively. The question arises whether a centralised system or a more dispersed, multi-faceted approach for linking this diverse community should be adopted. This includes voices from the industry, academia, coastal communities, and environmental NGOs. Each of these groups brings valuable perspectives and insights. The positive development is that these various parties are beginning to come together.

The key point is that data integration and sharing are crucial. From a US perspective, underwater domain awareness is not owned by any single government entity or even a specific branch of Government. It represents a societal and global challenge and opportunity. Therefore, finding effective methods to share information involves balancing concerns with the realities of national security. Security cooperation through information sharing cannot advance without trust. Data can help build this trust by providing a foundation for collaboration. It is essential to recognize that while managing sensitive information is necessary, the overarching goal is to foster an environment where various stakeholders can work together effectively. Accumulating data and comparing it through a peer-reviewed process helps us advance cooperation and avoid the complexities of potentially entangled political processes. In doing this, every party's priority and situational specifics must be considered. The US, like every other nation, is navigating these challenges, and data is indeed key to moving forward.

OPEN FLOOR DISCUSSION

- While there is no denying the need to build collective capacity in the region to address the challenges of UDA, there is a concern that the real challenge is to arrive at a political consensus among all impacted nations. This consensus is hinging upon the trust deficit and different core national interests being aligned. It was pointed out that there was no real need for political consensus or intervention as individual organizations or academic institutions can address it as UDA is an emerging problem that requires attention. In India, the private sector makes a significant contribution; therefore, the requirement is to have a will and move forward. It was pointed out that it is not always necessary to seek government support.

- Regarding the future implications and concerns of the involvement of non-state actors in UDA, the example of the LTTE, which also resorted to such methods, was alluded to. It was also indicated as a potential threat to the Red Sea. To overcome this, the need to build affinity to the oceans and see the potential, resources, and threats that the undersea could bring is crucial. Security forces should not only concentrate on surface ships, neglecting undersea threats. There is a gradual buildup now with obtaining capabilities and all countries in the region being equipped with such capabilities, there will be potential to counter this threat. More than security, the safety of nuclear submarines was noted as a concern. The example of Argentinian and Indonesian submarine accidents due to poor maintenance was highlighted and the idea that whatever geopolitical posturing should not compromise safety for the larger population.

CLIMATE CHANGE, MARITIME DISASTER MANAGEMENT AND BLUE-GREEN ECONOMY

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Executive summary

Blue Halo S is an innovative initiative led by Conservation International, Yayasan Konservasi Cakrawala Indonesia (Konservasi Indonesia or KI), Yayasan Keanekagaraman Hayati Indonesia (KEHATI Foundation or KEHATI), and the Green Climate Fund (GCF). This transformative project aligns with the Government of Indonesia's vision to revolutionize its marine and coastal economy through a groundbreaking self-financing conservation approach.

The motivation behind this transformation is the pressing threat of climate change. It acknowledges the imperative need for sustainable growth and development while recognizing the pivotal role that healthy oceans play in economic prosperity, food security and climate change mitigation and adaptation. Indonesia's critical ecosystems, including mangroves, seagrasses, and coral reefs, face severe challenges due to climate change, leading to ecosystem degradation, rising sea levels, and heightened natural disasters. These ecosystems also allow Indonesia to demonstrate a new economic development paradigm relevant to other coastal states such as Sri Lanka.

Blue Halo S advocates a paradigm shift in management and regulation to address these challenges and seize opportunities to safeguard and enhance coastal protection, fish stocks, economic activities, and marine biodiversity. A fundamental component of this initiative is the expansion of Marine Protected Areas (MPAs) and the financing of community-based initiatives, which, in turn, increase the value of fish catches, improve livelihoods, and fortify climate resilience. This establishes a self-sustaining model for conservation, creating a virtuous cycle of protection and production.

Blue Halo S employs a holistic approach that tackles key drivers in the sustainable use of ocean resources, ultimately fostering economic growth and preserving ecosystems. The heart of this approach is an innovative Protection-Production model that strives to directly counter climate threats to Indonesia's coastal ecosystems and economies. It sets the stage for large-scale blue investments by introducing the Blue Halo S – Blue Finance Facility (BFF), envisioning substantial non-grant financing to engage the private sector in the blue economy.

Given the profound and immediate threats climate change poses to Indonesia's coastal regions, this approach relies on close collaboration with the Indonesian Government. This ensures that the project aligns with national priorities and maintains the sustainability of its outcomes. Blue Halo S represents an innovative and proactive response to the urgent need for sustainable ocean conservation and climate resilience. We believe that the strategies and approaches pioneered by Blue Halo S can serve as a replicable model with significant potential for application in other countries, particularly coastal and island states like Sri Lanka, facing similar economic and ecological challenges.

Background

Indonesia is home to one of the richest biodiverse landscapes in the world. It hosts a wide range of aquatic ecosystems that play a crucial role in sequestering global emissions and offer numerous climate resilience benefits to local coastal populations, including food security, economic opportunities and flood and storm-surge protection for low-lying areas along the coastline. The country's main coastal ecosystems (mangroves, seagrasses, and coral reefs) are a key source of income for coastal communities. They are the bedrock of several of the country's key economic sectors, such

as fishing and tourism. Coastal ecosystems also play a vital role in helping the country reach its climate mitigation targets, as described in its Nationally Determined Contribution (NDC).

Despite the key role marine ecosystems play in contributing to the country's economy and environmental resilience, climate change is driving the decline of the extent and quality of mangroves, seagrasses, and coral reef systems [1, 2]. This also contributes to declining fish stocks and marine biodiversity, further threatened by overfishing and ineffective sustainable fisheries management. Climate-driven natural disasters (e.g., floods, droughts, storm surges) and gradual changes in climatic variables (e.g., sea level rise, rainfall pattern shifts, ocean temperature increase and acidification) are the primary drivers of non-anthropogenic coastal ecosystem degradation. Indonesia now ranks among the top third countries vulnerable to climate-driven disasters [3]. It hosts the 5th largest coastal population in the world (49 million people), particularly at risk of climate-related disasters [4].   The Government of Indonesia (GOI) has identified the country's marine and coastal sectors as those that will suffer the most from climate change-related impacts, projecting potential economic losses equivalent to IDR 81.82 trillion (~ USD 5.2 billion) in 2024 [5].

Several studies have shown the close interrelationship between ecosystem degradation resulting from climate change and ineffective sustainable fisheries management. A decrease in fish populations is endangering a key source of income for coastal communities. Also, it represents a critical threat to Indonesia's national food security (50% of the total animal protein consumed in Indonesia is derived from fish products [6, 7]. Conversely, the Blue Nature Alliance found that the current baseline of fisheries protection and investments in sustainable fisheries management will lead to significant fish stock declines between 2020 and 2050 and that the establishment of effective Marine Protected Areas (MPAs) could boost fishing industry revenues by IDR 126 trillion (31% increase compared to projected revenues) by 2050 [8]. There is also considerable evidence that the regulatory and technical reinforcement of MPAs in Indonesia's WPP zones (714 and 715) is associated with greater fish stock volume and species biodiversity [9]. In short, these factors suggest that a combination of protection, regulatory reform, and enforcement coupled with investment into compatible ventures and capacity represents a new way forward.

