THE PORTHOLE

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First Edition

Naval & Maritime Academy

'ECONOMIC PROSPERITY & SECURITY THROUGH THE OCEAN'

THE PORTHOLE

Porthole is an annual journal which provides a centralized platform for publishing research papers that contain scholarly articles, specifically; publications containing articles written by NMA Directing Staff, Student Officers, Officer Under Trainees, Sailor Instructors & Sailor Under Trainees. Journal focuses on a specific discipline or field of study. The theme for the year 2022 is 'Economic Prosperity and Security through the Ocean'.

Directing Staff and Students' active engagement in their academic endeavour has been demonstrated to be an important component of success and learning outcomes. The main objective of publishing the Porthole is to enhance the academic writing ability and reading habit of the Naval persons, widening the knowledge of various subject areas constantly need to be updated.

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FOREWORD

'Reading Makes a Full Man: Writing Makes an Exact Man' - Francis Bacon

Being the Commandant of the Naval and Maritime Academy, it is indeed a great pleasure for me to present the foreword on the maiden edition of the annual NMA journal. For a long time Naval and Maritime Academy; the premier training institute of Sri Lanka Navy, has felt the requirement of publishing its own professional publication. 'The Porthole' is the proud embodiment of this vision. I am contented that this milestone was attained during my tenure as the Commandant NMA.

Writing is one of the powerful means of communication that a person should master to be a great leader. There is no apt place for an individual in Sri Lanka Navy other than the NMA; the alma mater of all the Naval Personnel: to inculcate and nourish the skill of writing. NMA journal will provide the directing staff, the student officers, the officer under trainees, the sailor instructors and the sailor under trainees a great opportunity to develop their skill of writing in the long run. The theme for the maiden edition of the publication has been rightly selected to be **'Security and Prosperity through the Oceans'**. With an advantageous maritime geography, the economy of Sri Lanka in the future will mostly depend upon the oceans. While the SLN has been successful in a protracted war at sea, it is prudent to anticipate the new forms of challenges that may definitely threaten our prosperity and security in the time to come. I am certain that 'The Porthole' will pave the way for pollinating the bright ideas.

I would like to commend the role played by the editorial board for their untiring efforts in selecting, proof reading and compiling the articles. I value the efforts of NMA IT School for designing and editing the publication with dedication and commitment.

I take this opportunity to congratulate all the authors whose articles have been published and encourage all other officers and sailors to contribute effectively for the next edition.

I am looking forward to read more editions in 'The Porthole'.

KDDC Fernando, RSP, USP, rcds, MSc (DS) Mgt, MA in IS & S (UK), AFNI, JP (Whole Island)
Commodore
Commandant
Naval & Maritime Academy

MESSAGE FROM THE EDITORIAL BOARD

At the outset, it is a great privilege to be in the editorial board of first ever edition of NMA Journal 'The Porthole'. From the vision of having a unique professional publication for NMA, the Commandant's personal concerns, involvements and directives greatly influenced the quality of end product. Therefore, the commitments made by the Commandant Naval and Maritime Academy is highly appreciated in making his vision into a reality.

Further, as Sri Lanka Navy is promoting the habits of reading and writing among its officers and sailors, NMA Journal would provide another platform for officers and sailors at NMA to nurture those habits. Similarly, the naval personnel would get more chances of emerging as potential authors in future, in order to contribute at next higher levels of professional writing through the NMA Journal.

Moreover, the views and recommendations brought up by the authors would be eye openers for the decision making level in order to make effective decisions, as the NMA Journal contains writings of all levels starting from Directing Staff, Instructors, Student Officers, Senior Sailors to Junior Sailors.

Finally, the editorial board presents its complements to all stakeholders who contributed in various capacities to publish the journal in highest standard.

Content

Content

SECURITY AND PROSPERITY THROUGH THE OCEAN: AN INTEGRATED APPROACH

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Abstract

Maritime security and prosperity through oceans are no two different areas. They overlap largely on many areas and the resultants of maritime security (the conditions that it can generate) can be directly or indirectly have a relationship to economic aspects or prosperity through the oceans. Therefore, it is by far the most difficult task to speak of either area singly without referring to the other. This paper analyses different literature and framework described by scholars in each of these areas in order to propose a common or an integrated framework for security and prosperity through the oceans. There, the researcher introduces two functions; enhance and control in respect of maritime security while another two functions; Mitigation and influence in terms of the risks identified. Enhancement, control and mitigation measures will have a positive relationship while influence will have a negative effect on the identified resultants of maritime security (These are obvious security and economic aspects).

Key Words : Maritime Security, Economic prosperity.

Introduction

The oceans have been the centrepiece for many countries since ancient times despite the fact that some strategists like Halford John Mackinder emphasised the importance of the heartland (A term used to denote the collective land masses adjoining Europe and Eurasia). However, 182 independent countries that exist in today's world share a coast line that is directly connected to the sea or ocean and therefore these countries will always be harping on the maritime aspects for an indefinite time in the future. The two key areas that all these countries are mostly concerned are the security and economic aspects through oceans for the benefit of their own. The most commonly heard terminology for the purpose of achieving economic prosperity through oceans is the 'Blue Economy' and that is widely and vividly spoken all over the world despite its slower adaptation by countries. Additionally, The security is widely spoken in terms of maritime security encompasses broader areas such as maritime zones, maritime jurisdiction,

traditional and nontraditional threats, maritime terrorism, Maritime Domain Awareness (MDA) etc.

Many a literature found on the internet and other printed material have a segregated approach in defining security and prosperity over oceans, even though these two broader areas go hand in hand in the eyes of ground realities. Further, the literature found that endeavoured to merge the two key areas under study lacked proposing a common framework. Therefore, this paper tries to merge these differently touched areas in a single framework that can be used as a reference for future use and a basement for further researches.

Methodology

The researcher mainly depended on the literature available in open sources through the internet. The primary method employed was a content analysis for maritime security and economic prosperity through oceans in order to discern two different individual frameworks. Then the researcher tried to merge these two different frameworks based on the Sri Lankan context and propose a common framework for Sri Lanka. The methodology followed was mainly in the manner of a desk research.

Literature Background

The literature was examined in open sources under three different categories; maritime security and economic prosperity through oceans and possible overlaps between security and economy.

Security

As per voyer, et al., (2018) maritime security is a term which is widely used but poorly defined in broader terms. Further, they cite Bueger (2014) who identified four key areas in which the term maritime security is understood; sea power, maritime safety, economic development, human security. Further, Bueger (2015) describes, sea power is protection of states including patrolling and protecting sea lanes claimed maritime zones Marine safety as a dressing threats to ships and maritime installations and assets including responding to maritime disasters and search and rescue, economic development as enforcing laws and regulations in relation to resources in the ocean where as human security as ensuring food security and sustainable livelihood with a special focus on Illegal, Unreported and Unregulated (IUU) fishing and human trafficking.

Moreover, Voyer, et al., (2018) argues that, maritime security as an enabler of the blue economy and maritime security is a subset of the larger blue economic aspect. Below is the matrix proposed by Voyer, et al., (2018) outlining the intersections between maritime security and blue economy;

Table 1: Matrix of intersections between maritime security and blue economy.

	Extraction of non-living resources, or resource generation	Harvesting of living resources	Commerce and trade in and around the ocean	Ecosystem protection and management
Enabling the Blue Economy	Seapower: Peacekeeping, defence and surveillance activities within expanded maritime zones, including disputed territories. Marine safety and economic development: especially in relation to energy security through the protection of maritime assets and infrastructure, such as oil rigs and renewables	Economic development and human security: managing IUU fishing through cooperative regional arrangements Seapower: Managing conflict in disputed territories. Human security: search and rescue e.g. fishing vessels	Seapower: Managing geopolitical threats Economic development: Maritime crime prevention and management through patrol activities, monitoring and surveillance (piracy, terrorism, smuggling, human trafficking). Marine safety and human security: MDA and disaster management	Human security: Surveillance and data provision for disaster management and response Marine safety and economic development: Enforcement of resource use and environmental protection regulations (e.g. MPAs). Protecting against environmental crimes (e.g. IUU fishing, illegal dumping at sea)
Contributing to the Blue Economy	Expanded naval fleets with associated shipbuilding and associated industries	Public and private sector engagement in enforcement activities, including patrol boat building Expanded MDA, innovation in surveillance and monitoring technologies		

Source: Voyer, et al., (2018).

Till (2018) describes the term maritime security is a ambiguos phrase itself and brings in the following matrix to represent varieties and constitutents that represent martime secuirty;

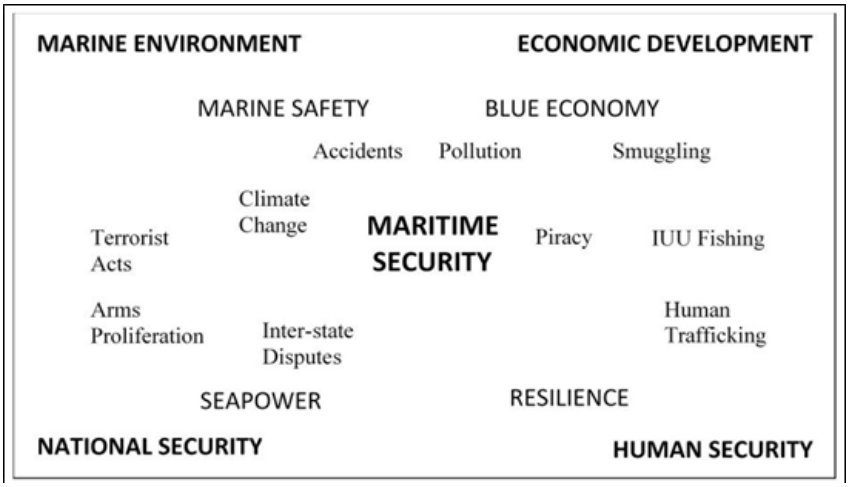

Figure 1: Maritime Security Matrix.
Source : Bueger (2015) as Represented in Till (2018).

As per Bueger (2015) maritime security constitutes national security, human security, marine environment and economic development. Hard national defence concern issues tend to dwell on the lower part of the matrix and somewhat soft and softer parts of this matrix such as non military stake holders and elements dwell on the upper corners of the matrix.

Economic Prosperity

Voyeur, et al., (2018) point out that, blue economy is an increasingly popular term in modern marine and ocean governance and further this concept seeks to many ocean based development opportunities with environmental stewardship and protection. A multi layered analytical approach of their study interprets the use of blue economy concept under four dominant discourses i.e. Oceans as natural capitals, oceans as a good business, oceans as integral part of developing coastal nations and oceans as small scale fisheries livelihoods.

On the other hand, Bennett, et al., (2021) describe oceans are increasingly viewed as a new frontier for economic development yet companies and governments Rae capitalize on marine resources, substantial risks can arise for people and the environment and they identify 10 main categories of such risks;

- Dispossession, displacement and ocean crabbing.
- Environmental justice concerns from pollution and waste.
- Environmental degradation and reduction of availability of ecosystem services.

- Livelihood impacts for small scale fishers.
- Lost access to marine resources needed for food security and well being.
- Inequitable distribution of economic benefits.
- Social and cultural impacts of ocean development.
- Marginalization of women.
- Human and indigenous rights abuses.
- Exclusion from decision making and governance.

Bennett, et al., (2021) recommend in line to their identified risks, 10 recommendations as depicted in Figure 2;

Figure 2: Ten Key Recommendations.

Source : Bennett, et al., (2021).

Overlap Between Security and Economy

Voyeur, et al., (2018) concludes that, role played by maritime security operations and the agencies has a direct relationship to support the blue economy by being itself a source of economic development and growth. They further argue that, as the blue economy expands and grows in response to concerted efforts in a region, there will be an inevitable demand for maritime security capability. A classic example, they refer to describe the interdependency of these two key areas is the maritime silk route initiative aimed at developing economies has a significant investment in port development as well as commensuration maritime security and defence.

On the same lines, Bueger & Edmunds (2017) point out that, it is a likely outcome of an increased emphasis on maritime security within a growing blue economy will be the enhanced need for training and capacity development activities. The latter can include development to coastguard and defence capabilities.

Discussion

Under this section the researcher tries to derive two separate frameworks for the two key areas the paper is aimed at; security and prosperity through oceans after which both will be merged given the Sri Lankan context.

Based on the literature background, the following framework is derived from aspects of security and the overlap between security and economic prosperity;

- Extraction of non living resources or resource generation, harvesting of living resources, commerce and trade in and around the ocean and ecosystem protection and management can be identified as four key areas that are enabled by maritime security.

- The above identified four key areas can be controlled by maritime security and in particularly with the elements such as maritime defence, surveillance activities in maritime zones, managing IUU fishing, Search And Rescue (SAR) activities to entrust human security, maritime crime prevention, marine safety, Maritime Domain Awareness (MDA), protection against environmental crimes.

- Further, it can be identified that these elements of maritime security can be enhanced through training and capacity development.

Moreover, based on the findings at literature background, following risks can be identified as major influencers under economic prospects through oceans;

- Dispossession, displacement and ocean grabbing.
- Environmental degradation and justice concerns.
- Inequitable distribution of economic benefits and livelihood impacts for low income people.
- Lost access to marine resources needed for food security and well being.
- Social and cultural impacts of ocean development.
- Exclusion of concerned communities from decision making and governance.

Further, these identified risks can have a direct impact on the four key areas identified earlier under maritime security as its enablers. In addition, the ten key recommendations identified during literature background can be considered as mitigation measure to reduce those risks and their impact. These ten key recommendations are;

- Tenure and access.
- Food security.
- Gender equity.
- Small scale fisheries.
- Environmental justice.
- Economic benefits.
- Social cultural impacts.
- Eco system services.
- Human rights.
- Inclusive governance.

Overarching all aforesaid relationships among all variables, following single framework is constructed for the easy understanding of the total dimension of security and economic prosperity through the oceans;

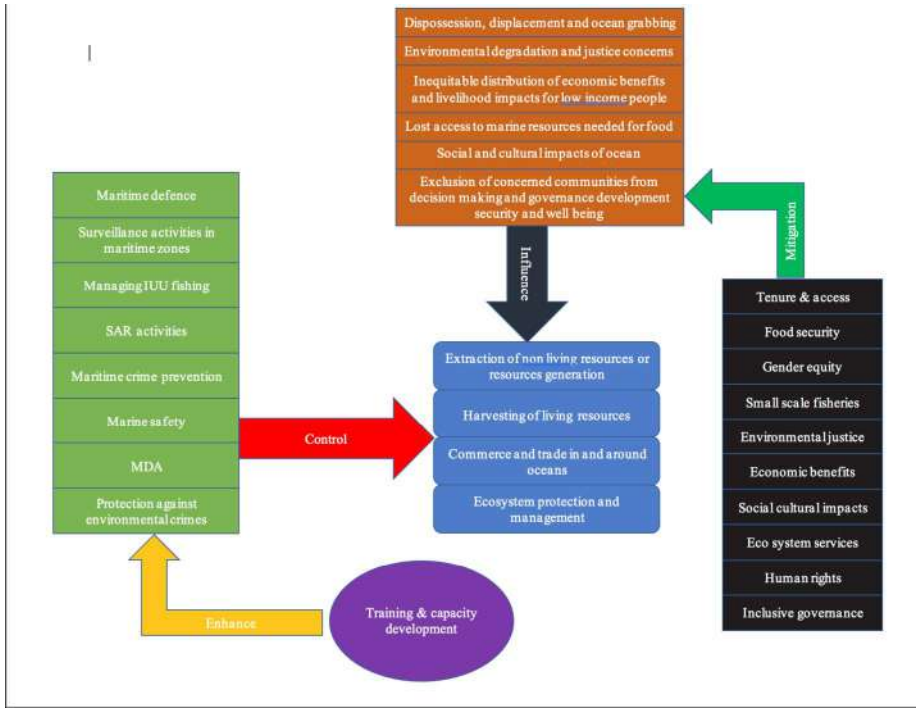

Figure 3 : Integrated Framework for Security & Prosperity Through the Ocean.

Source : Developed by the Author.

The identified integrated framework for security and prosperity suggests that there are four functions; Enhance, control, influence and mitigation in order uplift four major areas of the resultants of maritime security. Control and enhancement functions are the output and the input for elements of maritime security. On the other hand, the resultants of maritime security (four major areas) are influenced by risks which can be mitigated by ten recommendations for mitigation.

Therefore, ideally, if enhancement and control measures can be increased while minimizing the influence functions through mitigation, the resultants of maritime security are increased. This can be figured in the following equation for easy interpretation;

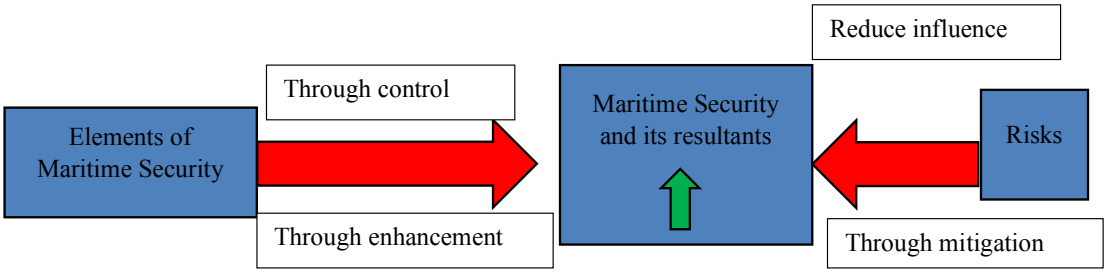

Figure 4 : Simplified Equation of the Integrated Framework.

Source : Developed by the Author.

Conclusion

The oceans have been a competing places for many a nation in terms of its resources and dominance. In the present context, the number of countries which share a border with the oceans or seas is much greater than the number that do not. Therefore, the oceans will be a place for competition for an indefinite time in the future as well. The terms like maritime security and economic prosperity through oceans are widely spoken ones in today's context. Blue economy is another term that cannot be ruled out when speak of the economic prosperity through oceans, even though its practical application has a slower momentum. On the other hand, security or maritime security encompasses a range of topics that are widely discussed below it. In the reality, there are many literatures found in open source that describe and providing a framework to describe these two wide areas separately, but a very little to describe its integration as both these go hand in hand in practically. Therefore, after analysing the open source literature, two identified frameworks for each of the areas (Security and Economic prosperity through oceans) were merged in order to result in a common and integrated framework that describes the relationship between security and economic

prosperity through the oceans. With that, it was identified four major areas that maritime security can Make resultant and elements of maritime security that can control them. Moreover, it was further identified, such maritime security elements can be enhanced through training and capacity building while any identified risks to the resultants of maritime security can be mitigated through a ten point mitigation.

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SRI LANKA'S POSITION IN MARITIME SECURITY AND BLUE ECONOMY

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Abstract

An ocean based economy is essential to the future prosperity and welfare of a country. Hundreds of millions of people rely on it as a major source of food, energy, minerals, health, pleasure and transportation. However, a significant transformation in the maritime industry's terrain is imminent. New activities are emerging that are changing and diversifying maritime businesses, which were previously thought of as the traditional domain of shipping, fishing and offshore oil and gas. Population expansion, rising wages, the depletion of natural resources, adaptation to climate change and cutting-edge technologies all contribute to the emerging 'ocean economy'. The rising ocean sectors are getting the majority of the focus, even if established maritime companies are still innovating quickly. Offshore aquaculture, seabed mining, offshore wind, tidal and wave energy, oil and gas exploration and production in deep oceans and extremely hostile conditions, cruise tourism, maritime surveillance and marine biotechnology are some of these sectors. The long term potential for innovation, employment creation and economic growth offered by these sectors is impressive.

Introduction

The ocean is the new economic frontier. It has the ability to greatly increase economic growth, employment and innovation while also holding the promise of enormous resource wealth. And it is becoming more understood that it is necessary for tackling many of the global issues that the globe will face in the decades to come, such as enhanced medical care, global food security and climate change. Although the ocean has enormous potential to assist in addressing these issues, it is already under pressure from overuse, pollution, a decline in biodiversity and climate change. It will thus take prudent, sustainable methods for the ocean's economic development if it is to reach its full potential.

Further, The ocean economy includes both the natural resources and ecosystem services that the ocean offers, as well as industries dependent on the ocean (such as shipping, fishing, offshore wind and marine biotechnology) (fish,

shipping lanes, CO2 absorption). It focuses on the maritime sector dimension because of how closely related ecosystem services and ecosystem-based management are to one another. However, a complex range of dangers that must be managed also characterize economic activity on the water. The ones relating to ocean health from overuse of marine resources, pollution, increasing sea temperatures and levels, ocean acidification and loss of biodiversity are foremost among them. The irresponsible use of the ocean and its resources threatens the fundamental support system that underpins most of the world's prosperity and welfare.

Maritime History

The maritime history is a broad topic that encompasses issues such as maritime commerce, shipbuilding, port development, human migration and diaspora and many other aspects of sea transportation. Theorists can approach the topic from a variety of angles and simultaneously touch on a wide range of other related topics, such as science, technology, industry, economics, trade, politics, art, literature, ideas, sociology, military and naval affairs, international relations, cartography, comparative studies in imperial and colonial affairs, institutional and organizational development, communication, migration and intercultural relations. In a nutshell, marine history is a humanistic examination of the various facets of man's interaction with the ocean.

The growth of marine networks has connected various societies and civilizations, acting as a conduit for the distribution and exchange of goods as well as the projection of political and economic power and the spread of ideologies and culture. These networks can also be broadly classified as either economic or political. Economic networks are primarily ones that facilitate trade and allow states or other organizations to harvest, distribute, alter and consume commodities like food, metals, or lumber. Political networks are maritime confederacies or empires in which dominant factions control the actions of others to fulfill their own needs.

The sea water covers 71% of the planet's surface and contains 97% of the planet's water, yet more than 95% of the underwater world remains unexplored. It offers seafood, which accounts for at least 15% of the protein consumed by 60% of the world's population and is the main source of animal protein for the diets of about 1 billion people (mainly in poor nations). Seafood exports account for 10% of all agricultural food exports and 1% of global commerce trade in terms of value. 90% of all trade is carried by the maritime sector, while tourism - of which marine and coastal tourism is a significant component - represents 5% of worldwide GDP. More than 500 million people work in industries related to water. Other essential

functions for human well-being are also provided by marine ecosystems and their marine biodiversity. These services include controlling the levels of air and marine carbon dioxide (CO2), supplying oxygen, maintaining the hydrothermal convection cycle, maintaining the hydrological cycle and protecting coastlines. For instance, the oceans have taken in one-third of the carbon dioxide produced by humans.

Maritime Trades

Global economic integration is a key factor behind the rising significance of international trade. While trading was common in the past, the technical infrastructure that supported it was constrained. Trading across vast distances continued to be expensive and slow, which constrained its scale. By the turn of the 20th century, transportation innovations like the steamship had spread widely and were effective enough to support intricate global trade networks. In particular, the steamship made it possible to reach economies of scale that were previously impossible. However, until the middle of the twentieth century, the global regulatory framework did not open up sufficiently to allow for more extensive forms of globalization.

Without effective transportation, global trade is impossible, making it a crucial trade facilitator. Almost all of the cargo that is transported by maritime shipping is regarded as international trade by definition. A significant portion of total trade costs is made up of transportation costs, including time and freight expenditures. In addition to the marginal cost of producing the commodity itself, these trade costs also include expenses involved in delivering goods to consumers, such as policy obstacles, information costs and legal and regulatory expenses. Since it has been noted that for developing economies, a 10% decrease in transportation costs is related to a 20% increase in international trade, lower trade costs help to drive trade growth. Distance has become a less important factor in the intensity of maritime trade relations, making the capacity and direct connectivity of maritime shipping networks critical.

Since the end of World War II, ongoing trade liberalism under the banner of 'World Peace through World Trade' has led to the gradual removal of political, regulatory and cultural obstacles to trade. Integration processes occurred at both the regional and global levels. The collapse of the Soviet Union and the opening up of China in the 1990s represented landmark events that incited the entry of close to 2 billion consumers as well as the related resources into the global economy. The formation of regional trading blocs with varying degrees of trade liberalization, such as NAFTA in North America, the EU Single Market in Europe,

ASEAN in Southeast Asia, Mercosur in South America and Ecowas in West Africa is one example. Economic blocs, particularly the European Union and NAFTA, which rely mainly on land-based transportation methods like the road and rail, account for a significant portion of global trade. With 62.3% and 51.2% of their respective commerce involving member countries, the European Union and NAFTA are regarded as the two trade agreements with the greatest degree of integration. A higher relative share of maritime transport is suggested by the fact that 75.5% of ASEAN's trade is with countries not party to the pact.

The globalization of production is a driver for the globalization of trade as they are interrelated. The scale, volume and efficiency of international trade have all increased. The World Trade Organization's (WTO) ongoing development, as well as initiatives from organizations such as UNCTAD and the World Bank, aid in the liberalization of international trade. After World War II, several multinational firms looked to intergovernmental bodies like the United Nations for support in developing the legal frameworks necessary to conduct worldwide business. In this environment, multinational corporations become more important as investors and traders. As a result, the phrase 'World Peace through World Trade' may have gradually changed to 'World Peace for World Trade'. Intergovernmental organizations continue to play an important role in establishing the ground rules for international trade and competition.

Maritime Security

A very large part of the world's shipping fleet involved in international activities is fairly well regulated from a safety point of view. However, maritime safety is facing numerous challenges as it heads towards 2030. The seas are getting more crowded as shipping and offshore activities pick up steam; potentially hazardous cargo, like LNG is growing as seaborne trade expands; new destinations, like the Arctic are emerging for commercial shipping, cruise tourism, oil and gas exploration and extraction, fisheries and aquaculture; and significant technological changes, like Artificial Intelligence (AI) are on the horizon, electronic navigation, autonomous and unmanned ships. (Civil wars, interstate strife, piracy, disagreements over national claims to seabed rights and natural resources on the continental shelf are other important risks.) The worldwide regulatory framework overseen by the IMO is becoming more complex as the ocean environment does as well. It must constantly adapt to shifting patterns of maritime use, refocus on safety flaws, address the unique requirements of certain ship types and take into account new technological advancements and environmental threats. This progress occurs more slowly in certain instances compared to others.

Ocean Environment

An important constraining factor for the development of the ocean economy could prove to be the expected further deterioration in the health of the ocean. The ocean is tightly entwined with the land mass and atmosphere of the planet and has a significant role in regulating the climate. The regulation of carbon dioxide concentrations in the atmosphere and the ocean, oxygen supply, hydrothermal convection cycle, hydrological cycle, coastal protection and essential contributions from marine biodiversity are only a few of the ecosystem services it provides. Ocean acidification, rising sea temperatures and sea levels, changes in ocean currents and other effects have resulted as manmade carbon emissions have increased through time. The ocean has absorbed much of the carbon. There is growing concern about how climate change may affect the health of the oceans in the future. In fact, the Intergovernmental Panel on Climate Change (IPCC report 2022) will release a special report on the ocean after the COP21 conference in Paris, focusing on the impacts of climate change on biodiversity, the operation of marine ecosystems and the role of those ecosystems in helping to regulate the planet's climate.

The consequences for marine biodiversity and ocean ecosystems are significant and include habitat loss, changes in fish stock composition, changes in fish migration patterns and an increase in the frequency of extreme ocean weather events. Fishing and aquaculture activities, the offshore oil and gas sector, vulnerable low-lying coastal communities, shipping firms, coastal and marine tourism and marine bioprospecting for medical and industrial uses are all currently feeling the effects and will continue to do so. Land-based pollution, in particular agricultural runoff, pesticides and macro and microplastic pollutants that seep into the ocean, particularly from rivers, worsens the prospects for ocean health and ocean users (Nationalgeographic.org). Developing nations are frequently struck considerably harder than industrialized nations in similar situations.

At the same time, however, changes in the ocean's climate are set to create new business opportunities. This is demonstrated, for instance, by developments in the Arctic, where it is anticipated that the ice cap will continue to melt over the coming years and open the Northern Sea Route to commercial shipping (UNFCC COP-21 Report). According to the most recent modeling findings, if sailing times between north east Asia and north western Europe were cut by about a third compared to how the Southern Sea Route is currently used through the Suez, the NSR would become one of the busiest shipping routes in the world, cause a significant shift in bilateral trade flows between Asia and Europe and lead to a reorganization of global supply chains both within Europe and between Europe

and Asia. At the same time, receding ice cover would open the way for new economic opportunities ranging from oil and gas exploration to mining, fishing, and tourism, introducing, however, further potential risks to the vulnerable Arctic environment.

Conclusion

Realizing the full potential of the ocean economy, therefore, will demand responsible, sustainable approaches to its economic development. Perhaps unexpectedly, given its primordial role, the ocean economy has only recently begun to garner attention and move up the international policy agenda. Numerous international organizations are involved in efforts to address the challenges of sustainable use of the ocean.

But economic activity in the ocean is also characterized by a complex variety of risks that need to be addressed. The ones relating to ocean health from overuse of marine resources, pollution, increasing sea temperatures and levels, ocean acidification and loss of biodiversity are foremost among them. The basic foundation upon which much of the world's welfare and wealth depend is threatened by the unsustainable exploitation of the ocean and its resources. As a result, if the ocean economy is to reach its full potential, ethical and sustainable approaches to economic development are required.

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COOPERATION BETWEEN INDIA AND SRI LANKA IN COMBATING NON-TRADITIONAL THREATS IN THE REGION

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Abstract

India and Sri Lanka, both maritime nations, share the challenges and opportunities in the Indian Ocean Region. With time, the spectrum of non-traditional threats has increased manifold. Over the years, the Indian Navy has grown from a buyer's navy to a builder's navy and has gathered years of operational experience. At the same time, a battle-hardened Sri Lanka Navy has undergone the transition from war to peace. Yet today no navy can single-handedly neutralize the non-traditional threats growing exponentially in the region. Thinking on similar lines, India and Sri Lanka have a large number of working mechanisms in form of dialogues, conclaves, training, exercises, etc. This paper aims to highlight the threats and existing arrangements. Thereafter, the paper will conclude with a few new additions to enhance mutual readiness to combat these threats.

Keywords : IOR, Non-Traditional Threats, Cooperation, New Avenues

Introduction

The Indian Ocean is the strategic centre of gravity of the world. It accounts for over half of the world's container traffic, a third of cargo shipments, and 80 % of oil shipments transiting the oceans. It is the lifeline of the adjoining land masses of India, Sri Lanka and other countries in the region (Ship Technology Global, 2019). As per the Information Fusion Centre - Indian Ocean Region (IFC - IOR) operated by the Indian Navy, the average number of vessels transiting the IOR in 2020 was 13000 - 15000 per day (IFC-IOR, 2020). The maritime shipping routes account for over 90 % of trade by volume and 70 % by value for India. The exports and imports of Sri Lanka also utilise maritime routes. Of the seaborne trade, 90 % is through the port of Colombo and India is responsible for 70 % of this transshipment at Colombo port (Ship Technology Global, 2019).

Economic prosperity through the oceans cannot be taken for granted. Without credible maritime resistance – either individual or collaborative, the colonial navies conquered and controlled the region for centuries (Crowley, 2015). With opportunities come challenges and today the region faces an ever-increasing range of non-traditional threats such as drug trafficking, poaching, environmental pollution, human smuggling, etc. These threats extend beyond national boundaries. Hence, make detection and prosecution by either of the countries alone, impossible. From the apex to the working level, India and Sri Lanka have established systems to neutralize these threats. However, there still exist a number of opportunities that each of the two nations can explore and share.

Threats and Challenges in the Maritime Domain

The Indian Peninsula juts out into the Indian Ocean, providing a very favourable maritime location to India. At the same time, Sri Lanka is located right at the convergence of the busiest Sea Lines of Communication in the IOR. The large number of ships transiting the region also translates into a large vulnerability to multiple non-traditional threats in the region. To provide a context to the topic, the types of threats are discussed in the succeeding paragraphs.

Piracy and Armed Robbery. Piracy and Armed Robbery are defined in articles 101 of UNCLOS and article 2 of ReCAAP respectively. Up until the year 2015, the High-Risk Zone of piracy had expanded to cover the Arabian Sea, including the West coast of India (SP, 2015). While in the last few years there has been no reported incident of piracy or armed robbery in the waters around India and Sri Lanka (IFC-IOR, 2020), a close watch is always maintained by the two navies and transiting merchantmen to guard against the threat.

Contraband Smuggling. As per the IFC-IOR report, a large number of contraband seizures have been made in the region. The contraband includes domestic use items such as turmeric, rice, sandalwood, quart, etc. and the smuggling of these has increased due to the ongoing economic crisis in Sri Lanka. In addition to the domestic goods, a large amount of drugs such as crystal meth, cannabis and heroin trafficking is undertaken around the waters of the two countries. These are produced in Central Asian countries and shipped through India, the Maldives and Sri Lanka for onward transit to the East. This well-established maritime route is known as Southern Route in the IOR (UNODC, n.d.).

Human Trafficking. The onset of the monsoon in the waters around India and Sri Lanka often results in accidents at sea. Fire/flooding onboard merchant ships have often been attended to by naval personnel by using helicopters, tugs or fast attack craft. The busy Drondra Head Traffic Separation Scheme, international SLOCs close to the two countries also witness minor/major collisions at sea warranting Search and Rescue and constabulary deployment of ships.

Marine Pollution. On 03 Sep 20 MT New Diamond caught fire on the West coast of Sri Lanka had a possibility of an oil spill. Not long after, a more severe tragedy struck when pollutants leaked from MV Express Pearl and finally sank on 02 Jun 21. Codenamed Operation Sagar Aaraksha I and II respectively by India a number of specialist Indian Naval and CG ships and Dorniers (operating from Mattala airport) were deployed and worked in close cooperation with SLN, SLCG and SLAF, highlighting the interoperability between the armed forces (Defence, 2021).

Miscellaneous Incidents (Collision, SAR). The onset of the monsoon in the waters around India and Sri Lanka often results in accidents at sea. Fire/flooding onboard merchant ships have often been attended to by naval personnel by using helicopters, tugs or fast attack craft. The busy Drondra Head Traffic Separation Scheme, international SLOCs close to the two countries also witness minor/major collisions at sea warranting Search and Rescue and constabulary deployment of ships.

Illegal Unreported and Unregulated Fishing. One of the biggest bones of contention between the two countries is the IUU fishing. The narrow Palk Straits and cross-border extent of fishing grounds often result in fishermen from both sides crossing over. While there are established measures such as regular talks and deployment of naval ships and helicopters, IUU continues to trouble the two countries.

Natural Disasters. Over the last two decades, the temperature of the Arabian Sea has risen by 1.2 - 1.4 degrees (Correspondent, 2021). This has led to more than ever frequent cyclonic storms in the region. The Bay of Bengal has always been one of the roughest seas in the region. In addition to the cyclones, the region is also prone to seismic activity. The tsunami of 2004 still haunts the memories of the Sri Lankan and Indian coastal populace.

Maritime Terrorism. Terrorism from the sea and at sea has affected both countries over the years. The Sea Tigers, a maritime wing of the dreaded

LTTE, inflicted heavy casualties on the Sri Lanka Navy over the course of the protracted wars. The Mumbai attacks of 2008 resulted in a massive change in the approach of coastal security of the Indian security establishment.

Cyber Attacks. Like all others, the shipping industry also depends heavily on the use of information technology for passing ship's cargo manifest, crew manifest, route plan, reporting systems in TSS, port arrivals and departures, etc. This information is vulnerable to cyber criminals on the prowl and its compromise can lead to the suspension of operations and subsequent financial loss. In the year 2020 alone operations of CMA-CGM, MSC lines and even the IMO website were attacked and caused huge financial losses (IFC-IOR, 2020).

Existing Cooperative Framework Between India and Sri Lanka

A close cooperative engagement exists between India and Sri Lanka to mitigate the threats as described above. While the Indian Navy has always been the first responder in case of tsunami, MT New Diamond, MV Express Pearl, etc. the Sri Lanka Navy has also reciprocated and been proactive when called upon to provide assistance. The neighbourhood-first policy has been the core of Indian foreign policy. A stable neighbourhood is essential to ensure internal security, prosperity and growth. Putting words to action, every budget India has been allocating a substantial amount for development activities in the neighbouring countries. For the year 2022-23 the Indian government has allocated INR62,920 million in its budget for 2022-23 for development assistance which includes a total of INR2,000 million to Sri Lanka (Srivastava, 2022).

Security and Growth for all in the Region (SAGAR) – A Concept and Vision. Extending the policy into the maritime domain, Security And Growth for All in the Region (SAGAR) was first heightened by the Indian PM in March 2015 in Mauritius. Since its conceptualization, the idea has been the fuel in the maritime policy of India and is being embodied by the Indian Navy. In order to ensure security, the Indian Navy conducts coordinated patrols, maritime exercises, training of personnel, capacity building and capability enhancement and a host of other activities. Joint EEZ patrols with countries such as Mauritius, Seychelles, Maldives and Mozambique (MOU signed) are also being undertaken.

A new dimension of cooperation emerged during the COVID 19 pandemic wherein India supplied the first lot of vaccines to kick-start the vaccination drive in Sri Lanka. As part of Operation Samudra Setu, a number

of stranded citizens from India and Sri Lanka were repatriated to their respective countries from many foreign locations in the year 2020. Later when there was a shortage of Liquid Medical Oxygen (LMO) SLNS Shakthi (40 tons) and INS Shakti (100 tons) shipped the same to Sri Lanka from India in August 2021.

With the onset of the economic crisis in Sri Lanka, India immediately perceived the need to support its neighbour. Expressed in economic terms a total of 3.8 bn USD was committed by India to support the financial emergency in Sri Lanka. It included currency swaps, deferred settlements, Line of Credit for importing - fuel, food items, medicines and other essential items. Further humanitarian assistance was provided by gifting food items, medicines, etc. and supplying Urea. In line with the vision of the government, the Indian Navy played a very pivotal role. INS Ghariyal undertook visits in April and May 2022 carrying essential supplies such as medicines etc.

Colombo Security Conclave (CSC). Initially known as the Trilateral NSA Meeting on Maritime Security, the avenue was renamed as Colombo Security Conclave in November 2020. The conclave has a secretariat in Colombo and has now expanded attendance from the initial three (Sri Lanka, India and the Maldives) to include Mauritius, Bangladesh and Seychelles (will be elevated to full members in the next meeting). The last meeting was conducted in August 2021 in Colombo wherein the National Security Advisers identified "five pillars" of cooperation: maritime safety and security; countering terrorism and radicalization; combating trafficking and transnational organized crime; cyber security, protection of critical infrastructure and technology; and humanitarian assistance and disaster relief (Subramanium, 2022). A few of the activities conducted under the aegis of CSC are;

- Ex-Dosti between CGs - marine pollution response exercise- Nov 21
- First maritime law workshop (Gandhinagar) - Mar 22.
- Marine pollution workshop (Mumbai) - Apr 22.
- Capacity building programme on investigation of terrorism cases (Delhi) -Jun/Jul 22.

Goa Maritime Conclave. Conducted by the Indian Navy, the Goa Maritime Conclave provides a forum for the like-minded navies of the IOR to discuss and deliberate upon maritime issues of common interest. It also acts as a platform for sharing of ideas, experiences and strategies to improve interoperability and ensure collective safety. The inaugural edition was conducted in Nov 2017 with a focus on 'addressing regional maritime challenges. The third edition

of the GMC was conducted in Nov 2021 and was able to bring together a total of 12 navy chiefs to discuss 'Maritime Security and Emerging Non-Traditional Threats: A Case for Proactive Role for IOR Navies'.

Information Sharing.

IOR – Information Fusion Centre (IOR-IFC). The IOR-IFC located at Gurugram in India is an advanced white shipping monitoring station established in 2018. The aim of this establishment is to enhance maritime safety and security in the IOR through a corroborative effort. The centre builds up maritime domain awareness and then continuously monitors the developing maritime picture to coordinate intervention to ensure security. An International Liaison Officer from Sri Lanka is posted at the centre and he is a witness to this corroboration. Further, Maritime Information Sharing Workshops (MISW) is conducted regularly with the attendance of international maritime nations including Sri Lanka.

IMBL Talks. In order to discuss and find a way ahead to control and monitor the straying of fishermen into each other's waters India and Sri Lanka conduct annual talks at the IMBL. This is a working-level mechanism, made functional by the participation of the two navies.

Port Visits. A number of port visits are undertaken by ships from both navies. SLN ships frequently visit Kochi for undertaking fuelling and other ports for participating in bilateral/multilateral exercises. The First Training Squadron of the Indian Navy frequently visits Trincomalee and Colombo. The diving support ship Nireekshak also is a periodic visitor for undertaking diving operations with SLN. Numbers of other IN ships also visit Sri Lanka during their cross-coast deployments. A new development has been the visit by Ocean Sailing boats of the Indian Navy to Trincomalee and Colombo in Mar 22. Frequent visits by each navy assist in building up local knowledge, critical for undertaking constabulary tasks in the region.

Training. The Indian Navy and the Sri Lanka Navy share a very time-tested, mutually beneficial engagement in the sphere of training personnel. Training together widens the horizon and assists in understanding the perspective of each other better.

Academic Training. Right from the ab-initio training to specialist training, the IN conducts multiple courses for SLN personnel. This includes officer training at Indian Naval Academy, non-specialist

and specialist courses at INS Venduruthy (ASW, communication, navigation), INS Dronacharya (gunnery), INS Shivaji, INS Valsura, and INS Vishwakarma. Officers are also trained at National Defence College and at Higher Defence Management College. At the same time, Indian naval officers also undergo Staff College (DSCSC/JNSC), UNODC courses organized by SLN.

Exercises at Sea. Putting theory to work the navies and coast guard engage in a number of exercises at sea. Exercises improve interoperability and understanding of SOPs followed by each other essential for operational efficiency when faced with any non-traditional threat. To list a few the exercises are – MILAN, SLNX, Dosti and a number of PASSEXs.

Capacity Building

Floating Naval Dock. Sharing of assets is a way of capacity building. Towards this, a Floating Naval Dock (FDN) is being provided by India to assist the SLN in undertaking refit and repair activities of her fleet. Once operational the FDN shall benefit the Sri Lanka Navy financially by saving more than SLR 600 million spent towards outsourcing the docking of ships.

Leasing of Indian Naval Dornier. Another important step is the leasing of Dornier, Maritime Patrol Aircraft. Equipped with state of the art sensors and substantial endurance, this aircraft can undertake coastal surveillance, EEZ patrolling and reporting for SAR duties. In addition to the leasing of aircraft flight training of four SLAF pilots was also undertaken in India. Further, in order to ensure maintenance and training of SLAF personnel in undertaking maintenance, a team of IN personnel has been deputed along with the aircraft.

Maritime Rescue Coordination Centre (MRCC). In its current form, the MRCC is established in the navy headquarters in Colombo and has been coordinating SAR in and around Sri Lanka. To enhance its capacity, a plan has been agreed upon by the SLN and M/s Bharat Electronics Limited (India) to develop software-based communication and coordination centre. For an efficient SAR network, a sub centre at Hambantota, right next to the busy Dondra Head TSS, and seven more sub centres covering the coast of Sri Lanka are also being established. An efficient SAR organization is critical not only for Sri Lanka but also

for countries with maritime interests in the region. Being built on the Indian grant of USD 6 million, once fully functional the centre shall be able to coordinate SAR utilising assets of both SLN and IN.

Avenues for Future Cooperation

While the existing engagement between the two countries has been moderately successful in mitigating an array of threats, a SWOT analysis was undertaken to explore new dimensions of cooperation. The dynamism and the evolving nature of these threats would mean that the security establishments would be required to continuously explore new ideas and undertake activities to enhance mutual security. The following paragraph recommends a few such ideas.

Joint Ship Construction Ventures. The Indian shipyards are now capable of designing and constructing aircraft carriers, submarines, large capital ships and various types of merchant ships. The Colombo Dockyard has also constructed vessels for both civil and military purposes. Therefore, it would be prudent for ship-builders from both countries to jointly construct ships. Sharing of existing and setting up of new infrastructure and experience can mutually benefit the two countries.

Hydrography. The Indian Navy has a large fleet of survey ships that can be utilised for joint survey operations in regional waters. Starting with hydrographic data collection, the manufacturing of navigational charts can also be undertaken.

Information Sharing. At present, there are no established means of operational information sharing between the two navies. While the IFC-IOR provides a platform to share white shipping data, matters of naval emergencies go unreported or are delayed. This inhibits the conduct of joint operations to mitigate the non-traditional threats at sea. Therefore, a formal reporting and coordinating mechanism need to be worked out to reduce sharing time and response time.

Logistics Support

Supply of Spares for Repair of Ships. A large complement of the SLN ships has been manufactured in India. The OPVs and the recently acquired APOVs are very important for the SLN to ensure maritime security in the region. However, there are periodic defects or scheduled maintenance periods, which require a supply of spares. Upon being

requested on many occasions, India has shipped such spares. With this background, a system can be worked out to smoothen this process of supply of spares – both quicker and deliverable at any location.

Fuelling of SLN ships by IN Tankers. Sri Lanka possesses a very large EEZ stretching over an area of 517,000 sq km, patrolled by the ships of the Sri Lanka Navy. In addition to patrolling, the ships are also required to undertake presence showing to deter misadventures. For these ships with long seas, legs are preferred assets, as they are self-sustained. At present, the SLN has a total of eight such ships. Considering the downtime attributed to defects and maintenance cycles, the available option would be to extend the sea legs of the operational craft. Conserving fuel by drifting is one way of doing it but it has its limitations. Another option would be to undertake to fuel with Indian Naval tankers at sea. This would phenomenally increase the sea legs of the ships. It would also benefit the Indian ships by providing them with experience in interoperability.

Use of Mattala Airport for Maritime Air Surveillance. Another way of mitigating the limitations imposed by the shorter sea legs is to employ air assets for undertaking maritime patrols. The utilisation of the Dornier aircraft by Sri Lanka is the first step towards that. In order to increase the duration and reach into the IOR, employment of MPA could also be considered. Based on a civil airframe, P8I is easy to operate and fly. The Mattala airport could be used as a stage through the airfield. The aircraft could also embark observers from the Sri Lanka Navy – a mutually beneficial venture.

Conclusion

The challenges posed by the non-traditional threats are not new. What differs is the ways in which it can manifest and the ways in which it can affect security and prosperity on land. The neighbouring waters of Sri Lanka and India are infested with an array of non-traditional threats. Drug trafficking, human smuggling, poaching, etc. dent the economic and social set-up and push the countries back in years. It is this realization that has ensured that India and Sri Lanka have shared tables and worked out ways and means.

It is pertinent that these avenues remain open and expand in dimension and numbers. The impact of technology and the threat of a likely economic slump in the years to come will contribute to the rise of threats in the maritime domain. While the wheel exists - yet there is a need to keep reinventing it else we would still be using boulders as wheels.

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SRI LANKA'S POSITION IN CROWDSOURCED BATHYMETRY (CSB) IN THE HYDRO SPATIAL DOMAIN AND THE EMERGING SUSTAINABLE BLUE ECONOMY

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Abstract

Hydrography is the foundational piece of the hydrospatial domain. Crowdsourced bathymetry (CSB) is depth measurements collected and shared from vessels of opportunity using standard navigation instruments, while engaged in routine maritime operations. National Hydrographic Office is accredited to the International Hydrographic Organization (IHO) as the focal point for Hydrography in Sri Lanka to fulfil the mandatory requirement of the obligation of the International Convention for the Safety of Life at Sea (SOLAS). Sri Lanka Navy Hydrographic Services (SLNHS) was reactivated since 2012. The lack of international relations and response of Sri Lanka in Hydrography is discussed in this paper with regards to the Crowdsourced Bathymetry (CSB) in Sri Lankan waters which has hampered the road map of Sri Lanka's emerging sustainable blue economy. The bathymetric gap around the coast of Sri Lanka and within the EEZ can be partly filled collecting and using CSB data. However, to do so, coastal states must give explicit consent to the collection, validation and publication of CSB data in waters under national jurisdiction. Sri Lanka has not positively responded yet to the IHO Circular Letter 21/2020, hence a geographical filter is applied to the Sri Lankan waters and there is no CSB data available to download and use. Responsible authorities on Hydrographic data and CSB within Sri Lankan waters have not studied the entire process of CSB and not carried out research to identify the possible issues. Due to the same fact Sri Lanka has not forwarded its position on CSB which has resulted in a geaographic filtering on the possible available data. This paper introduces the CSB process to the interested parties to study and to consider a positive reply which might need some restrictions if necessary to regulate CSB data.