Furthermore, marine ecosystems and fisheries suffer from exposure to climatic pressures, which are further accentuated by anthropogenic activity that treats these ecosystems as an economic commodity first and as a key source of environmental resilience second. Therefore, an integrated protection-production model is needed to ensure the long-term adaptability of key natural resources and ecosystems while supporting vulnerable communities to continue their coastal economic activities.

Effective response by civil society, NGOs and the Government to these various pressures is needed. We intend to work to reinforce the existing regulatory fisheries and marine management landscape and strengthen the adaptive capacity of coastal communities and marine ecosystems to provide a solid foundation for long-term, blue economy investments through innovative financial instruments through a protection-production initiative called Blue Halo S.

Protection – production: creating a virtuous cycle
Despite the nature-based carbon potential of Indonesia, the country faces considerable, climate-driven challenges that contribute to the degradation of coastal and marine ecosystems, reducing the region's carbon potential and its ability to develop blue economic sectors, such as sustainable fisheries, tourism and seaweed production. The ability of coastal communities to adapt to climate change due to climate pressures, compounded by non-climate-driven risks on the fisheries sector and ecosystems, renders communities even more vulnerable to higher poverty rates and food and income insecurity. Ecosystems cannot sufficiently adapt to climate change to deliver their carbon sequestration services due to climate pressures compounded by non-climate drivers. Therefore, Indonesia, like many other countries in the tropics, is exposed to two main climate problems:

> Adaptation: Coastal communities, whose livelihoods are largely dependent on fisheries and coastal ecosystems, are negatively affected by climate change and the resultant degradation of natural resources and have insufficient means and capacity to adapt to climate change.

Mitigation: Ecosystems (mangroves, seagrass, and coral reefs) are experiencing significant degradation from climate-driven and anthropogenic (ineffective management, destructive fishing practices) pressures, requiring efforts and interventions to protect and restore the health and extent of these key ecosystems to reduce GHG emissions.

We aim to address these two problems through an integrated protection and production approach that recognizes the symbiotic nature of marine ecosystems and fisheries. Focusing on fisheries area WPP572, adjacent to six provinces along Sumatra's western coast, the project targets this climate-vulnerable region due to its significant fisheries and biodiverse marine ecosystems. The Indonesian Government prioritized WPP572 as a pilot area for Blue Halo S initiatives, aiming for replication and scaling across the archipelago. We will trial these approaches in the Fisheries Management area WPP 572 in Indonesia to improve ecosystem conservation and sustainable management of marine resources and unlock new investment capital that can be deployed to drive conservation.

Catalytic blue finance grants drive a genuine paradigm shift
A new paradigm is essential, one that emphasizes the direct connection between the blue economy sectors and conservation. To achieve this goal, we will strategically allocate catalytic investment grants to stimulate economic incentives for activities that safeguard and sustainably utilize natural resources. One critical assumption underlying this approach is the belief that investments in conservation and enhanced management can indeed lead to economic growth. However, it is crucial to establish direct economic and regulatory linkages to facilitate this paradigm shift, which is the intent of Blue Halo S.

For instance, supporting eco-tourism and other sustainable livelihood initiatives can catalyze communities to adopt adaptive practices. These initiatives create economic incentives, generate employment opportunities, and open new livelihood avenues. Consequently, they reduce vulnerability to the impacts of climate change and promote inclusive participation in local marine area management and economic opportunities.

On a larger scale, protecting marine environments and implementing improved fisheries management can foster growth within the fishery sector and create more livelihood opportunities. Unfortunately, there is a common misconception that protection and management compete with economic development in fisheries. For example, in Kiribati, the Phoenix Island Protected Area (PIPA) was among the world's first large-scale, offshore "blue water" Marine Protected Areas. Unfortunately, PIPA was recently reversed by Kiribati's Government, and the stated rationale was that Kiribati's Government was unwilling to forgo perceived economic opportunities associated with opening PIPA to commercial fishing. Here, we suggest that we can disprove this long-running dichotomy that pits the economy against the environment, provided that the necessary conditions, incentives, and regulations are aligned.

It is imperative to unlock and deploy large-scale financing while eliminating key barriers that hinder progress to bring about this shift on a significant scale. By doing so, conservation can evolve into a self-financing model driven by nature-positive incentives. This transformation represents a genuine paradigm shift supporting a virtuous ocean protection cycle and sustainable production cycle.

Enabling a Blue Halo S financing facility for long-term sustainable blue climate financing
Piloting adaptation, mitigation, and catalytic investment readiness grants is a strategic move to prepare projects for blue enterprise partners, elevating blue economy initiatives to bankable levels while reinforcing local adaptation and mitigation efforts. Integral to the broader Blue Halo S Platform, this project is interconnected with a separate initiative developed for GCF funding to catalyze innovative blue finance for the ocean protection production model. The forthcoming Blue Halo S – Blue Financing Facility will leverage the initiatives and insights of the Blue Adaptation Mechanism (BEAM) project to scale and replicate successful project preparations conducted under BEAM's investment readiness window with catalytic grants. Together with other innovative financing instruments, the Financing Facility aims to expand blue economy financing, reshaping the paradigm for climate-smart ocean protection.

Blue Halo will play a pivotal role in the transition towards a more sustainable future by providing catalytic grants and creating the necessary enabling environment for the Financing Facility. This proactive approach ensures that the Blue

Economy in the region can absorb ambitious and lasting private-sector capital injections in the near future. This two-step comprehensive approach will ensure the delivery of long-lasting sustainability and scalability in blue economy financing while delivering ocean and coastal protection and production.

Unlocking and mobilizing blue finance
One of our primary objectives is to establish the necessary legal and financial foundations for blue climate finance. We aim to achieve this through a grant facility designed to support community-level climate adaptation and mitigation projects within the WPP 572 region. Additionally, we seek to bolster the investment readiness of blue enterprise partners by providing catalytic grants and fostering a rigorous learning process, focusing on the most efficient and high-impact approaches to catalyzing blue climate finance for the ocean protection production model.

The vision driving the development of the Blue Halo S Platform comprises two essential components: a GCF-supported catalytic grant layer and a complementary non-grant GCF Project – Blue Halo S Blue Financing Facility (BFF) featuring a blended finance layer. The BFF, currently under development through a separate but linked concept note, aims to support long-term climate outcomes by enabling blue finance at a significant scale.

Our interventions are strategically designed to address a range of barriers, including regulatory, technical, financial, and social, which hinder the enabling conditions necessary for blue financing of ocean protection. Regulatory barriers stemming from policy misalignment, administrative congestion, and inadequate data management hinder the protection of ecosystems. Technical challenges, such as limited capacity for data collection, monitoring, and enforcement of existing marine protection areas, impede expansion efforts despite national development plans and international commitments to safeguard Indonesia's marine areas. Furthermore, insufficient government budget allocations pose a financial barrier to expanding formal marine protection, but other pertinent obstacles to strengthening MPA protection are regulatory and technical in nature. It is important to note that all activities, especially those that address legal and regulatory barriers, are accomplished through support to government agencies and designed to align with existing plans. For example, the project will improve the Government's Fisheries Harvest Strategy, Fisheries Control Rule, Reinforce the Interregional Area Zoning Plan, The Coastal and Small Island Zoning Plan, and Specific National and Strategic Areas Zoning Plan, working in collaboration with the Ministry of Maritime Affairs and Fisheries (Kementerian Kelautan dan Perikanan, KKP) and other government agencies.