Key Words : Ocean-Centric Economy, Hydrography, Bathymetric Data, Crowdsourced Bathymetry (CSB), National Hydrographic Office.

Introduction

"Before the end of the 21st century, the Indo-Pacific Region will be the most powerful economic domain in the world", declared His Excellency the president Ranil Wickremesinghe when he opened the third session of the ninth Parliament and conveyed the government's policy statement. Further, he expanded, "In this context, the strategic geographical location of our country is extremely important. We should make the best use of this favorable position. Bearing this in mind, our future corporate laws and policies should be formulated". He also demands compiling rules and regulations and policies that will allow our country to get the maximum benefit from the Indian Ocean-centric new economic power (Wickramasinghe, 2022). The hydro spatial (Hains & al, 2022 + 2021) domain represents all types of spatio-temporal data, information and knowledge about the Blue of our Blue Planet and its contiguous zones. Hydrospatial is the Blue Geospatial. Hydrography is the branch of applied sciences which deals with the measurement and description of the physical features of the oceans, seas, coastal areas, lakes and rivers, it is a vital component of the emerging sustainable blue economy. Bathymetric data which is the foundational information about the water depths will involve and influence the blue economy, the security of the region as well as the national security of Sri Lanka.

According to the International Hydrographic Organization (IHO) the definition of Hydrography is "That branch of applied sciences which deals with the measurement and description of the features of the seas and coastal areas for the primary purpose of navigation and all other marine purposes and activities, including inter alia-offshore activities, research, protection of the environment, and prediction services" (IHO, 2007). Hydrography involves measuring the depth of the water and fixing the position of all the navigational hazards that lie on the seafloor, such as wrecks and rocks. This has been mostly done with specialized vessels equipped with echo sounders and sonars and operated by trained personnel. Nowadays and in the future, Satellite-Derived Bathymetry plus Autonomous Airborne, Surface and Underwater Vehicles and remotely operated are becoming affordable and usable for the task with different level of uncertainty and quality of data.

The development of a National Maritime Policy requires a well-developed capability to conduct all activities that will allow the obtaining of basic knowledge of the geographical, geological and geophysical features of the seabed and coast, as well as the currents, tides and certain physical properties of the seawater. All of this data must then be properly processed so that the nature of the sea bottom, its geographical relationship with the land and the characteristics and dynamics of

the ocean can be as accurately depicted as possible in all zones of national shipping. In addition to supporting maritime trade, hydrography underpins almost every other activity associated with the hydrospatial domain and the sea (M-2, 2018), including, but not limited to, protection of the marine environment;

- National infrastructure development,
- Coastal zone management,
- Marine resource exploitation (minerals, fishing, etc.),
- Maritime boundary delimitation,
- Maritime defence and security.

Sri Lanka ratified the International Convention for the Safety of Life at Sea (SOLAS), which entered into force on May 25, 1980. According to SOLAS Chapter V, Regulation 9, "contracting governments shall ensure that hydrographic surveying is carried out, as far as possible, in a manner adequate to the requirements of safe navigation; prepare and issue nautical charts, sailing directions, lists of lights, tide tables and other nautical publications, where applicable, to satisfy the needs of safe navigation." Further, contracting governments to provide data management arrangements to support these services and to coordinate their activities to the greatest possible degree is necessary to ensure that hydrographic and nautical information is made available on a worldwide scale as timely, reliably and unambiguously as possible. Moreover, Regulation 4 of SOLAS Chapter V sets an obligation on contracting governments to ensure that appropriate navigational warnings are issued (SOLAS, 1974).

The IHO is the intergovernmental organization representing hydrography. The principal role of the IHO is to ensure that the world's seas, oceans and navigable waters are properly surveyed and charted for safe and efficient marine navigation. It does this through the setting of international standards, the coordination of the endeavors of national hydrographic offices and its capacity-building programmes. The IHO enjoys observer status at the United Nations, where it is the recognized competent authority on hydrographic surveying and nautical charting (IHO, 2022).

Until 1984, Sri Lanka Navy (SLN) had been bestowed the authority in carrying out Hydrography services in the country, national authority was handed over to National Aquatic Resources Research and Development Agency (NARA) by the Act No. 54 of 1981 due to the operational commitments of SL Navy confronted at that time. In 1996, the aforesaid act was amended as NARA Amended Act No. 32 of 1996 and the authority of the national hydrographic activities was handed over to the National Hydrographic Office (NHO) which functions under the NARA. NHO

is accredited to the IHO as the focal point for Hydrography in Sri Lanka to fulfil the mandatory requirement of the International Convention for the Safety of Life at Sea (SOLAS). The prime objective of NHO is to provide Hydrographic services to ensure safe and efficient navigation in Sri Lankan waters. The other principal service is the provision of updated and accurate bathymetric and topographic data (NARA, 2020).

Hydrography includes bathymetric data, surveys, charts and other nautical publications that are vital in determining the centre of gravity and critical vulnerability of forces in the naval planning process and war gaming. These had been the main considerations in the strategic debate over where to establish naval bases and identify beachheads for amphibious operations. Ultimately, hydrographic data well describes the geography of the country and its strategic value in warfare. During the war, the SL Navy made extensive use of these data in the planning and execution of most landing operations. However, by the end of the war, new strategic ideas, technologies and the obligations of the country towards international laws and regulations triggered naval officers to change the approach to hydrography to more professional and standard methods. Considering this requirement, Sri Lanka Navy Hydrographic Services (SLNHS) was reactivated in 2012 with modified naval vessels for hydrographic surveys, expanded the standard of training, and improved the quality of human resources and infrastructure.

Except for Sri Lanka and Saudi Arabia, the rest of the countries in the Indian Ocean Region vest their National Hydrographic authority in the naval arms of their respective countries. This demonstrates the operational sensitivity of hydrographic data, regulates the outflow of hydrographic data and ensures national security. According to the annual report (2020) and the official website of NARA, approximately 90% of the hydrographic services carried out by the NHO division are surveys and consultations of the inland water bodies. However, to fulfil the national nautical publication requirement in accordance with SOLAS regulations, no national nautical publications such as sailing directions, lists of lights, tide tables and other nautical publications published by Sri Lanka are up to date. This shows the narrow focus on internal waters due to various drawbacks and the scarcity of resources. If the NHO is to represent Sri Lankan hydrographic services in the IHO, its vision and operations must meet the standards set by international bodies, as well as demonstrate strong international relations and responses to international organizations. The lack of international relations and the response of Sri Lanka in Hydrography will be discussed in this paper with regards to the Crowdsourced Bathymetry (CSB) in Sri Lankan waters, which hampers the road map for an ocean centric economy in Sri Lanka.

The annual report of NARA year 2020 published and available on their official webpage, indicated ongoing research and projects. The establishment of a database and online data processing unit for Crowdsourced Bathymetry parallel with the Seabed 2030 global mapping project of the General Bathymetric Chart of the Oceans (GEBCO) (NARA, 2020) was highlighted as an ongoing project by NHO.

Crowdsourced Bathymetry

There is very little Bathymetric coverage around our country, and it will take years to fully map the vast areas of our seafloor with systematic bathymetric surveys. The world contest is very similar and hence the General Bathymetric Chart of the Oceans (GEBCO) and Nippon Foundation have started a project called Seabed 2030 (GEBCO, 2020), with member states of the IHO inviting them to provide bathymetric data covering their seas. The objective of this project (by NARA) is to map the Indian Ocean using crowdsourced bathymetry, maintain and update the database and disseminate data for marine management, spatial planning and research in marine geology, ecology and oceanography. This will be a continuation project until 2030 (NARA, 2020). Furthermore, NARA divisions have made a request to obtain ship cruise data gathered from various sources. The overall progress of the project is 20% for the year 2020 (NARA, 2020).

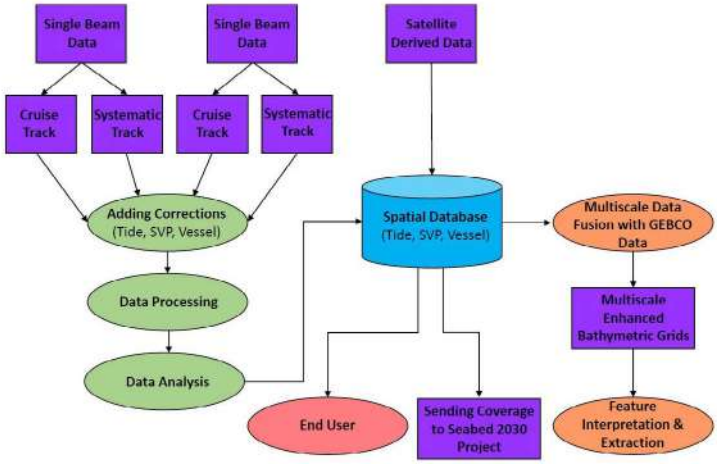

Figure 1: Seabed 2030 Working Procedure of NHO - NARA (NARA, 2020)
Source : http://www.nara.ac.lk/

The outflow of this bathymetric data has not been monitored for any security concerns and has not been filtered through the Ministry of Defense or related authorities such as SLNHS. The multisource bathymetric data processing

and dissemination workflow highlighted in the annual report (Figure 1) did not include any regulatory body with regards to national security and data security.

'The Nippon Foundation-GECO Seabed 2030 Project' is a collaborative project between the Nippon Foundation of Japan and the General Bathymetric Chart of the Oceans (GEBCO). GEBCO is a joint programme of the International Hydrographic Organization (IHO) and the Intergovernmental Oceanographic Commission (IOC). It intends to collect and make available all available bathymetric data in order to create a map of the world's ocean floor by 2030. The project was launched at the United Nations (UN) Ocean Conference in June 2017 and is aligned with the UN's Sustainable Development Goal 14 to conserve and sustainably use the oceans, seas and marine resources (GEBCO, 2022). Seabed 2030's aim is to map the global seafloor by 2030. If you look at global terrain models, it appears that this has already been done. For the 2022 release of the GEBCO grid, it is estimated that 23.4% of the seafloor has been mapped, compared with 20.6% in 2021 (Figure 2). However, large areas of the seafloor in these models are based on interpolation using a variety of methods.

Detailed knowledge of global bathymetry is critical for understanding how Earth's systems interact to support coastal zone management, environmental protection, tsunami modeling, inundation forecasting and charting in the hydrospatial domain. The shape of the ocean basins, ridges and mountains influence the flow of seawater carrying heat, salt, nutrients and pollutants. These features also influence the propagation of energy from undersea seismic events that result in potential disasters such as tsunamis. Hence, bathymetry is a pre-requisite for understanding how global Earth systems interact. Bathymetry;

- Influences the flow of seawater carrying heat, salt, nutrients.
- Influences the propagation of energy from undersea seismic events.
- Impacts navigation and commerce.
- Defines habitat for marine life.

All these interactions are integral parts of an ocean-centric economy. Further, the safety and efficiency of navigation are becoming a major concern and the European Maritime Safety Agency has highlighted the importance of bathymetric data from hydrography to navigation. According to the report, loss of propulsion power, accounting for 37% of all casualty events, was the main quoted category (Fishing Vessel for 2014–2020), together with navigation issues (collision, contact, and grounding) (EMSA, 2021). To assure safety and efficiency in the hydrospatial domain and the emerging and sustainable blue economy, bathymetric data is essential. In this fast-moving world, sharing location data about the land mass

has become an important aspect of the economy. Google Maps has put almost all the location details at the user's fingertips, which drastically improves logistics and economy compared to the era of road maps. Google Maps has changed the way people conduct business on the planet in numerous ways. Similarly, the open bathymetric data made available to the public will propel the growth of a sustainable blue economy in the hydrospatial domain.

The IHO Data Center for Digital Bathymetry (IHO DCDB) was established in 1990 to steward the worldwide collection of bathymetric data. The Center archives and shares, freely and without restrictions, depth data contributed by mariners with varying levels of quality and uncertainty. The IHO DCDB is hosted by the U.S. National Oceanographic and Atmospheric Administration (NOAA) on behalf of the IHO Member States (DCDB, 2022). The DCDB contains oceanic soundings acquired by hydrographic, oceanographic and other vessels during surveys or while on passage. Data are made public and used to create better and more comprehensive bathymetric maps and grids, particularly in support of the GEBCO Ocean Mapping Programme. However, there are significant gaps in bathymetric data in Sri Lankan water that can be easily filled by embracing and accepting CSB data.

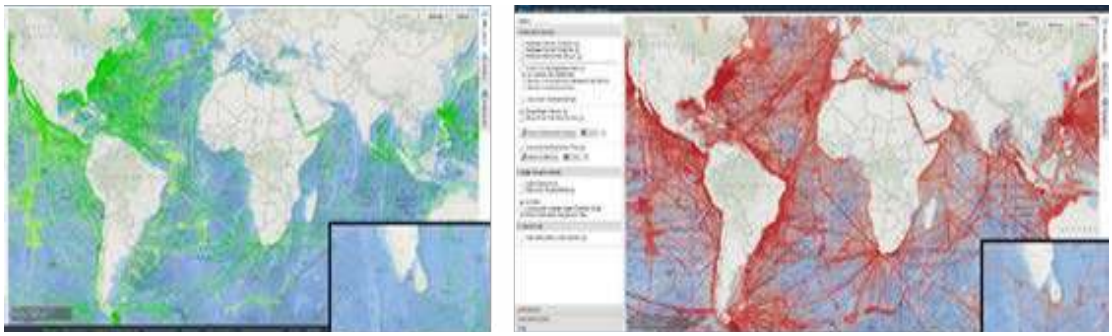

Figure 2: Available Multibeam (Left) and Singlebeam (Right) data in International Hydrographic Organization Data Centre for Digital Bathymetry (IHO DCDB). Given the very large scale of those maps, it looks good but only 23.4% of the oceans is adequately surveyed
Source : https://www.ngdc.noaa.gov/iho/

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Although there are many elements in bathymetric measurements, they have three main components: vertical (depth), horizontal (geographical position) and time of the survey. Many vessels or platforms already have the bare minimum of equipment (echo sounder and positioning system, respectively) to aid navigation and continuously monitor the vessel's safety and efficiency. The IMO Safety of Life at Sea (SOLAS) 10-carrier requirements oblige all commercial vessels to be equipped with certified echo sounders and satellite-based navigation systems (SOLAS, 1974). As a result, the world's commercial fleet represents a significant, untapped source of potential depth measurements in the same way that mariners

currently and routinely observe the weather and make other marine environmental observations.

The IHO defines Crowdsourced Bathymetry (CSB) as depth measurements from vessels, collected using standard navigation instruments, while engaged in routine maritime operations. The IHO Crowdsourced Bathymetry Working Group (CSBWG) is tasked with maintaining IHO Publication B-12 (still under review as of 29 September 2022): IHO Guidelines for Crowdsourced Bathymetry (IHO, 2022). Private entities can participate in increasing our knowledge of the ocean by sharing depth measurements from navigation instruments while out at sea obtained during routine operations. Known as crowdsourced bathymetry (CSB), this data can identify uncharted features such as seamounts, canyons, etc. and help fill the gaps where little to no hydrospatial data exists. Industries including commercial and luxury shipping, cruise-liners, commercial and pleasure fishing, and oil and gas operate across the world's oceans, sometimes in areas where data is sparse, non-existent, or of poor quality. By collecting and sharing some of their data, the interested and committed "crowd" can help to fill vast knowledge gaps, contribute to scientific research and improve navigational safety and efficiency. The bathymetric gaps around the coast of Sri Lanka and within the EEZ can be enabled by promoting and using CSB data and information.

Those interested can participate in this crowdsourcing initiative using standard navigation devices or by installing a basic data logger on vessels (Figure 5). Routinely measured depth and position data from echo sounders and GPS can then be stored, uploaded and contributed to this global initiative.

Figure 3: Example of standard navigation instruments that can be used to collect CSB data through a logger
Source : https://en.wikipedia.org/

IHO Circular Letter (CL) 11/2019, which called for the approval of edition 2.0.0 of IHO Publication B-12, 35 Member States approved the adoption of B-12 out of 38 replies. The letter also sought support for the CSB initiative and data gathering activities, not only in deep ocean regions but also within the waters of the national jurisdiction of individual coastal states. Only fifteen member states provided positive responses to the request. The DCDB responded by implementing a mechanism that filters out incoming data from coastal countries that responded either negatively or did not reply at all. The lack of initial replies showed that the CL ask was not clear, hence from IHO CL 21/2020 and IRCC CL 01/2020 again, all coastal states are requested to indicate their position on the provision of CSB data from ships within waters subject to their national jurisdiction into the public domain. To date, 30 coastal states have responded positively. The geographic filter updated in 2021 reflects the updated coastal state positions (DCDB, 2022). According to the available report, Sri Lanka has not replied to either circular letter and therefore has not stated its position on the CSB

The practical application of B-12 is fundamental to the success of The Nippon Foundation, GEBCO and the Seabed 2030 Project. And while the CSB data may not meet the data quality, uncertainty, and accuracy requirements for charting areas of critical under-keel clearance, it holds limitless potential, such as the ability to identify uncharted features and hazards to navigation, assist in verifying charted information and help confirm that existing charts are appropriate for the latest traffic patterns. Crowdsourced bathymetry can also provide vital information to support national and regional development activities and scientific studies in the hydrospatial domain and areas where little or no other data exists. Presently neither NHO nor SLNHS possesse a fully functional multibeam echo sounder system (MBES) and operates with limited equipment related to bathymetry data gathering. CSB provides a new opportunity for all countries operating with a scarcity of resources in terms of hydrographic equipment. If gathered and validated properly, this CSB data represents an untapped, low-cost opportunity to exploit.

These data will, in turn, be made publicly available through the IHO DCDB Map Viewer. The IHO DCDB is hosted by the US National Oceanic and Atmospheric Administration's (NOAA) National Centers for Environmental Information (NCEI). Data submitted to the IHO DCDB on behalf of the IHO is archived and made discoverable and accessible online via the IHO DCDB Map Viewer (Figures 4). The reality is that CSB data is already being collected in Sri Lanka's water, but unfortunately it is not being leveraged to gain access to the data as Sri Lanka has not officially submitted its position on the provision of CSB yet.

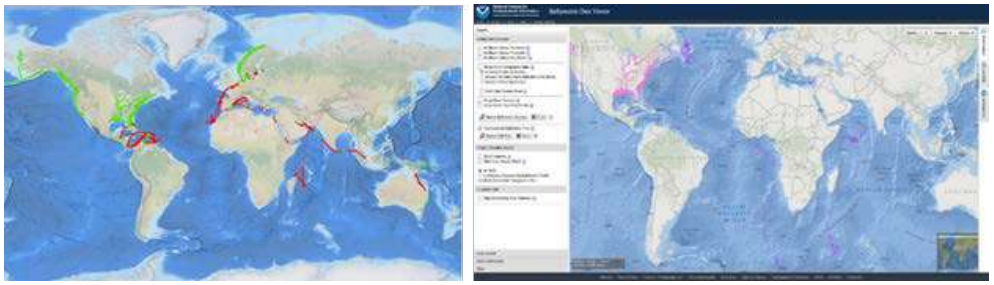

Figure 4: CSB data submitted to the DCDB (Left) (Green; Accessible to the public Red; Geographic filter applied). CSB data Map Viewer (Right)
Source : https://www.ngdc.noaa.gov/iho/

The IHO DCDB currently accepts CSB contributions through a network of trusted nodes (Figure 9). An IHO DCDB Trusted Node is an approved organisation or individual that systematically receives CSB data collected by vessels or other platforms and delivers it to the IHO DCDB. In order to demonstrate leadership, the author suggests that the Sri Lanka Navy Hydrographic Services has a great opportunity to stand as an ideal trusted node for CSB-collected data in Sri Lankan waters and coordinate this important element of the hydrospatial domain. As a trusted node, SLNHS will not only get the data collected from other parties in Sri Lankan waters but will also be able to validate and regulate the data, information, and knowledge before they are published in its own EEZ.

Figure 5: CSB Data and IHODCDB Workflow (CSBWG,2022)
Source : https://iho.int/

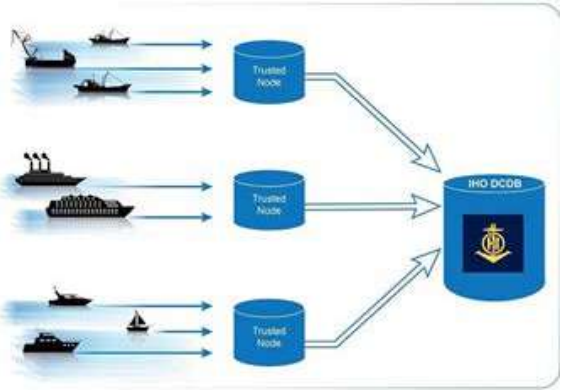

Figure 6: Contributions of CSB to IHODCDB Through a Network of Trusted Nodes
Source : https://iho.int/

To collect crowdsourced bathymetry (CSB), vessels might only need to install a simple and affordable data logger or enable logging software and/or a data modem to begin collecting and transferring CSB. The intent is to collect observations from the vessels of opportunity using data from the vessel's standard navigation equipment as they perform their routine operations in the hydrospatial domain.

Echo Sounders. Multiple depth sensing technologies currently exist. Echo sounding is widely accessible to mariners because the International Maritime Organization (IMO) requires most ships to be equipped with echo sounders to comply with SOLAS.

Positioning and Motion Sensors. Most vessels carry a Global Navigation Satellite System (GNSS), which obtains positional data automatically. CSB data collection systems should provide a position and timestamp with every depth reading.

Motion Sensors. Some vessels may be equipped with motion sensors. Motion sensor data captures vertical movement (heave) and any movement in three dimensions (pitch, roll, and yaw) of the vessel. It can greatly improve the quality of the final dataset.

Hardware and Software. In addition to depth, positioning, and motion data, there are several hardware and software variables that mariners should consider when collecting CSB data.

Data Loggers. Data loggers are electronic devices or software that connect to a vessel's echo sounder, the positioning system, and, if available, the motion sensors and record the sensor outputs.

Onboard Data Storage. This allows data users to accurately position depth measurements and apply corrections to the data if needed.

Trusted nodes may supply affordable data logging equipment, provide technical support to vessels, download data from data loggers and be responsible for data transfer, validation and integration directly into the DCDB. According to the current definition of CSB, coastal states have the right to impose restrictions on the collection of bathymetric data within maritime areas over which they have sovereignty, sovereign rights and jurisdiction. The United Nations Convention on the Law of the Seas (UNCLOS) recognises neither the term "CSB" nor the term "passage sounding," which IHO links to CSB in Publication B-12. The IHO recommends that the CSB can be considered equivalent to other voluntary environmental data collection initiatives that are intended to be used for the common good (CSBWG, 2022). The context of CSB should be seen as an open access to the understanding of the hydrospatial data and information for a better knowledge of the marine EEZ and as Google Maps is available publicly for the landmass, the bathymetric data and CSB should be made available to propel the country's emerging and sustainable blue economy.

IHO CSB initiative operates under the Creative Commons licensing framework. The IHO stresses that every user should use the data in good faith, taking into account the fact of the nature and the quality, uncertainty or precision of the data (CSBWG, 2022). The IHO assumes no legal responsibility for either the collection or the use of CSB data. In order to, in some way, address potential sovereignty concerns and risks, the IHO envisaged a "filter'' in its concept of CSB data flow. This filter refers to the collection and availability of the collected data. Coastal states, i.e., their HOs have the option of setting limits or resolution on the collection and disclosure of CSB data. The IHO filter is based on the right of coastal states to accept in full, accept with caveats or not to accept CSB in national waters of jurisdiction. Thus, the coastal state must give explicit consent to the collection and publication of CSB data in waters under national jurisdiction (S3/2649, 2019). So far, only 30 countries have positively responded with the caveat for their internal, territorial and EEZ zones (IHO, 2021). Sri Lanka has not responded yet to this great opportunity as mentioned in the particular CL from the IHO and is not included in the list, hence the geographical filter is automatically applied to the Sri Lankan water.

The following options are provided by the IHO via IHO CL 21/2020 & IRCC CL 01/2020 for coastal states to have more control over the CSB data flow (IHO, 2020).