In the current business-as-usual scenario, marine protected areas often fall short regarding ecosystem protection and ecological resilience. The core activities of our project revolve around fortifying the regulatory framework, expanding and enhancing marine management plans, and safeguarding critical blue carbon landscapes. Strengthening legal and regulatory frameworks serves to mitigate risks linked to ecosystem degradation, rendering blue economy investments less precarious. For example, field observations found that using low-explosive coral bombing (blast fishing) in Lampung, Sumatra, was a relatively common practice; this adds additional pressure to coral reef restoration and preservation as warming and acidification already render the coral weak due to bleaching. Similarly, field observations also found that using large trawls with small mesh that graze the sea floor in shallow waters destroys coral reef systems and captures endangered and banned fishing species (including sharks). Though these practices are prohibited by Law 45/2009 as revised by the Omnibus Law on Job Creation, fieldwork research across all WPP 572 provinces found that there is weak enforcement and insufficient local financing directed toward preventing illegal, unreported, and unregulated (IUU) fishing. Here, the regulatory framework has been put in place. Still, it needs to be significantly strengthened – with legal and enforcement capacity in government along with community-based education and engagement efforts, especially the development of new livelihood alternatives.

As such, it is the combination of economic investments that work in concert with existing regulatory and technical efforts that play key roles in enhancing ecosystem protection, ecological resilience, and community well-being. Regulatory support for MPA expansion, along with reinforced data collection, establishes an enabling environment conducive to sustainable blue economy investments

To realize these goals, the initiative is structured into two components. Component 1, led by Konservasi Indonesia, focuses on supporting the transition to a blue economy through technical assistance and policy reform. Component 2,

led by KEHATI, involves the allocation of grants to local entities to support climate adaptation, conserving blue carbon ecosystems, and advancing blue Micro, Small, and Medium-sized Enterprises (MSMEs). This component underscores sustainable growth and private sector investment readiness. Our grant facility is designed to be flexible and responsive, allowing for impactful grant investments through calls for proposals across three distinct windows targeting climate adaptation, mitigation, and investment readiness.

Conclusions: scaling up and replicability

While the project primarily operates at the provincial level, its impact extends far beyond, involving the alignment of both national and subnational policies and institutions to promote sustainable ecosystem protection and fisheries management. Blue Halo S is set to pioneer the development of Marine Protected Areas (MPAs) as a vital catalyst for productivity and economic models associated with Fisheries Management Areas, marking a significant departure from traditional conservation models towards a more integrated strategy. This initiative aims to harmonize national and local regulations, advance sustainable finance, and establish regulatory frameworks that reflect transformative shifts. Blue Halo S is envisioned as a blueprint for national implementation, showcasing the potential of well-managed MPAs in enhancing fish species diversity and stock volume. This paradigm shift towards expanding MPAs on a large scale serves as a model for improving aquatic and coastal ecosystems, creating broader avenues for blue economy financing dedicated to ocean protection and production.

Given the profound threats and the pressing need for action in response to climate change impacting Indonesia's coastal regions, it is imperative to adopt innovative approaches to conservation, financing, and sustainable development. Blue Halo S focuses on addressing the urgent climate-driven necessity for ocean protection and the sustainable utilization of marine resources. This is achieved by bolstering the enabling conditions for blue finance within the ocean protection-production model. The project aims to pave the way through readiness efforts and the dissemination of knowledge regarding the most efficient approaches to finance blue climate projects within the marine sector in Indonesia. Success will hinge on close collaboration with the Indonesian Government, ensuring that the project aligns with national priorities and that its outcomes are sustainable. The insights gained and successful strategies tested in Indonesia can serve as a template for replication and scaling in other coastal regions worldwide, particularly in areas such as Sri Lanka.

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PANELIST

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Climate Change and Security: Perspectives from the Maldives

Focus on issues related to the ocean, specifically security defence, climate change, and resource management. Defining a single, uniform concept of security is challenging, even within the context of non-traditional security. It involves a complex mix of factors that impact a region's ability to progress, develop, and maintain sustainability and territorial integrity.
Recognising that climate change affects development capabilities and significantly impacts economic progress and social well-being is crucial. The challenges posed by climate change keep evolving, and it's essential to address these issues comprehensively. Its impact on the ocean is particularly significant, especially for small island nations that are highly vulnerable to climate change effects. Our territory includes vast oceanic areas that are vital for economic development. The ocean plays a critical role in trade, resource management, and overall economic stability. When climate change interacts with the ocean, it can lead to numerous challenges, such as rising sea levels, increased storm intensity, and disruptions to marine ecosystems. Addressing these issues is essential for maintaining regional security and ensuring sustainable economic growth.

Climate change has been integrated into discussions about both traditional and non-traditional security. Disaster management capacities have been tested in places like Singapore, demonstrating the ability to handle and mitigate major disasters affected by climate-related challenges. Various reports from Indonesia have emphasised the need for assistance and how understanding climate change [impacts] contributes to effectively responding to challenges which affect various sectors, including the operational capabilities of maritime and coastal security forces. Severe weather can impair a Coast Guard's ability to conduct effective operations, manage resources, and respond to emergencies, underscoring the need for adaptive strategies. Ongoing work between small island states and across ocean-based regions shows efforts to incorporate climate considerations into security strategies. This includes expanding research, developing policies, and engaging in collaborative efforts to address the impacts of climate change on security.

The effects of climate change are interconnected globally. Disruptions in one region can impact economic and social activities elsewhere. Events in distant ocean areas can affect critical global trade routes and regional stability. This interconnectedness highlights the importance of comprehensive and adaptive maritime security and disaster management approaches. There is a need to create a comprehensive strategy that addresses the requirements of all stakeholders, including policymakers and those directly affected. This underscores the importance of policymakers considering climate change and its impact on ocean coordination and management. Local authorities must collaborate with broader organisations to ensure well-organised and efficient responses.

Using local resources effectively is essential, but since ocean-related issues are interconnected with many other factors, there is also a need for bilateral and regional cooperation. Strengthening media cooperation and collaboration between regional organisations can enhance the existing frameworks and strategies. This includes improving negotiation capacities and addressing the specific needs of island communities. Integrating these approaches and improving coordination can help address the challenges posed by climate change and effectively enhance the ability to manage ocean-related issues, including security.