- Do you support or object to the CSB data provision for depth measurements from the internal waters, territorial sea, or EEZ of your country?
- Do you wish to be informed when such information is received by the IHO DCDB?
- Do you wish to review such information before its ingestion into the IHO DCDB?
- Do you wish for the opportunity to put caveats on the further dissemination of such data?

Expertise in the fields of both defence and hydrography should study CSB and its potential impact on the economy, more specifically the emergence of the "blue" economy and security. However, the author suggests that Sri Lanka should consider responding positively to the CL 21/2020, with caveats if necessary, in order to benefit from this unique opportunity that the CSB effort offers. It is felt that it would be of great benefit to Sri Lanka's hydrospatial domain in the emerging sustainable blue economy for the country.

Sri Lanka's Position in CSB

Except for the USA, all the coastal states that positively responded to the IHO circular letter CL 21/2020 included some caveats for the respective sea areas and regulated CSB data collection, validation and distribution. The author suggests that Sri Lanka investigate this in terms of national security as well as the hydrospatial domain in the country's emerging sustainable blue economy and submit a response with detailed caveats if deemed necessary. Under normal circumstances, whether there is a requirement to inform the relevant hydrographic office of new data or to provide a copy of the dataset, this will be undertaken by the trusted node to which the dataset has been submitted. The IHO Data Center for Digital Bathymetry (DCDB) will apply a geographic screening process to all data received and will store datasets from restricted areas in a restricted, non-public database until such time as the appropriate authorizations have been received for placing them in the public domain (IHO, 2020). Hence, data security and sensitivity can be addressed by legitimate authorities.

While CSB Data is unlikely to be as accurate to contribute directly to a navigational chart, it can help update charts by issuing Notices to Mariners and/or Navigational Warnings when unknown and uncharted navigational hazards are discovered. Certainly there can be many other uses in Sri Lanka for these bathymetric data; there are many types of data and information in the hydrospatial domain, such as:

- Data with scientific, commercial, and research value at no cost to the public sector
- Fill gaps where data is scarce.
- Useful along shallow, complex coastlines
- Identify uncharted features.
- Assist in the verification of charted data
- Confirm whether the charts are appropriate for the latest traffic patterns.
- Survey planning and reconnaissance
- Chart adequacy
- Ground-trothing other types of data

Responsible authorities on hydrographic data and CSB within Sri Lankan waters have not studied the mechanism well explained by the IHO yet and have not carried out research to identify if any security issues arise from CSB and how to mitigate them if any. Due to the same fact, Sri Lanka has not positively contributed and forwarded its position on CSB yet, which has resulted in the geographic filtering of the possible available data. Sri Lanka would gain access to the available

CSB data throughout the country if it responded positively after careful study with the necessary caveats. As a next step, SLNHS could commit to becoming a trusted node in the region, with access to and regulatory power over future CSB data in our country. Many organisations and institutes offer a range of affordable to more expensive data loggers as well as technical support to countries in support of CSB and capacity building for hydrographers. Ultimately, this valuable bathymetric data has the potential to be utilised for the hydrospatial domain of Sri Lanka to maximise the benefits of an emerging sustainable blue economy in the country.

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BLUE ECONOMY OF THE INDIAN OCEAN

Lieutenant Commander (S) AMAP Jayawardhana, BSc (DS) MTS

Long Logistic Management Course

Abstract

In the blue economy what is paramount important is a sustainable development of sea trades, fisheries and preservation of the resources and the environment. Regional and international agreements are there to facilitate the blue economy concept and they are supporting developing nations in the development of ports and other infrastructure to enhance the sea line and the stability of the sea trades. Developing regional countries such as Sri Lanka, Nepal or the Philippines, their potential benefits outwards the nations is highly treasured through the blue economy and if taking hold the competitive advantage over it. From the ancient era the sea line of the Silk Route was popular in navigation in the Indian Ocean. China was the market leader of maritime trade as same as today in the history. Excessive harvesting of fisheries and unreasonable prices of European monopoly was the reason for the downfall of the sea line of the Silk Route back then. There are a few organizations regionally and internationally supporting for the blue economy. Sea piracy, drug trafficking and accidents are a few provocations ahead of the sustainable ecosystem and maritime economy. There the role of maritime security takes hand in hand with the blue economy. Organized monitoring, screening, use of high technology and accurate information system is required for the mega enlargement of maritime security in Blue Economy.

Keywords: Blue Economy, Maritime Security, Sustainable Ecosystem, Indian Ocean

Introduction

Blue economy is a dynamic modern concept for the oceanic trade market to exploit and conservation of the maritime environment or the sustainable ocean-based economy. Blue Economy has the power to obtain better governance of marine ecosystems. Blue economy consists of fisheries and aquaculture, renewable ocean energy, seaports and shipping, offshore hydrocarbons and sea bed minerals, marine biotechnology, research and development and tourism focusing on sustainable development of the entire ecosystem. Based on scientific findings and statistical

information of earth's limited resources and other facts such as greenhouse gases, unsustainable fishing, destruction of habitat, threatening of marine life, managing economic growth and enhancing the protection of the marine environment as well as maritime security of all national and regional embodies is basically what means by the Blue economy.

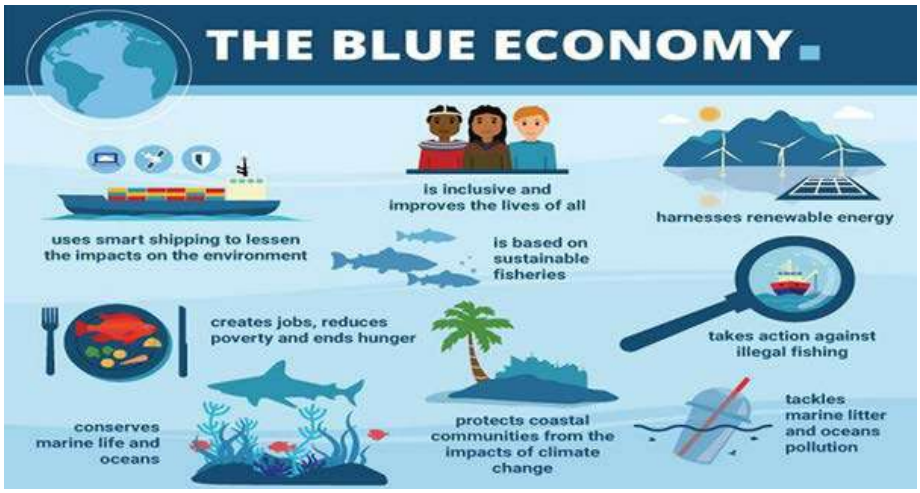

Figure1: The Blue Economy
Source : https://medium.com/renting-rationality/the-blue-economy-4accb04af78e

80% of world trade is achieved using the seas. The Indian Ocean consists of 20% of the Ocean ecosystem and it covers 70.56 square kilometres of the earth surface. Nearly half the world's population projected to be residing in the Indian Ocean coast belt. Half of the world's trade already traverses through Indian Ocean. Its distinctive location, variety of natural resources both marine and terrestrial stability of the trade and natural environment are some key factors of Indian Ocean to become a giant in blue economy. To benefit the competitive advantage over those who are at the forefront of the Blue Economy 'among sea way trades, developing the food variety, livelihoods, tourism, minerals resources, bio-prospecting and the mining of seabed resources is at most important. Maritime security is equally important in blue economy for safeguarding navigation routes, providing important oceanographic data to marine industries and protecting rights over valuable marine resources and activities. An expanded Blue Economy will create greater demand for maritime security capabilities and this, in turn, will trigger increased investment and growth in these capabilities. The enhanced and increasingly diverse role that maritime security will continue to play in the Blue Economy. Sri Lanka being a centric island nation of the Indian Ocean more demand as a facilitating hub and the maritime security provider for sea transactions. Not only the economic benefits blue economy is caused serious environmental issues such as acidification, pollution, ocean warming, eutrophication and fishery collapse.

Historical trading background of the Indian Ocean Region

During the medieval sea line of silk route is the navigation line of trading. Arabian Peninsula was the powerful western node of the silk routes. In addition, wealthy Muslim cities created an enormous demand for luxury goods. Meanwhile, China also emphasized trade and industry, developing strong trade ties along the land-based Silk Roads and encouraging maritime trade as well as maritime security for the industry. Arab and China exchanged parades of elephants, gold/silk cloths, pearl, gems, porcelain, spices and jewels marching through the city streets. Almost all taxing trading vessels moved through the narrow Malacca Straits and Mekong River as an inshore route in the Indian Ocean trade network. From the beginning, China initiated more attractive and Chinese goods such as fine silk and porcelain were popular among in ancient trading market. China easily became the market leader of early maritime economy in the Indian Ocean Near 1498, Portuguese sailors under Vasco da Gama first entered to the Indian Ocean as a European arrival in the sea trades in the Indian Ocean. The Portuguese were eager to join in the Indian Ocean trade since European demand for Asian luxury goods was extremely high. While Europe is lack of natural resources to exchange in the sea trade. Wool or fur clothing, iron cooking pots and other products which were having very low demand in South Asian, African and Arabic countries were only the European contribution in the marine trading. As a result, the Portuguese entered the Indian Ocean trade as pirates rather than traders using the combination of bravado and cannons, they seized port cities like Calicut on India's west coast and Macau, in southern China. The Portuguese began to rob and extort local producers and foreign merchant ships especially they attacked Muslims and rob them.

In 1602, the Dutch East India Company (VOC) built a total monopoly on more profitable spices like nutmeg and mace. In 1680, the British East Company, challenged the VOC for control of the trade market. In order to that the European powers established political control over important parts of Asia, which they turned into colonies countries like Indonesia, India, Malaya and much of Southeast Asia. Mutual trade dissolved and goods moved increasingly to Europe, while the former Asian trading empires grew poorer and collapsed.

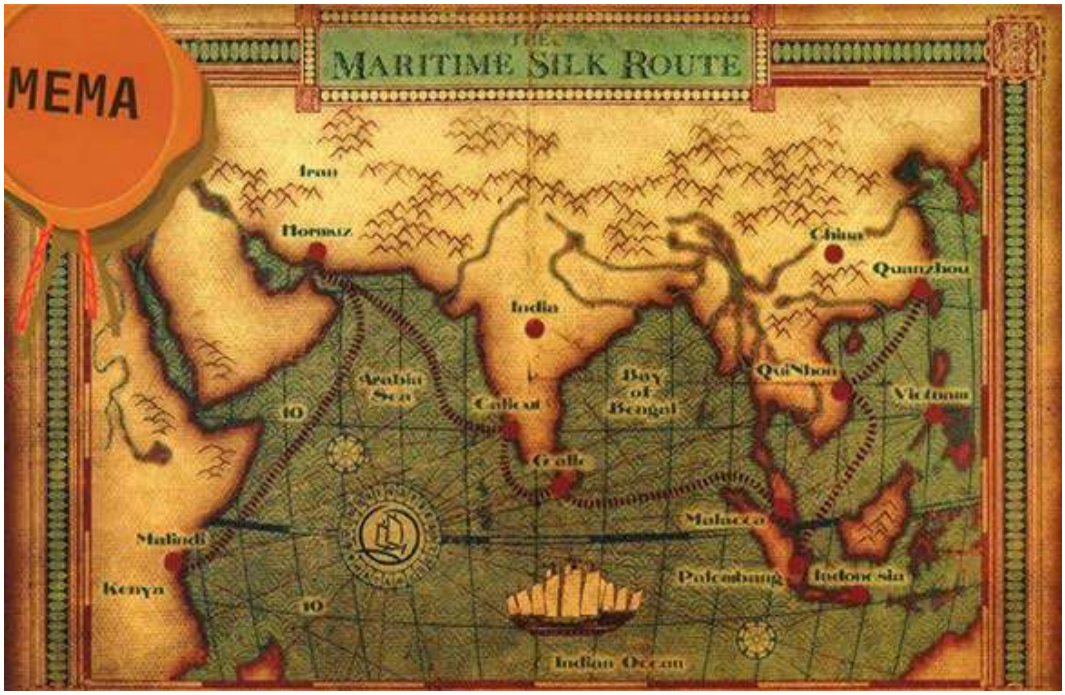

Figure 2: Ancient Maritime Silk Route
Source : https://harreira.com/history/maritime-silk-road-history-and-society/

Blue Economy of the Indian Ocean

South Indian regain is a resource full with natural gases/oil reserves, gold and gem production, fish harvest and trade-led growth is high in the region. Major sea routes connected Middle East. Africa, America and the East Asia are led through the Indian Ocean region. That carries half of the world sea borne oil and 23 number of wholes the best container ports currently facilitating the maritime trade in the Indian Ocean. During the last 2 decades average annual growth of container traffic including in small ports such as Colombo port Sri Lanka and Mombasa port of Kenya.16.5% of domestic goods cargo belongs to China making supremacy of the Indian Ocean trading. Other than intra- regional trading Europa, the United States and Japan are major trading partners in the Indian Ocean Trading. As a result of the growth of the technology and the information system maritime trading is endlessly expanding into more sustainable status. A number of preferential trade agreements is rising with time. Due to the inadequacy of regional involvement in the economic growth IOR has approached for the globally productive sea way transactions. Blue economy is a solution to reduce poverty and to establish food security of the South Asian region.

Fisheries and aquaculture. Fisheries are one of the major protein suppliers to the world. Indian Ocean's aquaculture is not well developed and inadequate for the regional consumption. Being Island nations and possessing biodiversity rich coastal belts and a healthy climate for fishery industry, Indian Ocean region has not reached to its maximum potential or the optimal function of the fisheries industry due to fewer resources and the inadequacy of capital investments. While commercial fishing is largely operated by Europe and Asia in distant waters focused on tuna and similar species. Illegal bulk harvesting of fisheries is caused to reduce fish breeding areas as well as to reduce the fish harvest. Food security is questionable in the Indian Ocean region. number of the nations are now focused on the blue economy agenda, capacity-building programmes and workshops for its trade development.

Maritime Trade. Half of the world's trade already traverses through Indian the Ocean region. The seaports and maritime transport sectors are important sectors under the Blue Economy. Uneven distribution of trade exists among the rim countries, where some Member States unfortunately are struggling to survive in the complex market of maritime trade as they face challenges in terms of congestion, new information technology and equipment, improvement of port infrastructure and professional services. In this regard, regional cooperation is important for trespass the bottlenecks to port development and maritime economy expansion in the Indian Ocean to enhance blue growth through economic cooperation and trade relations between Member States.

Renewable Ocean Energy. The expected population expansion is 9 billion in 2050.That is 1.5 times greater than today's population. With the unlimited expectations and perceptions of mankind demand for the resources such as fossil fuel, gasoline, minerals will be increased up to an unlimited scale and the provision of the resources will be not sufficient enough to cater the demand. Due to that, alternative resources should find. The ocean offers vast potential for renewable 'blue energy' from wind, wave, tidal, thermal and biomass sources.

Seabed Minerals. With the rapid decreasing of inland mineral deposits and increasing industrial demands, much attention is being focused on mineral exploration and mining of the seabed. The seabed contains minerals that represent an opportunity for economic development in both the Exclusive Economic Zones of coastal nations and beyond the limits of national jurisdiction. Seabed exploration in the Indian Ocean has already started, but

the major constraints in the commercialization of these resources lie in the fact that Member States have limited data on the resources of their exclusive economic zone (EEZ) possesses, lack capacity for exploration, mining and processing of these minerals. Therefore, improved information, technology and professional expertise in the field are required to assess the potential seabed mineral.

Offshore Hydrocarbons. Blue Biotechnology could be addressing key environmental issues, such as bio-sensing technologies to allow in marine monitoring, bioremediation and in developing cost-effective and non-toxic antifouling technologies. Finally, marine-derived molecules could be of high utility as industrial products or could be used in industrial processes as new enzymes, biopolymers and biomaterials. Research is to be conducted to find out more hydrocarbon mines underwater as a supportive measure to cater the Hydrocarbon requirement of the world.

Tourism. Marine tourism is another major income of coastal countries including cruise tourism. It is a developed industry that represents an important contributor to the economy of countries and for generating employment. If it is not managed properly would develop into a parasitic relationship for the environment for example sedimentation over coral organisms by sheer human physical impact, beach erosion and mangrove clearance. Protecting local marine resources is one of the most urgent needs in promoting sustainable tourism. Sustainable coastal tourism can assist with the preservation of artisanal fishing communities, allow for subsistence fishing, protect the environment and make positive contributions to sustainable economic development.

International Law and Framework. Global international agreements have been established to form a common platform for laws and policy development of the Indian Ocean region. Majority of Indian Ocean States have the key international environmental treaties and framework for oceans governance that create obligations to protect and preserve the marine environment for the next generation. Followings are some major organizations committed for a blue economy;

- United Nations Framework Convention on Climate Change (UNFCCC)
- Convention on Biological Diversity (CBD)
- Convention on Migratory Species (CMS)
- Convention on International Trade in Endangered Species (CITES)
- United Nations Convention on the Law of the Sea (UNCLOS)
- Food and Agriculture Organization (FAO)

Potential Treats of the Indian Ocean Trading

Competitive trading among world super power such as China, America Russia is one uncertainty and geopolitical tension in the Indian Ocean region. Traditional or Non- traditional security threats such as natural hazards, accidents, oil spills and fires are other usual downfalls for the regional sea fairs. Water and air pollution is another un inventible damage to the region. Which caused grave damage to the fish breeding areas and natural resources such as coral reefs as well as the underwater beauty of the zone. Sea piracy and drug trafficking is one of the largest barriers to the sea trades approximately 46.7% incidents out of total annual pirate rate occurred in the Indian Ocean. In the future who is having the supremacy of maritime security will be the leader of the regional shipping aids.

Maritime Security

Protecting vessels, avoiding thievery, avoiding trespassing, mitigating terrorist activities, preventing illegal trades, piracy attack safety, mitigating human trafficking and avoiding harmful acts for sea anemone and other living species and the oceanic ecosystem is the major role of maritime security. High technology and evident information system is required for maintaining an adequate security force for the blue economy. Followings are the tactics of marine security:

- Regularly inspect the vessel
- Manage the coordination and handling of cargo
- Proposing modifications
- Report problems:
- Assuring security awareness and vigilance
- Implement security training
- Report and record security incidents
- Ensure screening programs
- Monitor security equipment
- Supervise and support crew members

Conclusion

With the rapidly increasing population and their requirements, more exploration into sea bed minerals, hydrocarbon mines and renewable energies is paramount importance in the near future. A tremendous number of opportunities and unrevealed resources are possibly to exist underwater sea bed. Improvement of the sea trading industry and the navigation through the Indian ocean is increasing day by day. While unlimited utilization of sea routes and ocean- related

energies could be caused a grave damage to the sea-based ecosystem and that could be harmful to the mankind as well as sea animals and rare species. To avoid this condition there are bilateral and multilateral agreements that bind the Indian Ocean littoral countries for sustainable economic and environmental development with advanced maritime security. The diversity of the countries of the region in terms of geography, politics, economy and culture has so far hindered the translation of blue development goals into reality. Achieving the common blue economy goals would be mutually beneficial for all the embodies involved and the environment will be remaining enriched.

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MARITIME OPPORTUNITIES AND THE CHALLENGES IN THE INDIAN OCEAN REGION WITH COMPARING OTHER OCEANS

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Long Logistic Management Course

Abstract

In the Indian Ocean region, information and data on marine recreational fisheries (MRF) is lacking, which undermines efforts toward sustainable development. As far as the challenges and opportunities for sustainably developing marine recreational fisheries in the Indian Ocean region are concerned, it is identified several challenges are discussed in this article. And also show that addressing these challenges requires a holistic understanding of the socio ecological complexities and the multi-scale nature of the Indian Ocean region. Realizing the potential for sustainable development of this sector calls for the involvement of coastal communities in the sharing of benefits and decision-making. Further, coordinated efforts between multi-government agencies and non-governmental organizations are critical for integrating recreational fisheries into local and national agendas. It is obvious that the sustainable development of economics, fisheries, etc in the Indian Ocean region is possible. Still, such growth will be dependent upon the sustained capacity building of coastal communities and indigenous fishers, collaboration from stakeholders and the long-term sustainability of the resource.

Introduction

The Indian Ocean is the link that connects the East and West of the world. Through the Indian Ocean, the equilibrium of the world depends. The Indian Ocean is approximately 74 million square kilometres and roughly 20 percent of the global ocean; it is the third largest ocean after the Pacific and the Atlantic. Geographically, it is situated between the two bigger ones. So that serves as a natural 'transit lounge' for most of the traffic from the Atlantic to the Pacific and vice versa. Two key characteristics distinguish the Indian Ocean from the Atlantic and the Pacific: First, only one-fifth of the total trade is conducted among the countries of the Indian Ocean themselves, and 80 percent of the trade is extra-regional (for example, crude oil to Europe, the USA and Japan).

Second, contrary to the Atlantic and the Pacific as 'open' oceans, the Indian Ocean can only be accessed through several choke points: From the West via Cape

of Good Hope and the Straits of Madagascar, from the North via the Bab el-Mandeb at the end of the Red Sea and the Straits of Hormuz at the exit of the Persian Gulf, from the East via the Straits of Malacca, the Sunda and Lombok-Straits and the Ombai-Wetar-Straits.

Figure 1: Indian Ocean Region
Source : https://maritimeindia.org/events/aero-india-2021-indian-ocean-region-ior-seminar/

The demarcation of the Indian Ocean Region (IOR) is indicated above. United Nations and different organizations have established many policies and laws to safeguard and sustain this heritage. Even though a set of laws has been promulgated to protect and ensure safety we are facing a number of Globalized maritime issues, geopolitical issues, piracy issues, and terrorist activities within this region as well.

History of the Indian Ocean Region

Indian Ocean region covers approximately 74 million square kilometres and it consists of a variety of cultures and nationalities. IOR has 56 nations and most of them are developing countries. Some countries are the richest and some are the poorest among them. Even in past, there was no dominant power to be the superpower of the region. Since centuries ago the IOR has been used as the main transport route in the world and also Sea Lines of communications also along with the Indian Ocean. In the ancient era, most of the IOR has conquered and governed by Europe, especially by the British. Earlier this region is known as British Lake by scholars. Most of their culture, living styles and habits are embedded in this region. British had the dominant power earlier. But gradually several superpowers and emerging nations have emerged within the region as well as extra-regional. Since there was no dominant power so many powerful nations were trying to make a presence in this region, by knowing the importance of the region. It is like an anarchic situation.

Not only that, making disputes within the region and extra-regional influence appeared by showing their sympathy to the IOR. When considering the stability of the region, it is observed that ethnic conflicts, border conflicts, unrest situations, and most of the terror activities happen in IOR in comparison to others. It is obvious that the nations who are not capable to defend their nation by them self, they will seek assistance and help. The modern-day extra-regional influence can be seen for many reasons. Extra regional navies may come with hidden purposes. Sometimes with the intention of constructing infrastructure or facilities, sometimes aiding during natural disasters, and sometimes helping disputes of man-made activities.

There were many occasions and incidents reported in the past in several locations. Those led to extra-regional influence on the IOR. China also seeks the dominance and the presence of this region since their entire economy depends upon the IOR.

Importance of Indian Ocean Region

Mainly there are two factors that can be identified as the significance of the IOR; the first one is the high resource base and the second one is maritime trade. For above-mentioned factors are highly dependable on the IOR. The Indian Ocean consists of a considerable amount of oil reserves and natural gas reserves. As per the statistical data, it has been proven that 1/3 of iron production and a considerable amount of gold production contribute. Sometimes a considerable amount of fish harvest is provided to the world market by this region.

When it comes to maritime trade, it is obvious as geographically the IOR can be identified as the transit of the global economy. The world is witnessing global economic power shifting along with the rise of Asia. The IOR, emerged as one of the world's busiest trade corridors, that rapidly defeating the Pacific and Atlantic Oceans. It connects the Middle East, Africa, west Asia, America and Europe. This vital sea route transfers a large number of crude oil and seaborne oil resource.

It has drastically increased the joint ventures within the region and beyond the region as well. China also became the most important trading partner in IOR, and also intra-regional trades also have got increased.