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Blue Economy, Climate Change and Disaster Management: Perspectives from Bangladesh

After a peaceful arbitration with neighbouring countries, Bangladesh has acquired a maritime territory of approximately 118,000 square kilometres, including a continental shelf of about 37,000 square kilometres with a depth of about 15 meters. Bangladesh's foreign policy has historically been oriented towards its neighbouring countries, particularly India. Since Sheikh Hasina came into power, the government has prioritised addressing the issue of maritime boundary delimitation. Following arbitration, Bangladesh acquired rights to its internal waters, territorial sea, contiguous zone, and exclusive economic zone, sharing these with India and Myanmar. Historically, the focus on Bangladesh and the Bay of Bengal has often been inward-looking, a tendency possibly rooted in its colonial past when the Indian Ocean was dominated by British interests and discussions about the region were limited. However, this perspective is changing. Additionally, Bangladesh has had a rich maritime culture, with ancient Bengal being a significant port in the Bay of Bengal, connecting with Southeast Asia.
When discussing the Bay of Bengal, it is essential also to consider developments in the Andaman Sea, which have significant implications for Bangladesh. Regarding the blue economy potential, there are several key areas to explore. These include marine and coastal tourism, fishing and aquaculture, shipping, port and maritime logistics, marine renewable energy, biotechnology and marine genetic resources, minerals, marine manufacturing, marine construction, marine commerce, maritime education and resources, and blue carbon ecosystems should also be considered.

Bangladesh has significant mangrove forests, which are shared with India. About 60 per cent of the Sundarbans, the largest mangrove forest in the world, falls within Bangladesh's borders, which is a valuable asset, especially given the multiple challenges posed by climate change and other environmental issues. Bangladesh has tremendous blue economic potential. However, it is often observed in international relations that while the potential is recognised, it may not always be fully realised. To fully harness this potential, Bangladesh must address these challenges effectively.

It is crucial to recognise that projecting energy and resource needs to Europe cannot be done in isolation. Bangladesh needs to collaborate with various shipping corporations, governmental and private sector entities, and disaster management agencies. Effective collaboration is essential for ensuring that resources are effectively managed. Highlighting one particular issue, when discussing global challenges, such as shipping and fishing, it is necessary to consider its impact on different regions of the world. Addressing these challenges requires a comprehensive approach and international cooperation to ensure sustainable management and mitigate adverse effects.

The confluence of three major rivers forms the world's largest active delta. These rivers flow through various regions before merging and emptying into the Bay of Bengal. In Bangladesh, this delta plays a crucial role in the region's ecology and economy. However, plastic pollution is becoming a severe issue, for example, in places like the Port of Chittagong, which is situated within the country's borders. Regular waste management is crucial, but plastic waste continues to accumulate, and microplastics have been detected in local ecosystems and food sources. This problem is expected to worsen if not addressed. It is important to recognise that environmental issues do not respect national boundaries. What happens in one country can have repercussions in another. Thus, effective management and cooperation across borders are essential for addressing these challenges and mitigating their impact on the environment and public health. The concept of connectivity extending from Bangladesh into Northeast India and even further to China has been discussed by various stakeholders. As geopolitical and environmental dynamics intensify, connectivity becomes increasingly relevant. Investments are being made in infrastructure, including a major Japanese-backed deep-sea port project, which is expected to have implications for Bangladesh and Northeast India. This project will impact regional real estate, communication, and connectivity.

Disaster politics is a critical field of study in political science. The implications of natural disasters on politics can be seen in historical events such as Hurricane Katrina in the United States. Similarly, in Bangladesh, the 1970 cyclone

had devastating effects, particularly in what was then East Pakistan. The lack of adequate response from the central government contributed to the loss of around one million lives and had a profound impact on the 1971 elections, leading to the country's independence. Today, the issue of disaster politics remains relevant in Bangladesh, particularly concerning resilience and disaster management. Rising temperatures are a cause for concern in coastal areas such as Chittagong. Increasing salinity levels and flooding are also concerning, resulting in waterborne diseases and impact on agriculture and migration. It is essential to understand their multifaceted impacts of climate change.

In addressing humanitarian disasters, despite numerous catastrophes in recent years, the country has made substantial improvements in disaster management due to the combined efforts of government agencies, civil services, and the armed forces. These improvements have significantly reduced casualties and damage from natural disasters. Effective disaster response is crucial for humanitarian reasons, maintaining governmental stability, and addressing insecurity. The disaster management framework in Bangladesh involves various stakeholders, including ministries, local administrations, and civil services. The Ministry of Disaster Management plays a central role, coordinating efforts across divisions, districts, and urban centres. Local disaster management committees and union-level organisations work together to implement policies and provide immediate response and support. Despite these advancements, challenges remain. Policies may be well-designed, but a lack of funding can hinder their implementation. Addressing these financial constraints is crucial for transforming policies into practical actions and ensuring better preparedness and response to natural disasters.

OPEN FLOOR DISCUSSION

- A question on how such projects as the Blue Halo project were received and whether there has been skepticism or institutional resistance, additionally what common themes have emerged from the process. The response was that the scale and cost of marine protection always faces skepticism, and it was clear that a number of countries were averse to protection and the lack of an actual pipeline where financiers require concrete results. The task of matching a country's development plan to investment was highlighted. The reason being that much of human development has come at the cost of nature. The way forward should be moving from just talk to real action.

- According to a recent IMF working paper on debt swaps for nature, about 34 developing nations out of 60 are very vulnerable to climate risks. For example, Sri Lanka has three major components of foreign debt – multilateral, bilateral and commercial debt. A significant portion is multilateral debt, confined mainly to commercial and government-to-government debt. Unless these multilateral debt institutions develop a new swap, moving forward will be an issue. Can bilateral or sovereign restructuring in commercial markets get the right people in the room to come up with solutions and the right model? The US has run a bilateral debt reduction program for many years, which includes oceans and coral reefs. Many European countries are also open to it with a general idea of goodwill. There can be bilateral and multilateral restructuring which leaves it to the stakeholders concerned.

- Highlighted the concern among fisheries communities on access to indigenous, traditional livelihoods in their fisheries areas if debt for nature swaps or blue bonds are the route Sri Lanka decides to take and the concern of financialization of Mother Nature which is required by debt for nature swaps. Among anthropologists, there is a critique on the climate change narrative which is debatable on hotspots and cold spots. The uncertainty of climate science has to be taken into consideration. The Diego Garcia military base in the Chagos Islands which is a marine protection area in the Indian Ocean is a concern due to its with carbon emissions. Protection of the undersea data cable route, green and blue bonds and how they finance nature, fisheries being at the receiving end of a hybrid proxy warfare were pointed out as areas to be looked into as consequences of geopolitics. Emphasis on the quality of projects and safeguards are crucial with funding and energy being deployed such that they help indigenous and vulnerable communities to climate change. Emphasized the quality of projects which should be designed with safeguards built in with the most vulnerable communities in mind, providing livelihoods and new opportunities. Much of the marine work is not about mitigation but adaptation and the Blue Halo project matched the government's high-level ambition to build the blue and green economy in line with the needs of the communities.

- The role of science and how Marine Spatial Planning (MSP) is implemented on the ground with local conditions will be a fundamental aspect. Since the western model of MSP does not work in this part of the world, it is important to consider local conditions. MSP if understood in the true sense can be a driver from a governance perspective where it can be integrated using science and technology MSP if implemented right has to be a balance considering the interests of the people, economy and nature, therefore understanding of tropical conditions are important.