Figure 2: Mapping the Indian Ocean Economy
Source : https://www.semanticscholar.org/paper/The-Political-and-Economic-Significance

Extra-Regional Activities

The Sea Line of Communication (SLOC) came into a significant place during the 90s under the implementation of globalization and the growth of the economy. Since these routes are known as the world's busiest sea routes it has concerned the entire world. These SLOCs can be closed during wartime, but naval operations are carried out to ensure these SLOCs are opened. The regional navies and extra-regional navies paid extra attention during the period from 1985 to 1995. During this period the entire world realized the large increment of goods and oil traffic had increased. The protection of the SLOC is the prime task of regional and extra-regional navies. Whoever wants to control the world economy or to dominate any state, can easily do it by conquering the SLOC, and he can threaten the world as well. The major responsibility is to protect the critical SLOCs and also make a presence around them also. Major choke points are:

- Bab-el-Mandeb at Southern entrance to the Red Sea and the Suez Canal
- The Strait of Hormuz between the Persian Gulf and the Gulf of Oman
- The Mozambique Channel between Madagascar and the coast of Africa
- The Strait of Malacca between Sumatra and Malaysia
- The Sunda Strait between the Indian Ocean and Borneo
- The Lombok Strait between the Indian Ocean and the Sulawesi

Figure 3: Sea Lines in IOR
Source : https://www.semanticscholar.org/paper/The-Political-and-Economic-Significance-of-Indian-Fatima-Jamshed/9ba6c8b2ad5a78bb30bd7741b87ea59823ef3a96/figure/0

During the 1960s United Kingdom and the United States occupied the IOR and then the British withdrew from the region the US increasing their power. The US started to build its station in Diego Garcia by confirming its presence and making a deterrent to the regional powers. China also has been expanding its territory by providing infrastructure in the regional superpower.

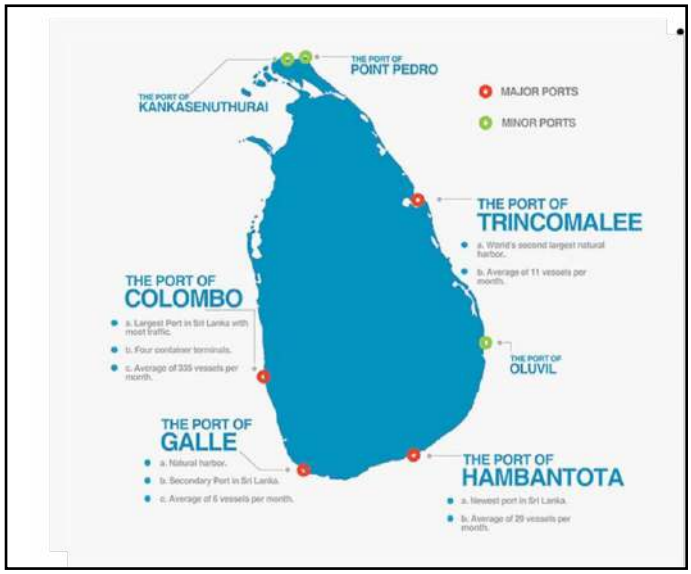

Figure 4: Sri Lanka Strategic position
Source : NSBM Logistics Circle 2020

From Sri Lanka's Perspective

Many of the states not only the IOR but also others in the globe do not have the capability to safeguard their territory; fulfil their responsibilities and manage their marine zones effectively. Even in the IOR, very few are capable to deal with man-made disasters and natural disasters. Being 360 degrees open to the Indian Ocean and having strategic value, Sri Lanka needs to play a vital role in the IOR. When the superpowers are fighting to become the dominant power in the region Sri Lanka needs to identify what are the challenges and the opportunities available.

Challenges in the Indian Ocean Region

There are many countries in this region that are developing countries. They are governed by another developed country, partially or entirely. Their economy is dependent. But the Indian Ocean has become a condition like anarchy with the rising of maritime threats from the past. When analysing the impacts from the favour of Sri Lanka:

Naval arms race can impact on the economy. Approximately here are 160 major warships present in this region. When comparatively them our platforms are lacking. But even though our platforms are fewer, we have to respond very large area in the region. Not only that even if we are detecting enemy ships from distance, we will also not be in a position to deter them well in advance because of less technology and scarcity of resources. Since there are sophisticated modern ships operating in the IOR they can be stimulated a battle at any time between superpowers. They are also capable of nuclear power. War is inevitable; it can happen at any time. If a tense situation arises in the region the entire economy will collapse, and the shipping route will be threatened.

Non-Traditional threats. Border conflicts, terror activities, and unrest conditions are frequent in the IOR. Some border wars are existing for 4 to 5 decades. But the major issue is sea piracy. Even though at present piracy has become a global issue, IOR has been affected severely. The Horn of Africa and Southeast Asia are the most affected areas. Same time IOR accounted for 18 percent of drug seize in this region.

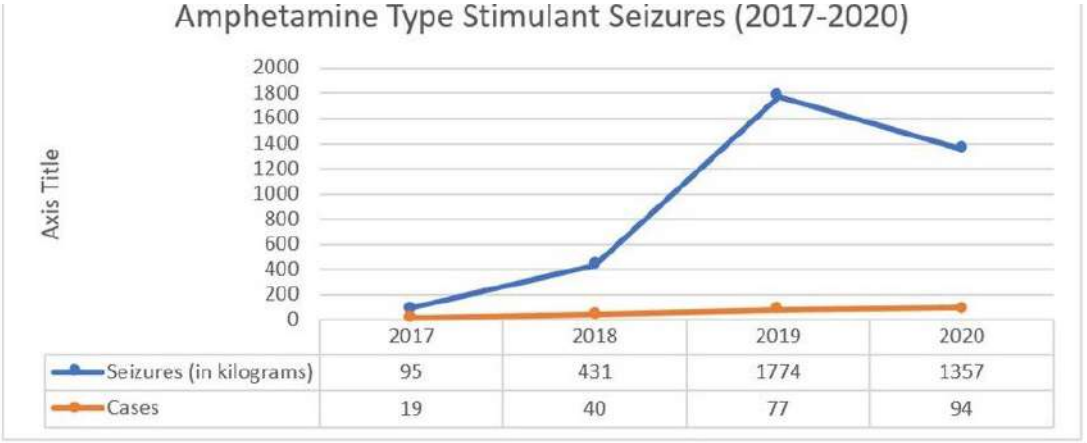

Figure 5: Annual drug seizes in IOR

Source : https://www.google.com/search?q=aannual+drug+seized+in+IOR

Geopolitical Challenges for Sri Lanka. Since our geographical position is prominent, we get the attention of the entire region. China's strategy has been increasing with the aid provided by them in order to strengthen the linkage. China has invested in Sri Lanka in a large sum of money in. Highways and huge constructions are being carried out by china and language centres, and Chinese cultural spread is also projected. On the other hand, India and the US are also observing. Sri Lanka is presently in a dilemma and confuses situations with this superpower's dominance strategy. Sri Lanka is under influence of India and the rapid growth of Chinese interests in Sri Lanka will not be tolerated by India.

Regional Stability. When extra-regional navies are occupying the space, it will lead to losing the regional stability. When the interference of others to solve the problems in the region, it is tarnished the sovereignty of IOR.

Maritime Terrorism. Terrorism is unlikely the piracy and it is a different phenomenon. The increase in terrorism within the region can be caused by the increase of extra-regional navies. They are;

- Terrorism within the maritime environment
- Terrorism against vessels or fixed platforms at sea or in ports, or against any of their passengers and personnel
- Terrorism against coastal facilities and settlements including tourist, port areas, and port towns and cities

Opportunities in the Indian Ocean

There are many opportunities can be identified when the presence of extra-regional Navies presence in the IOR:

Collaborative Effort to Overcome the Sea Piracy in the Area. With the presence of superpowers in the region's joint ventures and also conducting comprehensive exercises, this piracy issue can be mitigated. Not only that with the technological advancements, the result will also be more favourable for all the nations.

Natural Disaster Aid Providers. Natural disasters are very much prone in this region. The disaster which occurs on a large scale one nation or region cannot stand against that. During the Tsunami in 2004, this region was severely affected. On such occasions, donations are very much important to rebuild the collapsed economy and the country. Sri Lanka was heavily affected in 2004 but with the assistance of the extra-regional navies and also intra-regional navies we were able to rebuild the country.

Develop Ports and the Port City. With the help and support from extra-regional influence, the infrastructures and economy have shifted to another level and it is being transferred. Those were recently involved in projects in Sri Lanka with the help of the Chinese government.

- Colombo Port
- Hambantota Port
- Colombo Port City; a game changer for Sri Lanka Is expected to create a financial centre, tripling A grade office space in Colombo Business District Strengthen the financial regulatory environment, and implement the necessary policy reforms to maximize the benefits of this investment.

Naval Strategy and Platforms. Per annum number of training programmes and scholars are given to Sri Lanka Navy in order to establish and make a good image of foreign countries. Not only that the platforms are also given to Sri Lanka. The area of responsibility is very large, and our capability is comparatively less in order to meet the requirements.

Conclusion

It can be concluded that the presence of extra-regional forces brings both challenges and opportunities to the Indian Ocean. The strategic level needs to filter the best offer to make the country and boost the economy with sustainable development. Since we are a sovereign country we have the right to take decisions to safeguard our maritime environment and territory. It is not wiser to think that powerful countries will come to safeguard us at the expense of their national interests as well.

Recommendations

Following recommendations can be made when analysing the factors:

- Required to enhance the regional cooperation and bond among states.
- Sri Lankan Policy makers and strategic levels need to reform the policies on.
- Economic factors such as Tariff and focal policies.
- Required to make a national strategy on international relations.
- Need to invest in ports with careful master planning
- Increase the regional trading with the Indian region and India to become a regional trading hub.
- Need to collect the intellects and strategies by hosting the events such as Galle dialogue, The Indian Ocean: Defining the future, etc. in order to inculcate and expand the vision.

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ROLE OF SRI LANKA NAVY AND COASTGUARD FOR THE ECONOMIC PROSPERITY AND SECURITY THROUGH THE OCEAN

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Abstract

A large number of foreign nations have started to control Sri Lanka's economy as a result of the country's advantageous location in the Indian Ocean. Sri Lanka benefits from a prime strategic location in the Indian Ocean in comparison to other South Asian countries. Due to Sri Lanka's strategic importance, cross-border trade has been feasible for millennia. Nowadays, ocean-related businesses and farms are flourishing as a consequence of the increasing global population, increased consumption and ongoing need for new sources of food, energy and minerals. In 2030, aquaculture is predicted to account for two-thirds of fish consumption, with a significant amount of this aquaculture taking place at sea. Creating a blue economy is harder than it seems. It is constrained by a number of difficulties that the nation will experience. Excess nutrients from untreated sewage, agricultural runoff and marine debris like polythene and plastic all contribute to marine pollution. Sea levels are rising as a result of climate change, as are storms and increasingly severe and frequent weather events. How long-term climate change will affect the ocean system is still not well understood. It is clear that changes in water temperature, acidity and strong ocean currents are among the current risks to marine life, ecosystems and the populations that depend on them. Sri Lanka is one of the major maritime centers on the globe. Due to a combination of factors including its geographic location, rising infrastructure spending, efficiency gains and a favorable regulatory framework in an atmosphere of peace and political stability, Sri Lanka has emerged as a potential marine center in the Indian Ocean. While Singapore and Dubai do not get the same advantages from Sri Lanka's strategic position, many ports in South Asia and East Africa continue to be undeveloped.

What is the Blue Economy?

The sustainable use of ocean resources for job creation, improved lives, and economic progress is known as the 'blue economy' (World Bank Report, 2017). The blue economy concept aims to promote social justice and human well-being while reducing ocean environmental threats. Additionally, it offers a comprehensive paradigm that enables coastal nations to expand the advantages

of ocean resources. All social groups and geographical areas that are susceptible can also be encouraged to participate.

Nearly two thirds of the surface of the Earth is covered by oceans and seas, which help to eradicate poverty by generating sustainable livelihoods, supplying food and minerals, producing oxygen, absorbing greenhouse gases to lessen the effects of climate change, regulating weather patterns and temperatures and acting as seaports for transnational trade. A specific connection in the global supply chain is provided by the fact that almost 80 percent of trade is transported by sea through international shipping. Therefore, it is crucial for all nations to be able to access the global market.

Both the Portuguese and the Dutch controlled Sri Lanka before it became a colony of the British. There was a fierce struggle for control of the Indian Ocean, which has important ocean communication routes that are essential for marine trade and other activities, while these colonial powers built up their authority over vast swaths of territory in Asia and Africa

Furthermore, due to its geographic importance during the Cold War, Sri Lanka became highly sought after by both opposing factions. Trincomalee harbour was perfect for transporting battleships and submarines. The Colombo port is used for a large amount of international trade and shipping. It seeks to serve as an Indian Ocean transhipment centre.

Strategical Location of Sri Lanka in the Indian Ocean

Due to Sri Lanka's strategic location in the Indian Ocean, a huge number of foreign countries have begun to dominate the country's economy. Compared to other South Asian nations, Sri Lanka enjoys a crucial strategic location in the Indian Ocean. For millennia, cross border trade has been made possible thanks to Sri Lanka's strategic importance. Despite being in the middle of the Indian Ocean, the maritime silk route between China and Europe made the nation a trading centre. Natural harbours like Godawaya (Hambantota) in Sri Lanka were important commercial centres at various points throughout history. Numerous traders from the Arab world, Asia and subsequently the West, including the Dutch, British, and Portuguese came to trade because of this region's strategic location.

In the Indian Ocean, Sri Lanka serves as a significant hub for military installations and marine security. Establishing a Naval facility in Sri Lanka is crucial for keeping an eye on the Indian Ocean and the region's congested commerce corridors. The physical position of Sri Lanka is unmatched in the South Asian area.

Sri Lanka and India are close neighbours, yet Sri Lanka is a very small country in comparison to India. However, the location on Earth is highly strategically significant. International transportation lines are being established in the Indian Ocean close to Sri Lanka because of its strategic location in south India and at the top of the Indian Ocean.

The country may be impacted by the situation in the neighbouring nation. The three continents of the Indian Ocean, Asia, Africa and Australia have the ability to rule Sri Lanka. With significant ports including Colombo, Galle, Trincomalee and Hambantota Sri Lanka is a key position in most valuable sea waterways in the world. A powerhouse like China now controls Sri Lanka and the Indian Ocean and interferes with Sri Lanka's economic progress. The emergence of superpowers should not lead to violence in the Indian Ocean. India must thus assist Sri Lanka in maintaining its strategic security.

Opportunities of Oceanic Economy

Currently, as a result of the expanding global population, rising consumption and constant demand for new sources of food, energy and minerals the ocean related activities and farming are flourishing. Two thirds of the fish consumed in 2030 are expected to be farmed with a large portion of it occurring at sea. The following categories apply to the blue economy's many elements:

Harvesting and trade of marine living resources. Seafood harvesting is significant in terms of marine resources. Fisheries and allied operations, including processing, net and gear manufacture, ice production and supply, boat building and maintenance, manufacturing of fish processing equipment, marketing, distribution, etc., are all supported by the gathering of seafood. Additionally, aquaculture is an industry cantered on the collection of fish. The rising need for food and nourishment is a result of this.

Extraction and use of marine non-living resources. Minerals, energy, the production of freshwater and other non-living resources are pertinent in this area. Mineral extraction might lead to the development of mining enterprises and an increase in mineral demand. Energy source extraction is a way to expand the oil and gas industry. The need for energy sources can arise. Desalination companies may increase in tandem with the rise in freshwater demand through freshwater production.

U**se of renewable natural resources.** Wind, wave and tidal energy can be mentioned in terms of renewable natural sources. Numerous sectors fall into this category and the desire for renewable energy sources may be profitable.

Commerce and trade in and around the ocean. Transportation and trade, coastal development, tourism and recreation are subcategories of this category. With the growth of transportation and commerce, sectors including shipping and shipbuilding/ marine transportation ports and related services will expand. Therefore, it is possible to foresee expansion in the marine transport industry, transport demand and international rules. The private sector started to emerge as a result of coastal development initiatives carried out by national planning ministries and agencies. Due to the national tourist authorities, business sectors and other relevant sectors the global expansion of tourism is demanding.

Challenges and Security Treats to Sri Lankan Oceanic Economy

Developing a blue economy is not easy as what we think. It is limited by a series of challenges where the country will have to face as mentioned below:

Unsustainable extraction from marine resources. When taking the entire world into account, unsustainable fishing is a combination of technical advancements combined with improperly managed access to fish stocks and increased demand. It was shown that 37 percent of the fish stock is overexploited and that 37 percent of the fish stock is completely exploited. By engaging in illicit, unreported and unregulated fishing, these populations are further threatened.

Destruction of marine and coastal habitats and landscapes. Deforestation, mining and coastal development are the main causes of this damage. Coastal development has the potential to cause erosion. As a result, infrastructure and livelihoods are destroyed immediately.

Marine pollution. Examples of marine pollution include excess nutrients from sewage that has not been cleaned, agricultural runoff and marine debris like polythene and plastic.

Impact of climate change. Examples of the effects of climate change include the rising sea level, storms and increasingly severe and frequent weather occurrences. We still do not completely understand how long-term climate change will affect the ocean system. However, it is evident that existing threats to marine life, ecosystems and the groups that depend on them include changes in water temperature, acidity and significant oceanic currents.

Sustainable Use of the Ocean by Sri Lanka for Economic Prosperity

Many consumers and social objectives benefit from ongoing ocean observations. As the ocean's importance to society grows, such knowledge is essential for managing ocean resources sustainably and ethically. A solid foundation of international and regional ocean observation networks has been made possible by the contributions of many nations working together to establish the global ocean observing system. Flat financing and the limited cooperation of current and future users, however have hampered the ability to improve the current monitoring system. Various players are looking to deploy new distant and watching capabilities such as biological sensors at the same time.

The world's one of most significant marine hubs is Sri Lanka. Sri Lanka has emerged as a potential marine centre in the Indian Ocean due to a combination of its geographical position, increasing infrastructure expenditures, efficiency improvements and a favourable regulatory environment in a setting of peace and political stability. While other ports, like Singapore and Dubai do not benefit from Sri Lanka's strategic location to the same degree many ports in South Asia and East Africa remain comparatively underdeveloped.

Consequently, the advantageous position paves the way for robust linkages to global shipping lanes. As the world's shipping patterns have changed, more trade is moving to Asia and larger ships are choosing to call at fewer hub ports. In order to build new huge ports in Sri Lanka that can accommodate the largest ships, the country's logistical infrastructure was expanded by increasing access to privileged economy.

The accompanying security worries were a significant barrier to the nation becoming a marine and logistic hub in Asia. The country is now in a position to take advantage of its strategic location after a thirty-year conflict. The nation's goal of becoming a marine centre is supported by elements including international maritime shipping, patterns of international maritime trade and other domestic elements.

Sri Lanka's location at the crossroads of East-West trade routes makes it possible for the nation to offer swift and effective global and regional connectivity for the movement of big ships to and from Asia to the rest of the globe. This is primarily due to the nation's location in the middle of all the maritime routes that link Asia to the rest of the world. Sri Lanka is in a strategic position that can offer quick and simple access to the Indian subcontinent through its feeder network because of its proximity to all major ports in the Indian subcontinent, especially those in India.

Role of Sri Lanka Navy and Sri Lanka Coastguard to Overcome Oceanic Economic Challenges

The 'golden fence around the country' is what the Sri Lanka Navy portrays. Therefore, the navy has a major obligation to effectively use ocean resources in the ongoing move toward sustainability. A significant occurrence in maritime transition is bulk transportation and at a distance of six to seven nautical miles from Hambantota Harbour, silk routes are closer. On a regular basis considerably large number of merchant ships pass through these silk routes. By maintaining their safety, the Sri Lanka Navy can meet the needs of these kinds of ships.

The current state of technology might not be adequate to meet the aforementioned needs. A technological resurrection is something that must happen. India, which is the adjacent nation, has 32 harbours. However, they are few in comparison to Sri Lanka's total which is six. This element benefits the development of a road toward global trade agreements. Due to its abundance of rare coral reefs, fisheries resources, excellent diving locations and magnificent natural harbours Sri Lanka ranks among the top countries. Therefore, the Sri Lanka Navy and Coast Guard should strengthen the measures to combat marine pollution by carrying out more and more counteraction than the current limit, acting as the 'golden fence around the country'.

At the moment, two new issues are emerging in the field of food security and the food crisis. But nobody looks at the possibilities of the fisheries in our nation. The demand for Sri Lankan prawns is increasing. As the Navy, we need to do a better job of assisting local business owners in the aforementioned areas. In contrast, Mullative, Kalpitiya and Galle are places with a strong fishery harvest. Eight times as much land as territorial waters are owned by Sri Lanka. To make Sri Lanka the 'Pearl of the Asia Silk Route' the Sri Lankan Navy should work harder.

As a result of the rising incidence of both conventional and unconventional marine threats, the sovereignty of the seas is facing new risks giving maritime security missions a crucial component. To accomplish the intended goals, it has become necessary to review the rules controlling the containment of these risks. The world's marine trade is in danger due to the threat of piracy.

The protection of commercial ships navigating in the congested lanes by the Sri Lanka Navy's presence in place of other nations' capital ship deployments, convoys, shifting monsoon conditions and the availability of On-board Security Teams (OBST). It strengthens the ties between our nation and the nations to whom the relevant commercial ships belong on a global scale. Although there have been

no documented acts of piracy in Sri Lankan waters there have been a number of occurrences.

The Sri Lankan Coast Guard works with marine safety organizations to support the protection of ocean resources. In essence, they cover search and rescue operations, environmental protection, customs work and marine law enforcement. The Sri Lanka Coast Guard responds to preventive measures against maritime pollution. It promotes the health and safety of the remaining marine life.

To safeguard aquatic life, breeding grounds are offered with a specific unit will be erected. The Sri Lankan Coast Guard should maintain mangrove plantings and welcome new, genetically modified species of plants and animals as needed. Deep-water search and rescue operations are important since there is a significant risk of drowning and little chance to save lives. This aids the aforementioned rescue efforts and helps Sri Lanka get international recognition. Oceanic tranquillity represents a turning point in the development of the tourism destination.

More emphasis should be placed on encouraging animal lovers to enjoy the company of Sri Lankan Coast Guard managed marine life, such as turtles. These days, the depletion of ocean resources is a prominent issue, giving illicit fishers a place to operate. In order to combat illegal fishing by all means the Sri Lanka Navy and Coast Guard take on such challenges in collaboration with other pertinent organizations which inevitably moves the country towards a sustainable blue economy. Additionally, the Sri Lanka Navy may help by establishing a ferry system for popular tourist destinations like Galle and Hikkaduwa. With the arrival of the ideal moment for bringing the nation to a new normal, it may actually be appreciated.

Contribution of Other Navies for their Oceanic Economy that can be Taken as Examples for Sri Lanka

The Royal Canadian Navy's objective is to build combat ready naval forces that serve Canadian interests both at home and abroad and the three key categories at the centre of this endeavour. The Royal Canadian Navy is committed to collaborating with other government agencies, conducting high seas search and rescue missions, assisting Canadians in times of need and delivering vital lifesaving humanitarian aid both domestically and internationally. As a tool of national power and governmental strategy, the Royal Canadian Navy is in the lead.

The Royal New Zealand Navy helps secure the blue economy. Additionally, it develops highly trained workers whose worth to industry is shown each time the

economy grows. There are chances to collaborate with business in general and the high-tech industry in particular in order to add to New Zealand's wealth rather than simply consume it. We must acknowledge the Navy's larger contribution to the national enterprise while evaluating its worth. By weighing the cost of maritime security against the value of trade, the trade facilitation initiatives do offer a quantitative benefit, but this is not the complete picture.