- The need to focus on island states' vulnerability, adaptation and mitigation plans in the regional and global agenda, as there isn't enough emphasis on island states in global forums. Emission by island states is minimal compared to developed states. Focus on security perspectives on climate change adaptation and vulnerabilities as coastal communities of island states are experts on maritime trade and as a result resort illicit activity. These issues should be taken up in in regional and global forums. The question whether island states are equitably represented is debatable. They have been in international discourse on challenges and there has been progress and development in terms of governance, development cooperation, multilateral aid and finance. The level in which small states can share their experience in international decision making is an ongoing debate. Their level of engagement is to usually share their experience and see what the developed

community makes out of it. Debates and forums such as PFIOSC help to find ways to discuss inter-subject narrative. Conservation International which works in small countries that have very little access to capital markets provides them access to develop their blue economy, manage it well, thrive and prosper.

- The importance of addressing the need to find a sustainable solution for plastic pollution as many incidents are reported from around the world. There is much effort which comes down to solid waste management. Cannot eliminate plastic as it saves lives, is cheap and has high utility but the use of single-use plastics has to be minimized. Countries at the receiving end of the problem are not the ones who create the problem, so it comes down to the idea of equity. Fisheries, pollution, war machines all deplete the ocean. Tools available globally are such as marine spatial planning, marine protected areas, blue economy, blue bonds and nature to debt swaps. The starting point is to think globally but act locally.

BIOGRAPHIES OF SPEAKERS

Amb. (Retd.) Bernard Goonetilleke
Co-Chair, Pathfinder Indian Ocean Security Conference and Chairman, Pathfinder Foundation
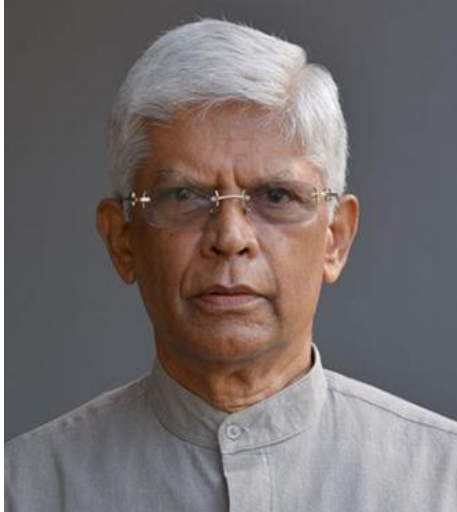
A graduate in History and postgraduate in International Relations (The Hague), Amb. Bernard Goonetilleke spent nearly four decades as an officer of the Sri Lanka Foreign Service. Following his retirement, he was appointed Chairman of Sri Lanka Institute of Tourism and Hotel Management (SLITHM) and later Chairman of Sri Lanka Tourism Development Authority (SLTDA) and Sri Lanka Tourism Promotion Bureau (SLTPB), which positions he held concurrently from 2008 to 2010.

His career as a Foreign Service officer began in 1970 and included postings to Sri Lanka diplomatic missions in Kuala Lumpur, New York, Bangkok, Washington D.C., Geneva and Beijing. He served as Permanent Representative of Sri Lanka to the UN in Geneva (1992-1997), during which period he was concurrently accredited to the Holy See and as Permanent Representative of Sri Lanka to the United Nations in Vienna. Later he served as Sri Lanka's Ambassador to the People's Republic of China (2000-2003). He also served as Acting Permanent Representative of Sri Lanka to the UN in New York (2004-2005) and ended his diplomatic career as Ambassador to the United States of America (2005-2008). Amb. Goonetilleke held several positions in the Ministry of Foreign Affairs including the post of Director General (Multilateral Affairs) from 1997-2000, and ending as Secretary, Ministry of Foreign Affairs (2003-2004).
Following the signing of the Ceasefire Agreement between the Government and the LTTE in 2002, he headed the Secretariat for Coordinating the Peace Process (SCOPP) and functioned as one of the four members of the government negotiating team. Since May 2010, he functions as Chairman, Pathfinder Foundation and Director of several companies associated with the Mercantile Merchant Bank (MMBL).

Amb. (Retd.) Shivshankar Menon
Co-Chair, Pathfinder Indian Ocean Security Conference

Amb. (Retd.) Shivshankar Menon is a Distinguished Fellow at CSEP, Visiting Professor at Ashoka University and Chair of the Ashoka Centre for China Studies. Amb. Menon served as National Security Advisor to the Indian Prime Minister (2010-2014); Foreign Secretary of India (2006-2009); and as Ambassador and High Commissioner of India to Israel (1995-1997), Sri Lanka (1997-2000), China (2000-2003) and Pakistan (2003-2006). He has served in the mission to the IAEA in Vienna and in the Department of Atomic Energy in Mumbai.

He was also a Distinguished Fellow with Brookings India. He has published Choices: Inside the Making of Indian Foreign Policy in 2016 and India and Asian Geopolitics: The Past, Present (Brookings Press USA, & Penguin Random House India) in April 2021. Amb. Menon has been a Richard Wilhelm Fellow at the Center for International Studies at MIT and Fisher Family Fellow at the Belfer Center, Harvard University. In 2010, he was chosen by Foreign Policy magazine as one of the world's "Top 100 Global Thinkers." He attended the Scindia School, Gwalior and St. Stephens College of the University of Delhi, where he studied ancient Indian history and Chinese. He speaks Chinese and some German.

Amb. (Retd.) Ahmed A. Jawad
Director-Centre for Indo-Lanka Initiatives, Pathfinder Foundation

Amb. (Retd.) Ahmed A. Jawad, formerly a senior career diplomat with the Sri Lanka Foreign Service is the Director of the Centre for Indo-Lanka Initiatives at the Pathfinder Foundation. He was Sri Lanka's Ambassador to Norway and Saudi Arabia and High Commissioner to Canada. He held various diplomatic positions at Sri Lanka missions in Sweden, France (including UNESCO) and China. In Canada, he served concurrently as Representative of Sri Lanka to the International Civil Aviation Organization (ICAO). Amb. Jawad was lastly Additional Secretary, Multilateral Affairs in the Foreign Ministry. He also held many other positions, in between tours of duty abroad, in a Foreign Service career spanning 32 years. He has a Bachelor's Degree from the University of Peradeniya and a Master's Degree, in international relations, from the University of Colombo and was awarded a Fellowship in Disarmament by the United Nations Centre for Disarmament Affairs in Geneva.

Mr. Kim Heriot-Darragh
Research Fellow, Perth USAsia Centre, University of Western Australia

Mr. Kim Heriot-Darragh joined the Perth USAsia Centre as Research and Program Fellow (South Asia), following a 14-year career in defence.

Mr. Kim holds undergraduate degrees in International Relations and Asian Studies, as well as a Master of International Law. A former Indonesian linguist, he served with the Australian Government in Timor-Leste, Afghanistan and most recently India from 2019 to 2023. In 2021, he was the first Australian civilian to complete India's year-long National Defence College course.

Amb. (Retd.) H.M.G.S Palihakkara
Former Secretary, Ministry of foreign Affairs, Sri Lanka

Amb. Palihakkara retired as Foreign Secretary of Sri Lanka on 31 Dec. 2006 after 37 years of civil and diplomatic service. His last diplomatic assignment abroad was as Sri Lanka's Ambassador and Permanent Representative to United Nations in New York 2008- 2009. He served as a Commissioner on the Presidential Commission on Reconciliation and Lessons Learnt (LLRC). He was the Chairman of UN Secretary General's Advisory Board on Disarmament Matters, United Nations HQ, New York. (2012). President of Sri Lanka appointed him the Governor of the Northern Province in February, 2015. He does visiting lectures on international relations, foreign policy, peace and security studies at several Sri Lankan academic/training institutions.

He previously served as Sri Lanka Ambassador and Permanent Representative to United Nations in Geneva and the Leader of Sri Lanka Delegation to the UN Human Rights Commission and the Conference on Disarmament, the UN multilateral negotiating body on international arms control and security matters, (1997-2000). He was Sri Lanka Ambassador to Thailand, Cambodia, Laos, Vietnam and Permanent Representative to Economic and Social Commission for Asia and the Pacific (ESCAP), Bangkok, 2000-2004. During the period 2002-2003 he functioned as Actg. Director General/ Deputy Director General of the Sri Lanka Govt. Peace Secretariat (SCOPP). He was Director General, Multilateral Affairs at the Foreign Ministry, Sri Lanka from 1995-1997 covering inter alia, work relating to Human Rights, preventive diplomacy, peace building, arms control, non-proliferation.

Dr. Liu Zongyi
Senior Fellow and Director, Center for South Asia Studies, SIIS

Dr. LIU Zongyi, Senior Fellow, Director of the Center for South Asia Studies, Shanghai Institutes for International Studies (SIIS). His research interests mainly focus on India's economy and foreign policy, China's foreign policy, BRICS, and G-20. In recent years, Dr. Liu published a lot of papers in Chinese and overseas journals on these subjects and published more than 300 pieces of commentary in Chinese and English in newspapers.

Dr. Liu got a B.A. in Economics from the Shandong University of Finance and Economics and a Diploma for Chinese and American Studies from The Johns Hopkins University Nanjing Center. He obtained Master and PhD degrees in International Relations from China Foreign Affairs University. He worked at German Development Institute (D.I.E), OECD, Centre for Strategic and International Studies (CSIS) in Washington D.C., Indian National Institute of Public Finance and Policy (NIPFP), and Institute of Stategic Studies of Islamabad (ISSI) as visiting fellow.

Admiral (Retd.) Jayantha Perera RWP, VSV, USP, ndu, psc
Former Commander of the Sri Lanka Navy

As the 19th Sri Lanka Navy Commander possessing thirty-seven years of military experience, who wishes to constantly be associated with defence and maritime affairs both locally and internationally, Admiral Jayantha Perera is an expert in the area of maritime defence. As a professional aptly qualified in a myriad of military disciplines, which particularly captures the aspects of safeguarding maritime boundaries and enforcing principles of good governance in the ethical conduct of oceanic affairs, he was duly able to rise to the upper echelon of his military career, by being appointed as the 19th Commander of the Sri Lanka Navy in the year 2014.

Having obtained his first Master of Science degree in Defence Studies from the University of Madras, he was able to successfully complete his second Master of Science degree in Defence and Strategic Studies at the National Defence University of Islamabad, Pakistan. Before attaining the honour of being appointed as the 19th Sri Lanka Navy Chief, Admiral Perera also held many senior responsible naval appointments, where he was able to secure the opportunity of becoming the first Commanding Officer of the SLN Flag Ship Sayura in 2000. The exemplary service rendered by him towards protecting the motherland, he became a recipient of several gallantry medals. Upon retirement as the Navy Chief, he was appointed to serve in the capacity of Advisor to President on Maritime affairs in 2015 and was subsequently able to execute duties as a member of the Presidential Task Force for the prevention of the spread of COVID 19. At present, while extending services as a consultant and a Board Director to Maclarence group of companies in Sri Lanka, his recent appointment as a member of the steering committee on law and order under the Ceylon Chamber of Commerce, has made him impart, the knowledge and experience acquired over the years of serving in various capacities as a senior naval officer.

Dr. (Cdr) Arnab Das
Founder & Director, Maritime Research Centre, Pune, India

Dr. Arnab is a researcher, maritime strategist and an entrepreneur. He is the Founder & Director of the Maritime Research Centre (MRC) under the Foundation for Underwater Domain Awareness (FUDA), Pune that is working on a unique concept of Underwater Domain Awareness (UDA) as its main focus. He also runs his Start-up, M/S NirDhwani Technology Pvt Ltd (NDT) that provides consultancies and services for high end strategic security solutions and sustainability support. He advises start-ups on underwater technology solutions and defence strategies. He has over 100 publications, a book and two book chapters to his credit.

Dr. Arnab was commissioned as an electrical officer in 1994. He was deputed to IIT Delhi in 2001 for his Masters in Underwater Electronics and subsequently was appointed as the Project Officer at IIT Delhi to manage the Underwater R&D for Navy. He delivered multiple technology transfers including for the strategic submarine project related to underwater systems and algorithms. He also completed his PhD from IIT Delhi in 2007 in underwater signal processing. He was invited to Tokyo University in 2014 as a visiting researcher to participate in design and development of passive acoustic monitoring systems for fresh water dolphins. He was also at the Acoustic Research Laboratory of the Tropical Marine Science Institute at the National University of Singapore in 2015 for a year, post his retirement from the Navy to understand underwater technology development from a global perspective.

Rear Admiral (Retd,) Dimuthu Gunawardena
Former Actg. Director General and Director (Communications and Publications) Institute of National Security Studies Sri Lanka (INSS)

Rear Admiral Dimuthu Gunawardena retired from the Regular force of the Sri Lanka Navy after completing over 35 years' service to the nation. Being a sea going officer of the Executive branch he specialized in Naval Communications and has acquired wide and varied experience at sea and ashore before retiring in April 2018. His sea career culminated in 2008 after relinquishing command of SLNS Samudura, an Offshore Patrol Vessel which was instrumental in taking an active role in the final years of the humanitarian operation in the North and the East. He has served in leadership appointments ashore such as Area Commander of North Central Naval Area, and Commandant, of the Naval and Maritime Academy, in Trincomalee. He was nominated to actively participate in several national and international conferences/seminars representing the navy and the country.

He began his naval career in the third batch of the General Sir John Kotelawala Defence Academy, which is now a Defence University and pursued his studies graduating with a Bachelor of Science (Honours) degree from the University of Colombo. Thereafter, he obtained three master's degrees in Defence Management, Management Studies and National security and War studies from the General Sir John Kotelawala Defence University, Osmania University, Hyderabad, India and National Defence University in Pakistan, respectively. In addition to medals of gallantry awarded for acts of bravery, his distinguished naval career has been recognized with several awards and commended by the Commander of the Navy on eight occasions. Soon after his retirement, he was called upon to serve in the Regular Naval Reserve for a brief period where he was appointed as Additional Director General of the Department of Civil Security and Acting Director General of the Institute of National Security Studies, the premier think tank on national security under the Ministry of Defence.