Conclusion

Sri Lanka Navy and Coast Guard play a vital role in improving the oceanic sustainability and blue economy. It could not be achieved without working together with unity. Operational matter and health condition of Naval personnel in Sri Lanka Navy and Coast Guard in high level. Furthermore, low enforcement related to maritime security must be flexible towards the betterment of the blue economy. As much as the maritime security achieve by a Navy will totally benefits the blue economy. Due to the geographical location of the Sri Lanka in the Indian Ocean centre the threats for the maritime security is in a high extend. However, Sri Lanka Navy and Coast Guard should stand strong to enhance and maintain strong maritime security policies with the assistance of the regional Navies like India, Pakistan, Maldives and Bangladesh. A clear intention is to be given to the protection of own natural resources that available within the ocean specially by safeguarding aquatic life and breeding grounds in the specific legislative and practical aspects. The Sri Lankan Coast Guard should maintain more and more mangrove plantings and welcome new, genetically modified species of plants and animals as needed along the costal belt of the country. Same time, the Sri Lanka Navy and Coast Guard must get the priority in deep water search and rescue operations within the region as the Silk Route or the International Shipping Lane is always full of commercial ships and always having the threat of a distress out at sea. If the nation able to walk to talk Sri Lanka can be promoted to the position of a Developed Country in the world. The presence of the Sri Lanka Navy will safeguard commercial ships traveling through the crowded lanes instead of other countries' capital ship deployments, convoys, changing monsoon conditions and the availability of On-Board Security Teams (OBST). On a worldwide basis, it builds links between our country and the nations that the pertinent commercial ships belong to. Although no explicit acts of piracy have been recorded in Sri Lankan waters, there have been several incidents.

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UPRISING OF TUMBLED NATION INTO BLUE'S AND ROLE OF GUARDIAN OF THE NATION

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Abstract

Sri Lanka is an island nation which having plenty of resources around the sea and inside the country. Same Sri Lanka presently facing terrible economic crisis. In this article it is discussed that what are the nearest reasons and points for collapsing of country's economy. The crisis began from the higher debt and mismanagement. Staying in this prospective the blue economy concept coming into paly. Comparing to other countries in the IOR (Indian ocean region), Sri Lankas having more opportunities in marine economy due to her geographical situation in Indian Ocean. This article is describing about the insight of Blue Economy concept as well as opportunities in IOR for up rise the Sri Lanka's collapse economy. This paper also discusses about how to grab opportunities, what are the processes and mechanism we need to implement going along with blue economy concepts. Further, in here it is discussed role of the Navy in blue economy concept. Presently Sri Lanka Navy is considering as first line of defence in the nation and guardian of the nation. In this paper it is only discussed about green and blue projects such as beach cleaning, marine environment projects, and OBST (Onboard Security Team) operations etc. Further it is discussed what are the areas that must be upgraded for earn income within blue economy perspective. Finally, it is discussed about what are the future challenges which will be affected to blue economy.

Key words: Blue Economy, Indian Ocean Region, Role of Sri Lanka Navy, Onboard Security Team

Introduction to Sri Lankan Economy

Sri Lanka is an island country that gained independence from the United Kingdom in 1948. The country remained a British dominion state until 1972, when it became a sovereign republic. Since gaining independence, Sri Lanka has mainly depended on agriculture, services and light industry, such as exports of tea, rubber and coconuts. Since the country is known as a third world developing nation based on economy, education, and productivity. When considering the agriculture accounts, approximately 21% of the Gross Domestic Product (GDP)

comes from plantation agriculture and food crops from subsistence agriculture. Cash crops such as tea, rubber and coconuts are largely grown on plantations. Rice is the principal food crop and the main source of livelihood for over 70% of Sri Lanka's rural population. Manufacturing industries account for approximately 19% of the gross domestic product and employ about 17% of the workforce. Chief manufacturers include textiles, ceramics, petroleum products, vegetable oils, fertilizers and cement. The service sector is the largest in the Sri Lankan economy, employing 45% of the workforce and contributing roughly 60% of GDP. Tourism, banking, finance and retail trade are the major components of the service sector (Nations Encyclopaedia, 2022).

Present Economy Chaos and Reasons

Sri Lanka is home to approximately 22 million people, many of whom are rapidly losing their ability to afford FMCG (fast-moving consumer goods). Consumer inflation reached 39% at the end of May 2022. Government and private entities have decided to conserve fuel due to the energy crisis and the need to save energy. Schools will be closed by the end of May 2022, and children will receive their education through online and mutual platforms. Children do not engage in physical enrolment and most parents are unable to afford electronic and telecommunication devices for their children. As a result, 70% of schoolchildren's education had been disrupted. The former president resigned as a result of the protest. The International Monetary Fund (IMF) recently arrived in the country to discuss a bailout. The IMF announced that they can provide 2.9 billion dollars to uplift the country's economy, subject to approval from the executive and it will depend upon the country's economic policies.

The Sri Lankan economic crisis did not emerge overnight; it emerged gradually, despite the presence of economists and scholars to advise the government on these factors; irresponsible political policies and economic mismanagement in the country caused this chaos. The following are the most plausible factors and timeline descriptions for Sri Lanka's tumbling economy.

In 2009, nearly 30 years of conflict between the LTTE and the Sri Lankan government ended in a fatal defeat for the LTTE extremists and the government shifted its focus to the domestic market and domestic production. However, a stress on local production and sales instead of exporting the items increased the country's dependence on foreign goods. Afterwards, in 2019, unprompted cuts were introduced by the government on income tax. This was leading to significant losses in government revenue, challenging an already cash-strapped country. End of 2019 and all year 2020 The COVID-19 pandemic restricted the global movement

and jailed humankind into their own confined spaces, which stifled one of Sri Lanka's most money-spinning industries, such as tourism. Prior to the pandemic, in 2018, tourism contributed nearly 5 precent of the country's GDP and generated approximately 388,000 jobs.

In 2020, tourism's share of GDP had dropped to 0.8 precent, with over 40,000 jobs lost to that point. Recently, in 2021, the Sri Lankan government promulgated a policy of using organic fertilizers instead of chemical fertilizers. This paved the way for a ban on foreign-made chemical fertilizers, which are highly consumable in the local agriculture industry. The ban was intended to prevent the depletion of the country's foreign exchange reserves. However, things didn't act as they planned with only local, organic fertilizers available to farmers; a massive crop failure occurred, and subsequently, people had to rely even more heavily on imports. Further depletion of reserves as a result of the effects of these factors in 2022 sparked massive protests against Gotabhaya Rajapaksa's government. Due to this protest, the President and Prime Minister had to resign from their positions and Ranil Wickremasinghe became the President of Sri Lanka in May. Recently, in June, the government approved a four-day work week to allow citizens an extra day to grow food as prices continue to shoot up. Food inflation increased by over 57 percent in May. Further, the price of grain increased in the world due to the war in Ukraine and rising fuel prices globally have played into an already ominous situation in Sri Lanka (Koop, 2022).

What is Blue Economy Concept ?

As per the definition on 'Investopedia' economy is defines as "The large set of interrelated productions consumptions and exchange activities that aid in determining how scare resources are allocated in a country or for a period of time."

An economy may represent a nation, a region, a single industry, or even a family. In Sri Lanka, we have been going through various kinds of economic concepts since 1948 and have not yet come up with exact concepts and policies to uplift the country's economy. However, it is possible to conclude that Sri Lanka has had a 'mixed economy' for many decades. The mixed economy consists of a situation in which both the private sector and the government sector engage in the production process. Foreign investments are encouraged and several free zones have been established. The country's banking system is well developed, so that both foreign and local banks can function in this economy.

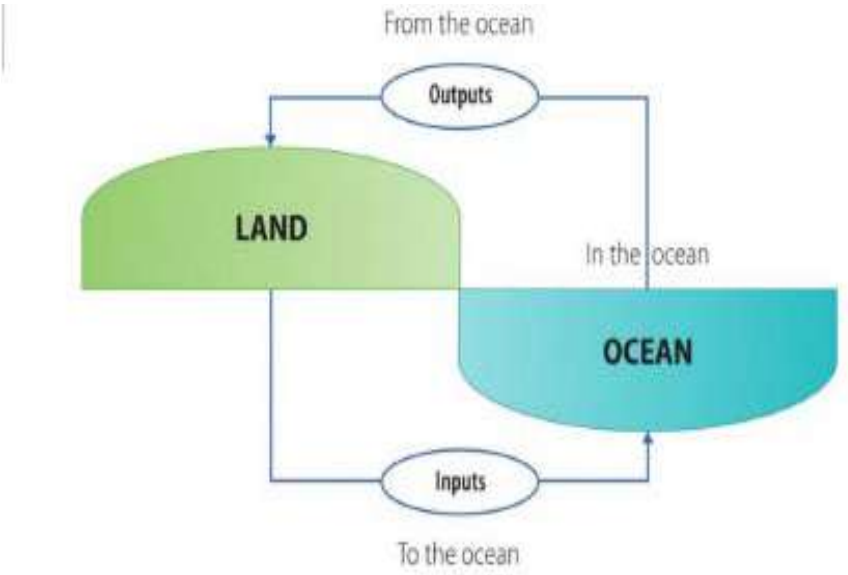

Figure 1: Relationship Between Ocean and Ocean Economy
Source : The Blue Economy Handbook of the Indian Ocean Region. (2018)

The 'Blue Economy' or 'Maritime Economy' is a term used by the EU (European Union) and covers all the market-related activities linked to the ocean. It serves as an alternative model for sustainable development that places more emphasis on the sea. The concept of a blue or maritime economy is closely related to the green economy concept and is of special interest to small island developing states (SIDS) and coastal economies such as Sri Lanka. There is not any exact definition for maritime or blue economies, but they should include the following factors;

- Reforming the oceans as development spaces.
- Decoupling socio-economic development from environmental degradation.
- Improving relevant international law and governance mechanisms.
- Prioritizing the use of the sea to benefit the people will poverty, generate employment and promote equity.

The World Bank describes the blue economy as "the sustainable use of ocean resources for economic growth, improved livelihoods and jobs while conserving the health of the ocean ecosystem," while the European Commission defines it as "all economic activity relating to oceans, seas and coasts. "It encompasses a diverse variety of interconnected established and growing areas." (Attri & Muller, 2018).

As discussed by (Alharthi & Hanif, 2020). The world's oceans, coastal areas, and seas have the largest ecosystems and biodiversity on the planet, with the oceans covering almost two-thirds of the planet's surface. These ecosystems are critical to both global and human health. When considering oceans, they not only help mitigate the effects of climatic changes but also provide habitat for millions of species and food for more than one billion people. Oceans are also directly related to most countries' economic prosperity. Despite the fact that oceans are a precious aspect of our natural heritage, only 7 percent of the planet's oceans have been explored. In the context of global megatrends such as migration to coastal cities, population growth, energy demands and climate change, the relationship between humankind and the oceans is becoming more complex.

According to the literature and research done by scholars, it is mainly observed that a blue economy or maritime economy is most suitable for SIDS such as Sri Lanka, the Maldives and most of the south Asian countries. Considering Sri Lanka, which is an island nation that currently acts as a maritime hub in the Indian Ocean, there are plenty of benefits and opportunities to be gotten from the sea and coastal ecosystems to rebuild the country's economy.

Opportunities of Blue Economy in Sri Lanka

As per the World Bank report in 2021, the Gross Domestic Product (GDP) in Sri Lanka was worth 84.52 billion USD. According to official data, the GDP value of Sri Lanka represents 0.02 percent of the world economy. Further south Asian countries have lower GDP per capita compared to the rest of the world, but the IOR is shifting from low to middle income. The region has as large population of poorer people and as a result, a number of initiatives have been taken by the government, but the progress on poverty reduction is limited in terms of GDP per capita. According to the 2017 World Bank report (Figure 2), Sri Lanka has the highest GDP in the region (figure 2) (Alharthi & Hanif, 2020).

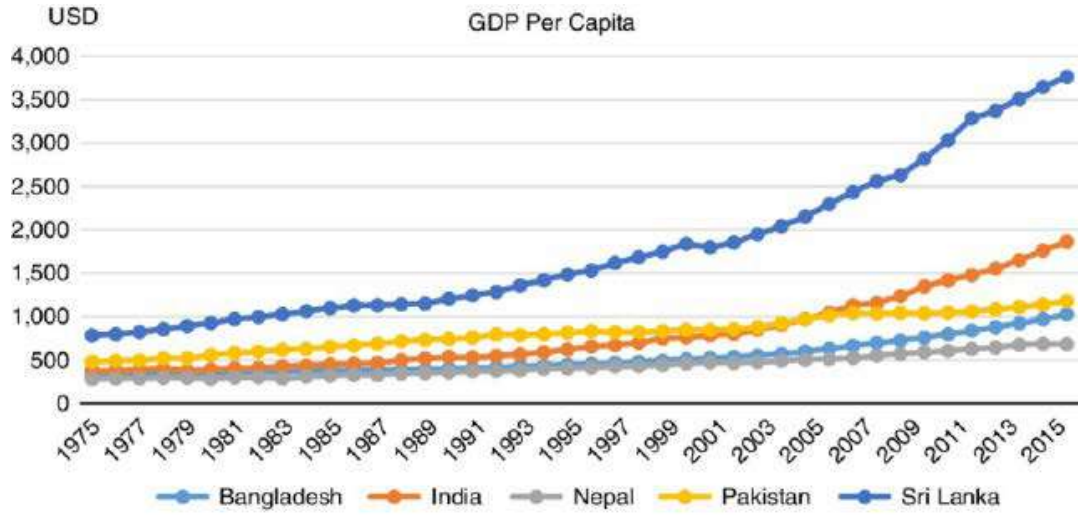

Figure 2: Comparison of GDP per capita for South Asian Countries.
Source : World Bank (2017).

When considering the IOR, South Asian countries are blessed with the world's largest natural bay, which is the Bay of Bengal. It is bounded by Bangladesh to the north, India to the west, Myanmar in the east, Sri Lanka to the southwest and Indonesia to the south-east. There is great potential in the blue economy because natural resources are abundant in this area. Coastal states have every right to explore and use resources within their marine boundaries. The marine economy (the Blue Economy) has a global reputation, extending from the Pacific SIDS to the Southern Africa region. It also continues to grow in the region.

Sri Lanka is an island nation, geographically situated in the middle of the Indian Ocean and having a maritime territory seven times bigger than its landmass. Being an island nation located in a central position in the Indian Ocean, implementing a blue economy strategy is not optional but is required for Sri Lanka, but we must face both opportunities and challenges in this insight. The principal benefits of a blue economy are:

- Unique geographic situation.
- High accessibility to ocean resources from the lengthy coastline around the country.
- Proximity to major sea lanes.
- Diverse range of coastal and marine ecosystems.
- High potential for tourism and recreation industries.
- The oceans around the country are highly contested by global power.
- Being a small player in the global political arena, Sri Lanka must proceed with caution.

- Fisheries, tourism, and maritime transport comprise the blue economy, which entails emerging industries including renewable energy.
- Energy, aquaculture, seabed extractive activities, marine biotechnology, and bio-prospecting.

Following are the ongoing plans of Sri Lanka for the blue economy concept.

- Coast conservation and coastal resource management department.
- Construction of a research and information centre at Nilaveli.
- Off-shore sand mining and beach nourishment projects at Marawila.
- Construction of a coast protection scheme at Kappalady.
- Construction of two offshore breakwaters at Mudukatuwa (Premarathna, 2021).

Being an island nation, the following sections can be implemented and developed further; these are considered opportunities in the marine economy, such as ocean-based renewable energy, fisheries, aquaculture, mariculture, maritime transport, tourism, or waste management.

Fisheries and Aquaculture

Fish and fisheries products make an enormous contribution to the lives of people in the region. The catch of South Asian fisheries increases by 5 to 8precent. In South Asia, the majority of productions are from the Bay of Bengal. India and Myanmar are catching about 50 precent of the fish. Compared to these countries, Bangladesh, Sri Lanka and the Maldives catch less fish.

As per the World Food and Agriculture Organization (FAO), Sri Lanka is designed for aquaculture with a total coastline of approximately 1,700 km. The total extent of lagoons and estuaries has been estimated at 121,000 hectares (ha). Adjoining these estuaries and lagoons are extensive areas of low-lying delta lands estimated at 70,000 hectares.

Taking into account the aforementioned factors, the following concepts and processes will be beneficial to Sri Lanka's blue economy: When it comes to high seas fishing the quality of the catch must be maintained and the processing and preservation of the catch must be done in a timely and appropriate manner. Proper processing and preservation can improve the quality of the supply and therefore increase sale proceeds, resulting in higher GDPs. These can be achieved by deploying factory ships instead of presently using multiday trawlers; they may accommodate factory shops fitted with a wide variety of seafood processing

equipment, work force living quarters, offices, emergency medical facilities, communication stations, fishing vessel supplies and storage facilities. They have the advantage of mobility over their land-based counterparts and can even move to seasonal fishing grounds. A factory ship thus offers catching over a wider fishing ground because of the reduction in travel time of trawlers by making consumables available at the door, flexibility in marketing by channelling catches according to market demand and providing a better home for all on the sea. It is a safe haven in times of disaster. Factory ships are being used by many countries, usually for whale fishing and other purposes. Further developing seawater fishing farms and waste management projects (currently commencing at Trincomalee) can generate marvellous income, which will result in higher GDP.

Maritime Transportation and Seaborne Trade

Shipping is the cheapest mode of transport and carries 80 precent of the global merchandise trade in volume. As a result, shipping becomes a more important means of South Asian countries require transportation as their merchandise products become more popular. When considering Sri Lanka's geographical location, she has numerous advantages over the other countries in the region. Colombo port is one of the busiest in South Asia and can accommodate VLCCs (very large crude oil carriers) such as the MV Everest (displacement of 265,876 t), as can HIP (Hambanthota international port), which can accommodate VLCCs and other large ships. Further, it can make another dockyard in the Hambanthota area and be given infrastructure facilities. Due to the international shipping lane connecting the Western world to the East and the traffic separation scheme off Dondra Head, which passes approximately 4000 units per year (CEIC Leading Indicator), this could generate a significant amount of revenue for the county.

South Asian countries are well linked with the global world, and their economies are growing rapidly. The liner shipping indices of the South Asian countries show an increasing trend, and this is because of the increasing trade volume.

Coastal Tourism

Less than 2 percent of the world's coastline may be found in the five coastal nations of South Asia: Bangladesh, India, the Maldives, Pakistan and Sri Lanka. Additionally, more than 40 precent of the region's economic activities and the majority of its significant economic infrastructure are located in the coastal zones.

Professor Hiran Amaraserka, senior lecturer of Sri Jayewardenepura University's faculty of wildlife and environmental studies, asserted in Amarasekera (2004) that Sri Lanka is one of the world's biodiversity hotspots. The natural variation along Sri Lanka's coastline is incredibly varied. According to the blue economy perspective, building tourism promotion campaigns will be Sri Lanka's best source of income. These natural resources can be used as major destinations around the nation, notably on the east coast. Tourists flock to countries because of their pleasant climates, biodiversity, clean water and long stretches of sand beach by offering beach-based relaxation and tourism, tourist activities close to the sea, and naval boating, such as yachting, marinas and cruise tourism, these nations may increase their tourism revenue.

Marine-Based Energy

Energy is truly the mother of all economic development. Supremacy in controlling the sources of energy so far has influenced the world's geopolitics and therefore the suffering of humanity, human basic living and social integration. On the other hand, the prices of energy are nearly unaffordable.

The high price of energy, such as crude oil-based energy, depends on the country's production and economy. Sri Lanka today requires the conversion of alternative energy sources, particularly renewable sources such as solar power, wind power, and tide power. The Blue Economy Concept, among others, has brought forward the sea as a source of enormous amounts of energy. energy from the seawater mass by using the temperature gradient and waves, respectively. There are many more types of energies: wind energy, chemical energy, etc.

Deep Sea Minerals

70 or more minerals may be extracted from the deep-sea water mass. The deep sea is the second layer of water mass in the ocean, extending from 250 meters up to a depth of 1500 meters, which is the most vital part for mineral extraction. Following are the most important elements that should be noted and explored.

Sea-floor massive sulphide deposits containing localized concentrations of Copper (Cu), Lead (Pb) and Zinc (Zn), with significant amounts of Gold (Au) and Silver (Ag), manganese nodules and cobalt-rich ferromanganese (FeMn) crusts containing notable concentrations of Nickel (Ni), Copper (Cu) and Cobalt (Co) coupled with significant concentrations of rare-earth elements and other rare metals Many other minerals are available and extractable; however, that is dependent on the development of innovative, cost-effective technology.

Some of those minerals are described below. Sea-floor massive sulphide (SMS) forms on or below the seabed. Mineralized seawater flows out of hydrothermal vents due to the pressure difference at the tip and underneath and forms sulphur dioxide. In very deep parts of the ocean, at depths of 4000 to 6000 meters, manganese nodules are found. Cobalt-rich Ferromanganese crusts can be found on underwater elevated surfaces up to a depth of 7000 m. (Alharthi & Hanif, 2020).

Role of the Navy in Blue Economy

Presently Sri Lanka Navy is engaging with sustainable combat operations at sea further Navy contributes her maximum output to country for generate income along with blue economy concepts some of these activities done in several modes and some of them are needed to update into blue economy prospects, Navy playing main role in followings sections.

OBST (On Board Security Team) Operations

As discussed in (General, 2016), OBST (On Board Security Team) operations are a major source of revenue for both the navy and the Sri Lankan government. After the end of the LTTE conflict, the international community identified Sri Lanka as an expert in littoral warfare. At the time, Somali piracy was at its peak and merchant ships passing through the Malacca Strait and the Suez Canal required security assistance. In this condition, the Navy came into action, introducing the OBST operations, the safekeeping of weapons in armouries, as well as administration work on sea martials, embarkations and disembarkations and providing security until they reach OHL (outer harbour limits) and get onboard respective vessels.

This operation was conducted in Colombo as well as Galle. Because of shifting government policies, this OBST operation was taken over by a private company (Avant Garde Maritime Services Ltd). Having taken over the Onboard Security Team Operations (OBST) from Avant Garde Maritime Services Ltd on November 13, 2015, the Sri Lanka Navy was able to earn Rs. 2.33 billion in recorded amounts for the Government of Sri Lanka for one year. Furthermore, these operations provide direct and indirect job opportunities for civilians in Sri Lanka, but all administration and coordination were handled by Avant Garde Maritime Services Ltd last year (2021). If Sri Lanka's navy can fully participate in the operations, the government will be able to earn a large sum of money for the country.

Protection of the Marine Environment

When compared to other government and private organizations in the country, the Sri Lanka Navy contributes 100 precent of its strength to protecting and conserving the country's marine environment. The following are the events that the Navy has participated in in connection with marine environment protection.

The Sri Lanka Navy established green and blue environmental protection programmes in each of its seven commands. Each base is now continuing with polyethene-free zones and every weekend the Navy conducts beach cleaning programmes in which they collect a massive amount of plastic and polyethylene from the beach, which is recycled and used to make equipment such as luggage.

Galle and Trincomalee are the two main locations where the Sri Lanka navy built an underwater museum for the first time in history and by doing so, the navy planted corals in this underwater museum, which automatically converted into fish and marine species breeding grounds as well as recreational areas.

In collaboration with the Department of Fisheries, the Navy once again makes every effort to prevent illegal fishing activities such as bottom trawling, TNT (trinitrotoluene) under water explosions and so on. Additionally, gardening of mangroves in beach areas and coral planting create breeding areas for marine species.

Search and Rescue Operations

The recent maritime accidents that occurred in the last year were the MV Xpress Pearl and the MT New Diamond; these accidents caused significant damage to the country's maritime environment.

The MT New Diamond crude oil tanker was transporting 270,000 metric tons of crude oil from the port of Meena Al Ahmadi in Kuwait to the port of Paradip in India. On September 3, 2020, at around 8:00 a.m., a fire broke out aboard the ship in the eastern seas off the coast of Sri Lanka. The ship was sailing 38 nautical miles off Sangamankanda Point when it caught fire with an explosion in a boiler in the ship's main engine room. The MV Xpress Pearl was registered in Singapore. On May 20, 2021, the X-Press Pearl caught fire off the coast of Colombo, Sri Lanka. It is not going to be a deep discussion in these two situations, but the Sri Lanka Navy played an extreme role in these situations; perhaps these incidents would not have ended in such a disaster if the Navy had firefighting ships. Considering

these facts, the navy needs to upgrade with new vessels and methods to avoid these types of incidents in the future.

Challenges to the Blue Economy

The potential to develop the blue economy is limited by a series of challenges. When considering Sri Lanka's main challenge, which is the prevailing instability of its economy, this will directly affect investment in economic-related projects, not only those further affected by climate change. Rising demand, ineffective governance institutions, inadequate economic incentives, technological advances, a lack of or inadequate capacities, a lack of full implementation of UNCLOS and other legal instruments, and insufficient application of management tools have often led to poorly regulated activities. The following are discussions about major issues affecting the blue economy.