Prof. Jeffrey Payne
Assistant Professor, Near East South Asia Center for Strategic Studies, National Defense University, Washington DC, USA

Assistant Professor at the Near East South Asia (NESA) Center for Strategic Studies. He pilots NESA's maritime security programming, including its ongoing series devoted to the Indian Ocean Region and wider Indo Pacific. In addition, he leads NESA's engagements relating to maritime and littoral information sharing/data analysis.

Professor Payne conducts analysis on Chinese foreign policy, Indian Ocean Regional affairs, and maritime security. He is particularly interested in the intersection of maritime security and strategic competition in the Indian Ocean, as well as in how technology and information can assist in furthering security cooperation. His work informs United States Combatant Commands, the Office of the Secretary of Defense, and interagency efforts inside the United States government. Professor Payne takes part in United States government efforts relating to Maritime Domain Awareness and helps facilitate internal discussions across bureaucratic seams existing in the Indian Ocean. He has presented before international conclaves, security forums, and defense institutions in Europe, the Middle East, South Asia, and East Asia.

Prof. P. B. Terney Pradeep Kumara
Professor of Oceanography, Dept. of Oceanography and Marine Geology, University of Ruhuna, Sri Lanka

Professor P.B. Terney Pradeep Kumara is a proud alumnus of Rahula College, Matara and holds B.Sc. 2nd Class Hons (Zoology special), University of Ruhuna, Sri Lanka and Ph.D. in Coral Ecology, University of Kalmar, Sweden. He was the former Head of the Department of Oceanography and Marine Geology, and the former General Manager/CEO of Marine Environment Protection Authority (MEPA), Ministry of Low land Development and Coast Conservation. He served in above portfolios for Seven years each, with active engagement in marine and coastal ecological management, administration, knowledge dissemination, research, local and international assignments and consultancy for more than 23 yrs.

At present he is serving as a Professor in Oceanography attached to the Department of Oceanography and Marine Geology, University of Ruhuna and also as the Director for the Centre for International affairs (CINTA), University of Ruhuna. He has published extensively in book and research publications. He is also an UNEP Advisory Group Member and UNEP Expert Group Member for the Marine Litter and Microplastics and also a SACEP Expert member for Marine Litter Management in the South Asian Seas (SAS) for the preparation of Marine Litter Management Plan for South Asian Seas (SAS) region. He is currently serving as a visiting lecturer at local Universities, Ocean University, National Defense College, Defence Services Command and Staff College, National Institute of Occupational Safety and Health (NOISH) and University of Nha Trang, Vietnam.

Professor Terney has taken part in a number of environmental assessment studies including UNDP and World Bank funded projects contributing as the team Leader or marine ecosystem specialist capacity. He serves as a marine environment specialist in more than dozens of national expert committees. Professor Terney is a recipient for 'Science Popularization Award (English medium) 2005' awarded by Sri Lanka Association for the Advancement of Science and 'Ruhuna University vice chancellor's award for the most outstanding young scholar of the year 2006' for his outstanding personal achievements and the service rendered to the University of Ruhuna.

Dr. Richard Jeo
Senior Vice President and Chief Field Officer, Asia-Pacific Field Division, Conservation International, Virginia, USA

Dr. Richard Jeo directs Conservation International's work in the Asia-Pacific region, overseeing strategies and outcomes in 13 countries. He guides the organization's role in international and regional networks, as well as partnerships with both the private and public sectors to achieve the best outcomes for people and nature. Dr. Richard brings more than 20 years of experience working in conservation and conservation science across the globe to the role. Prior to joining Conservation International, he served as the Montana state director for The Nature Conservancy, where he led programs that permanently protected more than 250,000 acres of critically important private lands.

During his tenure at The Nature Conservancy, Dr. Richard played a leadership role in some of the largest successful conservation deals ever completed, including the 2009 Great Bear Rainforest agreements with Coastal First Nations in Canada that encompassed more than 21 million acres, as well as the $500 million Montana Legacy project that transferred more than 310,000 acres of forest to public ownership. Dr. Richard received his Ph.D. in neuroscience from the California Institute of Technology in 1998 and continues to conduct conservation research. He is based in Singapore.

Dr. Athaulla Rasheed
Doctoral Researcher, Australia National University (ANU)

Currently, an academic researcher at the Australian National University (ANU), Dr. Athaulla ('Atho') Rasheed is a former foreign service officer and diplomat at the Maldives Ministry of Foreign Affairs. He holds a PhD in political science from the University of Queensland, Australia and is a former senior lecturer in political science and international relations at the Maldives National University. He authors peer-reviewed policy publications on small states' impact on global and regional security agenda, emphasising the agency of small states in the Indian Ocean, the Pacific, and the Indo-Pacific security communities. Dr. Athaulla is also completing a 2nd PhD at the Department of Pacific Affairs of ANU, on understanding wider definitions of security via the lens of climate security in small island developing states and their engagement in the UN Security Council debates.

Dr. Rashed Uz Zaman
Department of International Relations, University of Dhaka, Bangladesh

Dr. Rashed Uz Zaman has been teaching at the Department of International Relations, University of Dhaka since 1998. He holds a bachelor's and a master's degree in International Relations from the University of Dhaka. He has also obtained a master's in Security Studies from the University of Hull, and a Ph.D. in Strategic Studies from the University of Reading, United Kingdom. In 2009-11, Dr. Zaman was an Alexander von Humboldt post-doctoral research fellow at the University of Erfurt, Germany. He was a Fulbright Visiting Professor in the Department of Political Science at Vanderbilt University, USA, in 2012.

He has also served as the Chairman of the Department of International Relations, University of Dhaka. Dr. Zaman works on strategic and international security issues. His latest publication is a book chapter titled 'Defence Diplomacy and Civil-Military Relations: The Case of Bangladesh' in Alan Chong and Nicole Jenne (eds.), Asian Military Evolutions: Civil Military Relations in Asia (Bristol: Bristol University Press, March 2023). He speaks regularly at various international and national educational, defense and administrative institutions including Defense Services Command & Staff College (DSCSC), National Defence College (NDC), Bangladesh, Tribhuvan University, Nepal, National Defence College Sri Lanka, Foreign Service Academy, MoFA, Police Staff College, Bangladesh Public Administration Training Centre (BPATC), Bangladesh Institute of Governance and Management (BIGM).

LIST OF PARTICIPANTS

ON-SITE PARTICIPANTS

Name	Designation	Organization
H. E. Julie J. Chung	Ambassador	US Embassy
H. E. Jean-François PACTET	Ambassador	France Embassy
H. E. Damiano Francovigh	Ambassador	Embassy of Italy
H. E. Maged Mosleh	Ambassador	Embassy of Egypt
H. E. Andrew Patrick	High Commissioner	Embassy of UK
H. E. Tareq Md Ariful Islam	High Commissioner	High Commission of Bangladesh
H. E. HAYASHI Makoto	Deputy Director-General / Deputy Assistant Minister, Southeast and Southwest Asian Affairs Department	Ministry of Foreign Affairs, Japan.
John "Jay" Wise	Deputy Director of the Office of Security and Transnational Affairs	Department of State's South and Central Asian Bureau - US Embassy
Lalita Kapur	Acting High Commissioner	Australian High Commission
KATSUKI Kotaro	Acting Ambassador	Embassy of Japan
Patrick Rata	Acting High Commissioner	High Commission of NZ
Colonel Amanda Johnston	Defence Advisor	Australian High Commission
Enze Jin	Third Secretary of the Embassy of China	Embassy of China
Qin Ligong	Chief Political Officer	Embassy of China
Mohamed Mady	Counsellor	Embassy of Egypt
Ákos Baumgartner	Political Attach	EU
Satyanjal Pandey	Deputy High Commissioner	Indian High Commission
Heru Prayitno	Head of Chancery	Indonesian Embassy
Francesco Perale	Deputy Head of Mission	Embassy of Italy
MURATA Shinichi	First Secretary, Political Section	Embassy of Japan
YOKOHARI Yuki	Second Secretary, Political Section	Embassy of Japan
IMAI Kaori	Second Secretary, Political Section	Embassy of Japan
Attila Nasir	Researcher, Political Section	Embassy of Japan
Aminath Warudha	Second Secretary	Maldives High Commission
Said Al Harbi	Deputy Head of the Mission	Embassy of the Sultanate of Oman
Haider Hassen Mairghani	Embassy Translator	Embassy of the Sultanate of Oman
Lasitha Wijayagunawardana	Chief Business Operations Manager	Consulate of the Republic of Singapore
René Everson Varney	Deputy High Commissioner/Counsellor; Political	South African Embassy
Jung Sohngyee	Deputy Head of Mission	Embassy of South Korea
Byeon Jeonghun	Research Officer	Embassy of South Korea
Prangtip Kongridhisuksakorn	Counsellor	Royal Thai Embassy
Abdullah Mohideen	Translator	Embassy of the United Arab Emirates

Alexander Smith	Second Secretary (Political)	Embassy of UK
Thomas Seeker		US Embassy
Keith Jenkins		US Embassy
Anne Newborg	Political Officer	US Embassy
Dustin Bickel	Regional Indo-Pacific Strategy Coordinator	US Embassy
Ramesh Irugalbandara	Public Diplomacy Officer	US Embassy
Kisal Goonerathne		EU
Li Xinwei		Chinese Embassy
Aruni Wijewardane	Foreign Secretary of Sri Lanka	Ministry of Foreign Affairs of Sri Lanka
Hon. Niranjan Deva-Aditya DL FRSA	Presidential Advisor	
Lt Col Saman Kariyawasam	Deputy Director, Policy Implementation and Monitoring Division	Presidential Secretariat
Rizvi Hassen	Director General	Ocean Affairs, Environment and Climate Change Division
Asela Rekawa	Chairman	Marine Environment Protection Authority (MEPA)
Geevika J Ganegama Arachchi	Deputy Director General/ Research (Actg.)	NARA
Commodore M. D. K. Wijewardana	Commodore	Sri Lanka Navy
Captain (ND) P. S. Paranavithana	Director (Personnel & Administration)	Sri Lanka Coast Guard
Colonel M.B.B. Nalin Herath	Overlooking Director General and Acting Director (Research)	Institute of National Security Studies (INSS)
Commander (ASW) A.P. Amila Prasanga	Military Research officer	INSS
Ravinatha Aryasinha	Executive Director	Lakshman Kadirgamar Institute (LKI)
Pamela J. Deen	Director General	Bandaranaike International Diplomatic Training Institute (BIDTI)
Nayani Melegoda	Executive Director	Regional Centre for strategic studies (RCSS)
Gamini Keerawella	Executive Director	Bandaranaike Centre for International Studies (BCIS)
Rishan de Silva	Managing Director	Geopolitical Cartographer
Deweni Rambukwella	Research Assistant	Geopolitical Cartographer
Asantha Senevirathne	Senior Lecturer on Geopolitics from department of Strategic studies	Gen. Sir John Kotelawela Defence University
Dushanthi Fernando	National Project Coordinator	United Nations Office on Drugs and Crime
Lt General Venkatesha Gudadahalli Venkataswamy Reddy	Strategic Advisor	Synergia Foundation, India
Reat Admiral (Retd.) Y. N. Jayarathna	Rear Admiral	Former Chief of Staff of the SL Navy
Sumith Nakandala	First Secretary to BIMSTEC	BIMSTEC
Indrajit Coomaraswamy	Former Governor	Central Bank of Sri Lanka
Luxman Siriwardena	Former Executive Director	Pathfinder Foundation

Meera Srinivasan	Correspondent to Sri Lanka & Maldives	The Hindu
P. K. Balachandran	Correspondent	NewsInAsia
Darini Rajasingham	Anthropologist	
Michael Iveson	Research Fellow	LKI

VIRTUAL PARTICIPANTS

Name	Organization	Job Title	Country
Abdullah Mohideen	Embassy of the United Arab Emirates - Colombo	Economic Analyst	Sri Lanka
Abdulrhman Hassun	Helping Hand Humanitarian Aid Team	Observer of international political affairs	Iraq
Abhaya R. Joshi	Global centre for climate & security governance (GCSG)	Executive Director	Nepal
Afifat Khanam Ritika	Bangladesh Institute of Maritime Research and Development (BIMRAD)	Research Officer	Bangladesh
Amal Alem			Netherlands
Amanda Aspden	Indian Ocean Rim Association	Director - Maritime Safety and Security	Australia
Amanulla D		Counseller	Maldives
Ameera Arooz			Australia
Amila Prasanga	Institute of National Security Studies	Military Research Officer	Sri Lanka
Amunugama Dinuthri	Lawyer	Legal officer	Sri Lanka
Anilraj De Silva	Asia Trade and Investment Corporation	Chief Executive Officer	Canada
Asiri Fernando			Sri Lanka
Ayush Sawadh	Maritime Research Center	Research Center	India
Bhushan Vishwanath	Mindfarm Novatech Pvt Ltd	Director	India
Capt. Rama Kanduri	Megha Engineering and Infrastructures Limited	General Manager - Ship Infra (ports)	
Chamika Hewawasam	National Development Bank	Senior Manager	Sri Lanka
Chaminda Kulatunga			Sri Lanka
Chanaka Udayanga	Sri Lanka Navy	Commander	Sri Lanka
Chandranath Amarasekara	Central Bank of Sri Lanka	Assistant Governor	Sri Lanka
Charana Kanankegamage	Clementi Legal	Lead Counsel	Sri Lanka
Charmalee Jayasinghe	Development Partners Secretariat	Knowledge Management Coordinator	Sri Lanka
Chathuri Perera	Embassy of Sri Lanka	Counselor	United States
Christine Dasanayake	National Science Foundation	Senior Scientific Officer	Sri Lanka
Clara Cochran	Company	Employee	United States
Darini Rajasingham		Anthropologist	Sri Lanka
Dhammika Vidanalage	DCC	Director	Sri Lanka
Dinesh De Alwis	SriLankaTweet	Fact-Checker / Journalist	Sri Lanka
Dinithi Pallewatta	International University of Japan	Student	Sri Lanka
Dr Pratibha Jagtap	MIT ADT University's MANET Pune	Associate Professor	India
Egor Fedorov	Max Planck Foundation		Germany
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