Unsustainable Extraction from Marine Resources. Unsustainable fishing is due to poorly controlled access to fish sources, advances in technology, and increased demand. According to FAO estimates, 30precent of fish stocks are overexploited, depleted, or recovering, while 57precent of fish stocks are at full exploitation. Fish populations are further depleted by illegal, unreported, and unregulated fishing, which results in an annual harvest of between 11 and 26 million metric tons of fish and generates an estimated $10 to 22 billion in illicit or unreported income.

Physical Alterations, Destruction of Marine, Coastal Habitats, and Landscapes. Due to mining, deforestation, and coastal development. Infrastructure and ways of life are also destroyed by coastal erosion. Unplanned and uncontrolled development in the constrained coastal zone and near shore areas has resulted in significant sectoral outwardness, subpar infrastructure placement, conflicting uses of land and water, marginalization of underprivileged communities, and the loss or degradation of vital habitats.

Marine Pollution. For example, excess nutrients from untreated sewerage, agricultural runoff, and marine debris such as plastics

Impacts of Climate Change. For example, slow-onset phenomena such as sea-level rise as well as increasingly intense and frequent weather occurrences Although the long-term effects of climate change on ocean systems remain unknown, changes in water temperature, acidity, and major oceanic currents, among other things, are already causing harm to marine species, ecosystems, and the societies that rely on them.

Unfair Trade. Exclusive Economic Zones, which are areas in which a state has sovereign rights over the exploration and utilization of maritime resources, are critical to the economies of small island developing governments and frequently dwarf their corresponding land mass and administrative capability. In the case of fishing agreements granting access to an EEZ, there is typically a low appropriation of fisheries export revenues by national operators and insufficient transfer of specific fishing knowledge to national stakeholders by foreign fishing companies, reducing the potential for long-term national exploitation of those resources. (Group, 2017).

Conclusion

Due to the country's economic crisis, civilians tend to protest the government, and the president resigned. The economic crisis did not rise in one night, it gradually occurred due to greedy politics and mismanagement by countries' governing bodies. However, Sri Lanka can also be identified as an island nation rich in natural resources and beauty, and the maritime socioeconomic environment of Sri Lanka, combined with blue economy concepts, can provide an opportunity to rise above these crises. The Sri Lanka Navy is playing a vital role in the maritime economy concept, but somehow the Navy needs to upgrade her capabilities in accordance with modern and maritime requirements. such as the purchase of firefighting ships and the implementation of air wings for search and rescue operations. However, using maximum effort with the country's resources, Sri Lanka can rise along with the blue economy concept.

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BOOK REVIEW ON 'RETURN OF MARCO POLO'S WORLD; WAR, STRATEGY AND AMERICAN INTERESTS IN THE TWENTY - FIRST CENTURY'

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Abstract

The Silk Road, an important commercial route between Europe and Asia that served as the foundation of Kublai Khan's enormous empire, was where Marco Polo set off on his decades-long journey from Venice to China in the late thirteenth century. In the early 21st century, the Chinese government suggested a land-and-sea Silk Road that follows Marco Polo's identical route. Robert D. Kaplan describes the timeless values that should guide America's position in a chaotic world that includes the Chinese challenge. These articles provide a groundbreaking, outstanding synthesis and analysis of regional, national, international, technical and economic developments with far-reaching implications.

Introduction

Robert D. Kaplan is an American author who served on the Defense Policy Board of the Pentagon and the US Navy Executive Panel. He is an author for 25 books and several articles. He is the author of The Good American, The Europe's Shadow, the Revenge of Geography and Monsoon are some of his other geopolitical studies that are among his best.

Robert David Kaplan authored 'The Return of Marco Polo's World' in the United States in 2019. The book's genre is international relations. This topic explains how present geopolitics and conflicts are simultaneously interconnected to the restoration of Marco Polo's Eurasia-based trade route. According to the author, the political crisis in one side of the world is supposed to have an impact on the balance of power.

Content

Both, the structure of the book and exterior design are good, and the content is printed in visible text. The wordings of the book are quite complicated, which causes the readers to feel somewhat difficult to understand. Therefore, the book seems to be a target of intellectual community.

The book consists of 261 pages and divided into 17 chapters that each comprises a collection of articles that are organized around Marco Polo's journey as a geographical landmark. The author has carefully commented on the geopolitical climate of the world, how the US addressed disputes and how the darker suggestions of European wars lead to the establishment of dictatorial prisons in Libya, Syria and Iraq with the help of Soviet influences.

Robert D. Kaplan lays out a blueprint of the world's changing power politics that recalls the late thirteenth century. As Europe fractures from changes in culture and migration, Eurasia coheres into a single conflict system. China is constructing a land bridge to Europe. Iran and India are trying to link the oil fields of Central Asia to the Indian Ocean. America's ability to influence the power balance in Eurasia is declining.

By establishing the "Belt and Road Initiative" (BRI) along the existing Eurasian map, which includes the abandoned emperor regimes of Turkey, Iran and Russia, the author outlined China's aims to dominate global trade. Then, how the geopolitical balance in the eastern hemisphere affected the world's superpowers and how the global powers mixed with China's interests. The author then made a point regarding why the US is so worried about China and Russia's actions while Turkey, Egypt, Israel, Saudi Arabia and Iran work to create an unstable power balance.

Since the United States is a maritime superpower, the author has drawn attention to the weak points in US policy that result from officials' blind adherence to regulations. In addition, being a naval thinker he emphasized the importance of strengthening the navy. In the meantime, the author has developed a theme on the downfall of the North Korean government and has critically discussed how it would affect for global geopolitics and potential US strategies.

In his critical examination of the Vietnam War, Kaplan has been critical of the key operations and occurrences as well as the poor military decisions and blunders. Kaplan has also emphasized the suffering of the Vietnam invasion while placing the blame on the United States. The author then describes how President George W. Bush used billions of dollars to fight against Saddam Husain's government in Iraq. However, the author concurs that President Bush establishes democracy on Saddam's premises, which is quite debatable. Whereas Iran is located along the border, which led an expansion of US dominance toward Iran. According to Kaplan's opinion, the Iraq War had a significant social and psychological impact on US soldiers.

These articles highlight his keen insights and historical and geographic expertise and also highlight the limitations of long-term global thinking given the unpredictable nature of historical events. His weak explanation of his initial backing for the war in Iraq and his passionate defense of his friend and mentor Henry Kissinger were what bothered me the most in a few pieces. In his opinion, Kissinger stands out among "the boring and practical men of business" as an intellectual with a historical perspective, which ostensibly gives him a pass on certain historically regrettable judgments in which he played a crucial role.

The balance of the publication is a collection of articles that Kaplan has written and published over the past decade or years. He offers re - evaluation of the Vietnam and Iraq conflicts and talks about the moral dimensions of foreign policy as well as the navy's growing significance. His deep historical and geographic knowledge is on display in these articles, along with the limitations of lengthy global thinking given the unpredictable nature of historical events.

It is finally evident that Kaplan's main article is a profound and major contribution to global thinking, one that is hopefully being taken into account by those in positions of authority. It is essentially the opposite of the impromptu diplomacy that appears to be the current approach. Even if you do not agree with all of Kaplan's conclusions, you cannot help but respect his extraordinary breadth and depth of historical and geopolitical knowledge as well as the fascinating interpretations and forecasts he makes in light of it.

Conclusion

In the Return of Marco Polo, the 13th-century explorer who brought news of Asia to Europe, the world was one of empires and civilizations rather than governments. Mr. Kaplan has argued here and elsewhere that a combination of state failure, globalization and technical advancement has undermined state sovereignty and started restoring here and elsewhere that a trifecta of state failure, globalization, and technical advancement has undermined state sovereignty and started to restore a more traditional world characterized by culture and geography.

This book can be described as an intellectual work with a solid knowledge. With the content of this book, it can have a fair knowledge on geopolitical studies in the world, based on that this book suggested for diplomatist military personals and students who looking to enhance their geopolitical understanding.

BOOK REVIEW ON 'OCEAN OF CHURN - HOW THE INDIAN OCEAN SHAPED HUMAN HISTORY'

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Abstract

The Indian Ocean's rim has witnessed a large portion of human history. This book can be used to learn about the history of such an important region, which includes East Africa, Australia, South East Asia and the Middle East apart from the Indian Ocean Region (IOR). In order to make interesting discoveries, the author investigates historic inscriptions, remote archaeological sites, long-forgotten oral traditions and marine commercial networks. Instead of viewing the Indian Ocean as merely a supplier to a relatively independent region, this review intends to understand it from a unique perspective.

Introduction

This book has been written by Mr. Sanjeev Sanyal, who is a well-known historian and economist from India. Further, he is a member of the Indian Prime Minister's Economic Advisory Council. Apart from this book, he has written some other books such as 'The Indian Renaissance,' 'The Incredible History of India's Geography,' A Brief History of India's Geography,' 'How the Indian Ocean Shaped Human History,' 'Life Over Two Beers & Other Stories,' and 'India in the Age of Ideas.'

The 'Ocean of Churn' is a book that uses evidence to discuss history, maritime history and geopolitical history. The author introduces the reader to a place that has shaped civilization from the very beginning, bringing to life mediaeval geopolitics, eyewitness stories of long-lost cities and the most recent genetic discoveries regarding human origins since AD 731. Therefore, it seems that the author tries to target the community that prefers to read the history of IOR. This book has 324 pages and consists of eleven chapters. The book isn't written in simple English, but anyone can manage to understand it. The quality of the papers is moderate and the cover page is of average quality.

About the Book

The book raises the facts of migration from other nations to India, Indian migration to other nations and marriages between the nations, showing that the Indian region is a mix of all the cultures in the world. The author describes the genetic and geographic evaluations and he highlights the regional geographic changes that happened 175 million years ago.

Although the author has interestingly mentioned the history of this work, it seems to be written in favour of India. Reading of this book reveals that Mr. Sanjeev Sanyal has consistently and gently tried to revise Indian history in the first five chapters.

The author says that there is evidence that people from the Persian Gulf moved to India 5000 years ago and settled there, as per some of the modern data. Further, it's mentioned that both India and Sri Lanka were one territory that was separated because of the rising sea level due to the melting of ice mountains. This argument is logical because there are so many similarities between the two countries, such as behaviours, food patterns, people's ideologies, etc. Furthermore, given the current geographical situation, it is possible that Sri Lanka once shared a geographical connection with India. The author uses chronicle, historical and contemporary evidence to challenge generally held beliefs about well-known historical personalities and the path of history in his distinctive manner.

In addition, this book provides evidence for the existence of a developed and advanced civilization, known as the Indus River Valley Civilization or Harappan Civilization. Sindh and the Punjab areas of modern-day Pakistan were home to the Harappan civilization. People who belonged to this civilization were very intelligent and they were the ones who invented the world's most accurate measuring system. Terracotta, metal, stone and other materials had been used by the Harappans to make jewellery, seals, paintings and other products. To make thrilling discoveries, the author investigates distant archaeological sites, historic inscriptions, maritime trading networks and long-forgotten oral traditions. Further, the author gives interesting details about the initial migration of people from Africa and the founding of the major towns. All the chapters of this book consist of the stories of adventurers, traders, explorers, monks, pirates, revolutionaries and warrior princesses.

Mr. Sanjeev challenges widely accepted statements about well-known historical figures and the course of history in his signature way, drawing on both old and new data. According to Chapter 3, the Harappan Civilization can be used as an example of historical figures.

The importance of the Indian region for maritime trade is also repeatedly mentioned in this book. The maritime hub of the world has been linked to a commercial route between the west and east of the Indian subcontinent since the fourth century. So many shipping routes are connected through the Indian region. At that time, India had two well-known harbours. One harbour was the 'Barouche,' which is in present-day Gujarat and the other was the 'Mose Aries,' which is located close to Kochi today.

From Chapter five onwards, the author goes beyond India's involvement in the IOR. He discusses in great depth on the numerous trades, businesses and tourists who passed through this area and contributed to its development. Using interesting stories about powerful individuals in this field, the author tries to hold the reader's attention.

This book bears witness to the fact that the Dutch and the British agreed to work together on naval operations in the Indian Ocean in the late sixteenth century to counter the growing influence of the Portuguese. However, it is clearly mentioned here that the Portuguese, Dutch and English have controlled the IOR from time to time and taken most of the resources from India and Sri Lanka to Europe.

Any great book should surprise the reader with facts, especially those regarding well-known situations, and weave them into a compelling story to support a central idea. The Ocean of Churn excels at doing this. Mr. Sanyal cleverly interweaves narratives drawn from thousands of years of history spanning from Europe to Southeast Asia to demonstrate how special bonds and genetics have influenced culture & commerce, religion & government, family lineages & wars and family lineages & kinship throughout the centuries around the Indian Ocean. However, there is barely any information on this incident from the viewpoint of people who lived near the Indian Ocean.

The intellectual community that favour IOR geopolitics is encouraged to read this intriguing work.

Conclusion

This significant region, which comprises South East Asia, the Indian subcontinent, the Middle East and East Africa, is described in terms of its history. He provides a fascinating description of the early exodus of people from Africa and the establishment of the major towns. He researches far-off archaeological sites, historic documents, marine trade networks, chronicles and contemporary proof to provide fascinating insights. In general, this book explains the early history of the IOR and is well-researched.

OCEAN BASED ECONOMIC SUSTAINABILITY AND NATIONAL SECURITY OF SRI LANKA

Lieutenant Commander (CDO) KPGDK Madushan

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"Whoever controls the Indian Ocean dominates Asia. This ocean is key to seven seas. In the twenty-first century, the destiny of the world wills be decided on its waters"
Alfred Thayer Mahan

Introduction

The oceans cover approximately 70.8% of the Earth's surface and contain 97% of the Earth's water. The Pacific, Indian, Atlantic, Southern (Antarctic) and Arctic are the five distinct oceanic regions. Since the ocean is the main part of the hydrosphere, it is crucial to life. The ocean affects climate and weather patterns, the carbon cycle, and the water cycle by serving as a significant heat reservoir.

Ocean water contains significant amounts of dissolved gases such as carbon dioxide, oxygen and nitrogen. The gas exchange that takes place at the ocean's surface and solubility depends on the salinity and temperature of the water. The ocean provides essential environmental services to people, such as climate regulation. Furthermore, it gives access to food and other resources as well as a means of trade and transportation. It is estimated that about 230,000 people live in this region. However, the ocean faces a number of environmental threats, such as ocean acidification, marine pollution, overfishing and other impacts of climate change. The coastal waters and continental shelf are the areas mostly impacted by the human activities.

Maritime History

By 1000 BC, Austronesian people from Southeast Asia were regularly engaged in maritime trade with China, South Asia, and the Middle East. They supplied coconuts, bananas, and sugarcane to the Indian subcontinent and some of these were sent to Europe via overland by Persian and Arab traders. Chinese document in 200 AD mentioned about the Austronesian ships and the Northern European Vikings constructed oceangoing ships for travelling prior 1000 AD. The lateen sailing vessel known as the dhow was utilized in the Red Sea, Indian Ocean, and Persian Gulf in early modern India and Arabia.

Chinese seagoing ships were based on Austronesian ship designs. They have grown immensely during the time of Chinese explorer Admiral Zheng. Admiral Zheng went on explorations of the Indian Ocean in the fourteenth century. He travelled around the world on seven diplomatic missions for the Ming dynasty to boost trade and secure tribute from other nations. Zheng commanded massive fleets that transported valuable gifts and trade to far locations. Zheng sailed along the well-established routes on his first three voyages. He travelled across Southeast Asia, stopping at Sumatra and Java, passing through the Straits of Malacca to reach India and Sri Lanka. Zhengconveyed China's goodwill and peaceful intentions to the local ruler and established diplomatic relationships. King Alagakkonara, who displayed less welcome to Zhengand tried to rob his ships which ultimately caused political unrest in Sri Lanka for the Chinese involvement. (Cartwright, 2019)

Economic Prosperity

Over three billion people, mainly in developing nations, depend on the ocean for their livelihoods. Ocean-based sectors like tourism and fishing are important sources of income and employ many people in these industries. The value added by the seas to the global economy is estimated by the Organization for Economic Cooperation and Development (OECD) to be approximately $1.5 trillion yearly. According to the UN's Food and Agriculture Organization, fishing industry provides jobs for around 60 million people globally. Global fishing and aquaculture produce approx. 179 million tons, which was estimated at $41 billion in value and generated over $164 billion in exports in 2018. (The World Bank,2022) However, the impacts of these have expanded without adequate attention to social and environmental sustainability, causing environmental degradation. These ultimately result in the ocean pollution, climate change and overfishing. In addition, the development of new industries,including marine biotechnologies, growing aquaculture, and offshore wind energy, are accelerating the growth of the ocean economy .

The ocean itself is a valuable resource for the economy, and it contributes to Sri Lanka's economy significantly. The coastal region of the country consists of around 25% of the total land area, is home for about one-third of the population, more than two-thirds of industrial facilities, and more than 80% of the tourism infrastructure. The supply of fish in Sri Lanka is mostly depended on marine fisheries, and both coastal and offshore natural resources are significant to the economy. The National Aquatic Resource Research Development Agency (NARA) estimates that marine fisheries provide about 86% of the country's total fish supply. Fisheries, trade and tourism are the major sectors that play a key role in the growth of the coastal economy for many years. Furthermore, Sri Lanka has been fortunate to discover oil reserves in the Indian Ocean, which would be

a great business option for the nation. The Mannar basin, located in the west of the country, has the potential for existing oil or gas as per the discovered data. A variety of new economic opportunities in the tourism industry, including diving, whale and dolphin watching, have opened new avenues in the prevailing peaceful environment of the country.

Geography

The island nation of Sri Lanka lies off the South-East coast of India. The maritime boundary between the two nations was settled by two agreements in 1974 and 1976. The maritime boundary between India and Sri Lanka passes through three distinct seas, including the Gulf of Mannar, Palk Bay and the Bayof Bengal. The Palk Bay, which was referred to as the "historic waters," was included in the 1974 Agreement that was signed between Prime Ministers of the two nations, Indira Gandhi and Srimavo Bandaranaike.The Bay of Bengal and the Gulf of Mannar were covered by the 1976 Agreement.In the Palk Bay, where the maximum distance between the two countries is only about 45 km and the minimum is barely 16 km between Dhanushkodiand Thalaimannar. The Palk bay is a shallow area where the depth does not increase beyond 50 m at any pointand maritime boundary is quite close to the coast of both countries.In the Bay of Bengal and the Gulf of Mannar, the distance between the Indian and Sri Lankan coasts are significantly greater.The southern end of the Palk bay is narrow and the so- called Adam's Bridge acts as a barrier and theships can't cross from the Bay to the Gulf and vice versa. As a result, the ecosystem of Palk Bay is very different from that of the Gulf of Mannar.

Maritime Trades

Sri Lanka is located at the heart of the Indian Ocean and on the maritime silk route between China and Europe which has made it a trade hub for a long time. Manthai, Godawaya, and Gokannaare the natural harbours that have historically served as important trading centres in Sri Lanka. Due to its geographic location, Sri Lanka had been attracted by the traders from the Middle East, Asia, and later the Dutch and Portuguese.Thirty years of conflict has hampered Sri Lanka from acquiring the full benefits of its strategic location. Recent developments in international maritime shipping and international trading patternssupport the country's vision of becoming a maritime hub.

The Palk Bay area is blockedby ships passing through, so that prevents the south Indian coast from developing as a regional shipping hub and enables Sri Lankan ports to serve as transit hubs for international routes. Sri Lanka's ports

are located very near to the main shipping lanes that connect the East and West when compared to other ports in the area. Vessels visiting the Port of Colombo obtain huge benefits as they experience lesser hours of deviation from the main trade routes when compared to visiting other ports in the region. This decreases the degree of deviation hours and reduces costs while saving time.

Colombo is the only deep-water commercial port in South Asia and the only hub port between Singapore and Dubai that can be accommodated the new generation of large vessels. Further, the larger the size of the ship, the fewer port calls that ship would make. Sri Lanka is rising as a regional leader in terms of the handling of mega ships and terminal productivity. Sri Lanka's first private container terminal, named South Asia Gateway Terminals (SAGT) has a berth productivity performance of 113 container moves per hour. The Journal of Commerce, USA ranked SAGT's terminal productivity as the 1st in South Asia. The new deep-water terminal (Colombo South Terminal) has a capacity of 2.4 million TEUs by way of equipment and manpower. Its average productivity performance is currently 35 moves per hour on ultra-large carrier container ships (Ministry of Foreign Affairs, 2016). This is considered to be one of the highest among global ports.

Maritime Security

Maritime security, which includes dealing with piracy, terrorism, drug trafficking,territorial disputes, natural disasters and emerging global trends, is the push for naval modernization. Naval modernization can be stated as the improvement of naval capabilities by upgrading equipment and assets and applying modern military technology to secure their maritime interests.Small South Asian states like Sri Lanka are under pressure to invest in naval modernization in order to protect their territory as a result of recent developments in the Indian Ocean. The nation is susceptible to illegal trafficking in drugs, arms, human and contraband by sea. According to officials, Sri Lanka is turning into a "transit point for mass-scale drug dealers," with estimates indicating that 95% of the drugs reach the island via the sea. Further, the country has long faced the issue of illegal, unreported, and irregular (IUU) fishing and this may be more vulnerable in the maritime competition. However, as indicated by the Sri Lanka Navy Maritime Strategy 2025, the idea of naval modernization continues to receive priority in Sri Lankan defence policy. Sri Lanka should be more strategic in addressing its marine security concerns, prioritizing action and investment based on an evaluation of its resources (Frenando,2019).

However, in recent years, Sri Lanka's approach to maritime security has been impacted by the strategic environment in its neighbourhood. The Belt and

Road Initiative, which is increasing Chinese operations in the Indian Ocean, largely contributes to the shifting maritime security environment of Sri Lanka. China has already made significant investments in Sri Lanka's port development, including the Hambantota port. India has reacted by quickly updating its fleet to develop both defensive and offensive capabilities to confront China and safeguard its offshore interests. In order to balance out China's expanding influence in the region, the United States is currently seeking closer ties with the Sri Lankan Navy. The tension between India and China on the arrival of the Chinese tracking ship Yuan Wang 5 to Sri Lanka was the latest incident of security concern in the Indian Ocean Region (IOR). Sri Lanka should not be unnecessarily involved in this great power competition in the world.

Climate Changes and its Effects

Climate change can be defined as 'Any distinct change in measures of climate lasting for a long period of time'. In other words, major changes in temperature, rainfall, snowfall, or wind patterns that endure longer are considered climate change. Sri Lanka was placed 50th out of 149 countries in the Environmental Performance Index 2008 for ecosystem vitality and environmental health. The data indicates that Sri Lanka has some of the lowest greenhouse gas emission levels in the world (Baba, 2010). The adverse impacts of the expected climate change are probably going to be rather severe and will be felt strongly in Sri Lanka. The island will have to deal with a number of adverse effects, including rising sea levels, shifting temperatures, eroding beaches, dying forests, and natural disasters. Further, climate change may have significant impacts on agriculture, tourism and health sectors .

Agriculture will be severely affected by climate change. The variability of both summer and winter monsoon rains has increased significantly during recent decades. As a result, Sri Lanka's crop production is frequently hampered by water scarcity and excess water. This will lead to failing the harvest at the correct time and creating negative financial impacts on farmers.

The island's one of main source of foreign reserves is tourism. Country is blessed with the Sun, Sea and sand, which can be used for an effective advertising campaign. However, the increase in sea level due to climate change will have harmful effects on beaches and coral reefs, which is another main attraction of the island. This will have a negative impact on the tourism industry of the country.

Health issues are crucial factors to consider while assessing the effects of climate change. Numerous health risks could arise due to the effects of climate change. As a result of the country's rising temperatures, residents may contract a variety of diseases. The impacts of droughts will affect human health and sanitation. High-intensity rainfall would harm people's homes and could result in floods that spread many diseases.

Maritime Pollution

When human-made substances are introduced into the marine environment, it is referred to as marine pollution. This can harm aquatic life and hazards to human health. Marine water is subjected to contaminants from various sources that are commonly found in the surroundings. These contaminants change the properties of the ocean and coastal regions, which has an impact on marine biodiversity.Humans around the world release industrial waste,sewage, chemical waste and radioactive substances into the sea. These contaminants either sink or float in the water. They are consumed by small marine creatures, thus affecting the food chain. Direct discharge, ship pollution,deep sea mining, and land runoff are all examples of contamination sources (Senthil and Prasannamedha 2021). The kinds of marine pollution can be categorized as plastic pollution, ocean acidification, pollution from marine debris and toxins. Marine life is severely harmed by plastic waste in the water .

MT New Diamond was carrying 270,000 metric tons of crude oil to the Port of Paradip in India from the Port of Mina Al Ahmadi in Kuwait.A fire occurred in the ship's boiler on 03rdSeptember 2020, approximately 38 NM away from the Sri Lankan coast. There were 23 crew members onboard and one passed away when rescue teams arrived. In that case, the ship came to Sri Lankan waters for firefighting and huge damage happened to the sea bed, marine creatures and western coast of the country. Further, there was a great potential for an oil spill to occur that could have ended in a great catastrophe.

International Maritime Law

The laws that govern international waters are referred to as international maritime law and consisted ofconventions, regulations, and treaties used to govern nautical issues and regulate maritime organizations. The International Maritime Organization (IMO) is an organization under the United Nations that helps to establish maritime rules and regulations.The IMO has established four different conventions, including the Safety of Life at Sea (SOLAS) Convention, the Maritime Labour Convention (MLC), the Standards of Training, Certification, and

Watch keeping for Seafarers (STCW) Convention and the International Convention for the Prevention of Pollution from Ships (MARPOL).

CONCLUSION

Sri Lanka must be cautious when dealing with foreign countries and must practice good foreign diplomacy as it is situated in a strategically important location. The present world is passing through the transmission era, in which at any time the biggest war on earth may happen. Tensions between China and Hong Kong and the involvement of the United States in the South China Sea, tensions in the Black Sea between Russia and Ukraine, the South China Sea dispute, and the Chinese tracking ship Yuan Wang 5 incident in the IOR are few of the recent events around the world. These incidents show how countries stay alert on their security matters through the ocean. As an island nation, the ocean is a notable factor in establishing the security of the country.

The East and South Asia remain the world's most dynamic regions in terms of economic development. In today's world, the economic rivalry between China and the USA is a common sight. As a superpower, the USA wishes to maintain its global trade dominance. China, as an emerging super power, is implementing new projects to enhance trade in the world. It is expected that a trade war between China and the USA will accelerate into a new cold war in the world. Many of tradein the world are transported by sea, and the sea is an important factor in achieving economic prosperity.

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SRI LANKAN DILEMMA AND DRAWBACKS OF BELT ROAD INITIATIVE (BRI) THROUGH THE INSIGHT OF CHINESE BACKYARD

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Abstract

The Belt and Road Initiative (BRI) is a historical initiative that unites people and cultures from all over the world and opens up a number of prospects for world peace. This article's primary goal is to investigate the BRI's genuine aims and identify Sri Lanka's potential and challenges as they relate to the BRI. On the basis of the business, economic, political, social and environmental aspects of the nation, it also analyses the BRI's founding principles, strategy, prospects and obstacles. The aim of this essay was determined using a variety of websites and journal papers that are often utilized online. As stated, this article goes on to analyse the dangers and disadvantages of implementing BRI. The article also makes the case that effective coordination between BRI partners is required to reap the full benefits of the initiative through the implementation of laws, policies and guidelines that are supportive of it, the implementation of sound strategies, the use of a transparent procurement process and the careful consideration of political, financial, environmental and social factors. Through this journal, the important connection between Chinese soft power and BRI will also be covered. Since the emergence of social media and communication technologies, soft power has grown in significance. So how can a nation like China increase its soft power, which is meant to advance world peace and prosperity?

Key words: BRI, Asia, Chinese Soft Power, Sri Lankan Economy, Debt Trap

Introduction

The One Belt One Road (OBOR) plan, which was a historical idea that connects people from all over the world in various ways, was first presented by Chinese President Xi Jinping in 2013. The OBOR concept was later modified as the Belt Road Initiative (BRI), which includes the Silk Road Economic Belt and the 21st Century Maritime Silk Road as two replacement names. Through the Silk Road Economic Belt, China will be connected to Europe, the Persian Gulf, the Mediterranean, and the Indian Ocean. The waterways of the BRI member nations will be connected at the same time by the 21st Century Maritime Silk Road. Over

850 billion dollars have been invested through 900 projects worldwide, and 65 countries in all have joined the effort (Sarker et al., 2018).

The Silk Road Economic Belt, which connects China to central Asia, the Middle East, and Europe, is what the term 'Belt' refers to. The Modern Silk Road is another name for it. The 21st Century Maritime Silk Road, also known as the One Road, was intended to link Asia, Africa, the Middle East and Europe. The Maritime Silk Road is another name for this. The BRI seeks to unite Asia, Europe and Africa by fortifying bilateral relations between the nations. The old Silk Road was founded by the imperial emissary of China, Zhang Qian and has served as a commercial route to the Middle East and Central Asia for the past 2000 years. This road is known as the Silk Road since at the time it was one of China's biggest exports (Sarker et al., 2018).

Figure 1: Silk Road Economic Belt and 21st Century Maritime Silk Road
Source : https://archive-20172022indepthnews.info

President Xi Jinping announced in 2013 that he wanted to re-establish and renew the old Silk Road by connecting China with all of Asia, Europe and Africa through the construction of highways and other forms of infrastructure. It is the biggest economic platform in the world and it will boost economic cooperation to boost global economic growth. Two-thirds of the world's population and three-fourths of its energy resources are covered by the massive BRI project. Even while some scholars believed that BRI was a plan to help their faltering economy by fostering stable global markets, it is described as an effort to restructure Asia's

political and economic order by constructing a network of corporate entities focused on culture, politics and trade. BRI's significance cannot be understated given its active contribution to international harmony and economic growth. Through seaports, oil and gas pipelines and economic corridors, it links Asian nations including Bangladesh, Brunei, Singapore, Sri Lanka, Cambodia, Myanmar, Maldives, Nepal, India and Pakistan. Additionally, it provides funding for energy development initiatives and free trade zones in its member nations. Due to the growing support for the idea, policymakers and academics from the United States, Japan and India highlighted concerns about security in the BRI regions. Although China saw it as propaganda against the BRI's peaceful development, they believed that because of the BRI's benign natures such as mutual collaboration, integration and interdependence all people throughout the world would benefit from it. The effective implementation of BRI will create a multipolar world through trends toward peace and harmony (Sarker et al., 2018).

The fact that China depends substantially on energy sources to maintain her sustainable growth is well known. Since China is a significant energy importer from the Middle East and the Pacific Ocean, China must ensure the availability and sustainability of energy sources. To this end, China wants to ensure the safety of the energy passages. Because maritime trade now accounts for a significant portion of the modern Chinese economy, China wants to make sure the Sea Lanes are safe. The term 'Malacca Dilemma,' which describes the issues and future of vital sea routes in the Malacca Strait, was first used by President Hu Jin Tao in 2003. According to China, maintaining the security of the Sea Lanes of Communication (SLOC) presents both conventional and nonconventional security challenges, as well as a military task. Hu Jin Tao said that 'few powers have full access on the sea and strove to dominate navigation through this strait,' with particular reference to Malacca. For 80 percent of Chinese energy, the Malacca Strait is a very important energy route. China wants to grow its economy and in order to do so, it places a lot more emphasis on maritime dominance because that is how it can achieve both maritime and economic objectives. According to international law, sea lanes are autonomous channels for goods and trade that are always available. China must safeguard the SLOCs by strong military alliances, increased maritime presence and closer coordination with her neighbours and Indian Ocean countries. This is concerning for China's neighbours, particularly its regional adversary India and the United States' ability to balance China's might.

Sri Lankan Dilemma

Hambanthota Port

Sri Lanka is aware of its advantageous geographic location in the Indian Ocean and the benefits of its ports. Hambantota Port, which is situated along one of the busiest shipping lanes in the world, is one of them. Sri Lanka has the potential to develop into a cutting-edge commercial hub, allowing it to boost its commerce and economy with the aid of infrastructure investments from other nations like China. China has contributed $1.5 billion to the development of the Hambantota Port. This investment is made without adequate research or consideration of alternative payment methods. Sri Lanka is in a catastrophic 'debt trap' as a result of the port's crippling maintenance expenses, high interest payments, and weak economic performance. An original deal between the two parties was reached in December 2016 and stated that the Sri Lankan government will sell 80 percent of Hambantota Port in exchange for a 99-year lease worth $1.12 billion (Wibisono, 2019).

After a horrific civil war between the Sri Lankan government and the Tamil Tiger insurgent group, China strengthened its ties with Sri Lanka as it faced international isolation. Sri Lanka continues to receive finance and support from China and Sri Lanka has instead backed China's regional foreign policy goals. China loaned a total of $4.8 billion between 2010 and 2015 to create a range of economic projects, including the Hambantota Port, new airports, coal power plants and motorways. China raised Sri Lanka's credit by $6 billion in 2016. But given that the country's debt is worsening, the newly elected administration in 2016 had very little options other than giving in to Chinese demands to hand over Hambantota Port in 2017. A $1.5 billion loan from China to Sri Lanka was forgiven in 2017 in exchange for a long-term lease on the Hambantota Port. Sri Lanka consented to grant China a 99-year operating lease on the port as well as a controlling equity stake in it. China received official ownership of the Hambantota Port from Sri Lanka as part of a 99-year lease arrangement. At the moment, 80 percent of Hambantota Port is owned by Chinese corporations. Following the port's capitulation, China gained control of the region just a few hundred kilometres inland from the Indian coast, establishing a strategic foothold along vital trade and military waterways (Wibisono, 2019).

Not only Sri Lanka but other nations are currently concerned about Chinese debt. Eight nations, namely Djibouti, Kyrgyzstan, Laos, Maldives, Mongolia, Montenegro, Pakistan and Tajikistan were determined to be more sensitive to debt than the average country when participating in the BRI investment project.

According to the Sri Lankan Ministry of Finance's estimates, despite the country's government expecting to earn $14.8 billion in state revenues in 2018, it will have to pay back $ 12.3 billion in debt to international lenders. Sri Lanka's whole foreign debt is thought to be about $55 billion as of 2018. China, Japan, the Asian Development Bank, the World Bank and the International Monetary Fund are among the lenders (Wibisono, 2019).

Colombo Port City

BRI uses 'Overseas strategic pivots' to counter the SLOCs vulnerability in locations like Gwadar Sea Port. These pivots are referred to as support facilities made to ease escort operations and lessen the possibility of opposing naval forces harassing or blockading China's SLOCs. These pivots' dual objectives or else commercial and military are consistent with China's 2015 Military Strategy's description of civil military integration. According to India, these port developments, especially those in Myanmar, Pakistan and Sri Lanka seem to fit the 'string of pearls' idea, according to which China aims to build a network of facilities in the Indian Ocean region that can serve the People's Liberation Army Navy (PLAN) (Mobley, 2019).

In addition, the Sri Lankan government granted China Harbour Engineering Company a 99-year lease on two thirds of the 269-hectare land reclamation project in 2016 so that it could resume construction on the $1.4 billion Colombo Port City project. The Colombo Port City project has been renamed Colombo International Financial City by the new Sri Lankan government as part of a renegotiation, but the project's core remains the same, with the added focus on developing a financial centre and luring more investors (Mobley, 2019).

China's Soft Power and BRI

The ability to 'make other people want what you want' and the ability to define the argument framework by depending on intangible power resources like culture, ideology and institutions are examples of a particular country's soft power. However, 'Soft power is the capacity to influence other parties through cooperation in setting the agenda, persuading and generating positive attraction to achieve the anticipated goals' (Wibisono, 2019). Although theoretically they can be separated, in fact hard power and soft power are interrelated. The three basic forms of power in the international arena are military force, economic power and power over opinion. The resource's tangibility underlines the notion of soft power behaviour and plays a supporting function in the conceptualization of its soft power. Whether a nation employs tangible or intangible resources, the way those

resources are used has a significant impact on the way behavioural explanations are integrated into soft power (Wibisono, 2019).

Perspectives from South and Central Asia show the expansion of Chinese soft power. This is mostly accomplished through China's academic exchange programs, many of which are connected to its BRI projects and offer significant industry and academic connections as well as increased employment prospects. Critics frequently use Sri Lanka's Hambantota port as an example of China's debt trap diplomacy in the South Asian region, undermining and obscuring the country's soft power initiatives. However, it is important to comprehend that China's 99 year lease of the Hambanthota port is just one aspect of Sri Lanka's ongoing economic and debt crises. (Siddique & Shafqat, 2021). Negative factors, such as perceptions of Chinese labour inflows that may replace local workers, the loss of local autonomy and identities, potential project mismanagement, perceived competition pressure from China and others are likely to reduce the impact on China's soft power that results from the massive trade expansions and infrastructure building in BRI countries (Voona & Xub, 2020).

Several troubling reports have been published regarding the effects of BRI on debt distress. When fully implemented, the BRI is expected to cost up to $8 trillion, with China serving as the primary creditor. According to the Centre for Global Development, eight of the 23 BRI countries, Djibouti, Kyrgyzstan, Laos, Maldives, Mongolia, Montenegro, Pakistan and Tajikistan are at a particularly high risk of experiencing debt crisis. Debt imposes a duty on the borrower to pay back the lender at a later date. When the borrower is unable to pay obligations, a debt crisis occurs. While excessive levels of debt have negative effects, moderate levels can help the economy of the state. These nations might be forced to sell their natural resources, privatize their public companies and deal with economic hardship and political unrest. Recently, Malaysia cancelled Chinese funded projects, Sri Lanka is having trouble and Djibouti is also in trouble as a result of the BRI's debt implications. This increases concern about a debt problem in emerging nations and serves to lessen interest in BRI (Rahman, 2019).

Conclusion

China is strategically attempting to acquire control in the region while promoting its political, economic and security goals including resolving the Malacca Dilemma, by implementing BRI in South and Southeast Asia. This article has also demonstrated that China can persuade some BRI nations that are overly dependent on it to comply. Therefore, those countries are the most likely to host future Chinese Naval bases or strategic pivots abroad. Although China opposes

the US's presence in the Asia Pacific, it prefers to improve its position by drawing other nations into its orbit rather than engage the US directly. In order to lessen the ability of major nations to disrupt its energy supplies, China is making enormous strides in its attempts to create alternate energy sources and supply routes. At the same time, it is also enhancing its capacity to secure energy exports across the Malacca Straits. As of now, China seems much more likely to use economic gains to influence important BRI partner nations in the region. China has also shown a willingness to use its influence and economic might to penalize nations that do things that are viewed negatively by China. Because South Korea had deployed the American-made Terminal High Altitude Area Defence (THAAD) system as a deterrent against North Korea in 2017, China, for instance, took a variety of measures to punish South Korean enterprises. Similar to 2010, China halted sending rare earths to Japan when the skipper of a Chinese fishing boat was detained. Asia Pacific and other BRI partner countries may gain from Chinese investments, but over dependence leaves states vulnerable. As a result, BRI partner nations like Sri Lanka, Pakistan, Myanmar and Cambodia should diversify their project finance. Additionally, these nations should work to secure major host nation ownership of projects, try to renegotiate the conditions of unfair current contracts and make sure future BRI deals contain clauses that ensure local (host nation) citizens would directly benefit.

China will customize the effort to assure success given the prominence of BRI within China, even though success is sometimes judged in terms of security benefits rather than financial returns on investment. Chinese authorities will continue to refer to shared development and win-win scenarios in their responses to BRI detractors. The Asian Infrastructure Investment Bank (AIIB) is probably going to play a bigger and bigger role over time. China will utilize it to boost both its own and the BRI's overall reputation. Additionally, it is anticipated that more multinational firms will participate in BRI projects, which could increase transparency. Furthermore, projects that do not reflect fundamental security interests will probably place a greater emphasis on financial returns on investment. Therefore, it is expected that there will be a gradual change to less mercantilist tactics as well as a shift away from Chinese commercial and policy banks as the key lenders once China has strengthened its position in the Asia Pacific and secured crucial resources overseas. It is almost clear that China's economy and reputation will suffer if this shift does not take place. However, BRI partner nations should look for opportunities to benefit from this 'tailoring' which can occasionally lead to favourable project scale reductions, a lowering of interest rates on particular loans, or the conversion of some loans into grants.

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RELATIONSHIP BETWEEN BLUE ECONOMY AND OCEAN SECURITY

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Abstract

The Blue Economy cannot be supported without adequate maritime security. The Blue Economy idea has received strong support from numerous maritime security conferences, especially in the Indian Ocean region. It outlines two key linkages between the maritime sector and the blue economy. Security concerns First off, maritime security supports the Blue Economy, for instance, by defending marine industry, preserving crucial oceanographic data, and securing navigational routes rights over important marine activities and resources within disputed maritime jurisdictional zones. Secondly, Maritime security contributes to the Blue Economy in a way that is frequently being a source of economic expansion and development. Increasing demand for marine security capabilities will lead to increased investment and expansion these capabilities because of an expanded blue economy. All Indian Ocean region sectors exhibit the expanded and increasingly varied role that maritime security will continue to play in the Blue Economy. Island nations in Indian ocean region like Sri Lanka can use secure ocean region for sustainable develop their economy in so many successful ways than Sri Lanka presently engage.

Keywords : Blue Economy, Maritime Security,

Introduction

In several important ways, the Blue Economy is supported by maritime security. The Blue Economy concept has received strong support from numerous maritime security forums, especially in the Indian Ocean region where security collaborations among a variety of States that border the sea have expressed a keen interest in defining their role in mitigating threats to economic growth depends on the ocean. Sri Lanka also paid much attention on recent past years for mitigating threats of Indian ocean region by increasing Patrolling and Search and Rescue operations in region. Sri Lanka still lacking behind with some modern capabilities due to some financial and political issues.

The Importance of Living Recourses Management for Prosperous Indian Ocean Region

The Indian Ocean is a sizable marine region that encompasses coastal states from the southernmost point of South Africa to the western coast of Australia 36 nations have access to the Indian Ocean, which is home to huge numbers of different kind of economies. There are variations among several of these states' cultural, social, and economic environments. As the third-largest ocean in the world, where almost one-third of humanity resides the Indian Ocean in the area has a lot of potential to contribute to international efforts to fight against poverty, increase food security, and create new business opportunities. The Blue Economy is a theory that aims to encourage the creative and environmentally conscious creation of these opportunities. Fisheries, aquaculture and marine biotechnology are only a few examples of the ways used to harvest live resources from the oceans within this sector of the ocean economy. The Indian Ocean is the place of some of the most important fisheries on Earth, accounting for over 14 percent of global wild-caught fish, but 30 percent of assessed stocks in the region are already being fished beyond sustainable limits. In addressing risks to the efficient management of these resources, maritime security has played a particularly major constabulary and diplomatic role.

The Eastern part of the Indian Ocean has seen significant increase fishery industry in the Indian Ocean account for about 16 percent of global catches. The Indian Ocean is the place three of the top ten nations for marine capture fisheries. Many huge and small Indian Ocean coastal governments' economies are heavily reliant on fishing. For instance, 90 percent of exports from the Maldives come from the fishing industry, and more than half of foreign exchange gains come from the fishing industry in the Seychelles. Sri Lanka also engage high sea fishing primarily pursue medium and large pelagic species, such as Tuna and Lobsters species. Gillnet and Long-line fishing are both used in Sri Lanka's deep-sea fisheries, which reach beyond the country's exclusive economic zone (EEZ) and the edge of the continental shelf. The government of Sri Lanka, under its present fisheries policy objectives, has planned to increase the number of employments and food security of the people by developing the deep-sea fisheries through introducing large sized vessels with sophisticated technology, therefore it is important to study the economic efficiency of multiday deep sea fishing operations in the hope of evaluating the profitability of the present deep sea fishing operations. However presently due to fuel and economic crisis there is question mark on Fishery industry and its contribution on prosperous Sri Lankan economy.

Non-Living Recourses Management in IOR

Oil and gas extraction, potential deep seabed mining, water desalination and exporting them to Europe, maritime renewable energy production like tidal, wind, and wave energy generation are all included in this sector of the ocean economy. Questions of jurisdiction are highly pertinent to this element of the ocean economy due to the fixed character of natural resources and the infrastructure connected with renewable energy sources. Their management is largely a matter for coastal states because they typically occur within an EEZ or a state's territorial waters. To clarify the scope of their maritime jurisdictions and so ensure that they have rights over all resources (living and non-living) that occur within their waters, governments around the world have made enormous efforts to delimit their maritime boundaries.

Most of ocean base economy countries like Sri Lanka must pay attention to provide secure shipping and trading line to world for build strong economy., which includes shipping and transportation, ports, coastal development, and marine and coastal tourism. Some of the busiest shipping routes in the world are found in the Indian Ocean, where 25–30 percent of all global maritime movements take place Every year, about 100,000 ships pass through the area, transporting up to one-third of the bulk cargo, half of the containers, and two-thirds of the world's oil Both huge opportunities and several potential hazards result from this. In the area, tourism has enormous room to grow, particularly with the booming cruise liner industry. Although the value of cruise travel is now estimated at 35.5 billion dollars, the most of it takes place in the Mediterranean and Caribbean, with only a minor portion in the IOR. This is largely because the security situation in the area is unstable. Enhancing and coordinating maritime security capabilities will be necessary to expand this industry, coupled with careful management.

Security Threats and Counter Actions

The IOR faces some of the most serious risks to the development of ocean-based economies, including piracy, terrorism, and smuggling. One of the most glaring instances of the possible effects of these crimes on the growth of a Blue Economy in the area is probably Somali piracy. Piracy off the coast of Somalia started to seriously endanger cargo ships, fishing boats, and private yachts in the middle of the 2000s.In case of Sri Lanka Early 2009 there was a huge treat from sea tigers who operated their attacks from coastal lines in Sri Lanka and it was badly affected for maritime security and tourism sector. It is obvious that trade and business in and around the ocean have the potential to play a large role in the future Sri Lankan Economy, but for this to happen, serious maritime security

threats must be addressed. The need for effective deterrence and prompt reaction to possible threats and disasters is not the least of the security problems.

Role of Military for Development of Blue Economy

In a variety of key aspects that pertain to numerous Blue Economy sectors, maritime security is seen as being crucial to enabling the Blue Economy. Through a greater focus on defining maritime jurisdiction and increased action within and across claimed maritime zones, the traditional sea power function of naval forces has been reinforced and varied. This is possibly the most dramatic. Chinese naval forces have extended their military presence in the IOR, as seen by the Maritime Silk Road project, which also shows that China is expanding its commercial interests in the region. The region's navies will continue to play an important role in maintaining peace and security through their traditional military role, while international diplomacy and aid programs play important roles in supporting the stability required for fostering and growing economic relationships and protecting vital trade routes. The Australian and Indian navy have expanded their activity into non-traditional missions.

Operations for marine security are frequently at the heart of search and rescue efforts, disaster response, and maritime disasters like oil spills or shipwrecks. In this way, they contribute significantly to the preservation of both environmental health and human life and property. Given the IOR's unique susceptibilities to both natural and man-made disasters, the need of marine safety efforts is particularly clear. These weaknesses include a number of shipping choke spots as well as coastal towns at danger from natural disasters like low-lying SIDS that are more likely due to climate change. The Blue Economy's economic and ecological resources are protected by MDA's critical role in identifying marine dangers and creating plans to avoid, minimize, or successfully respond to them. The information needed for the Blue Economy, such as bathymetric and oceanographic data, vessel tracking, and weather and oceanic conditions, is provided by the data that maritime security agencies collect through these activities.

As an island nation Sri Lankan Navy is doing huge job to conduct Operations for marine security are frequently and search and rescue efforts, disaster response, and maritime disasters like oil spills or shipwrecks. In this way, Sri Lanka Navy contribute significant role in Indian Ocean Region. Therefore, in an expanded Blue Economy that includes combating marine crime, conducting monitoring and surveillance, and taking part in search and rescue, navies, coastguards, and private maritime security organizations will play a greater role. This is probably going to encourage more investment in the region's shipbuilding industry and

supporting infrastructure. For instance, the Indian Defence White Paper highlights considerable investments in submarines, frigates, offshore patrol vessels, amphibious vessels, and frigates while placing a special emphasis on innovation in these fields. The increased requirement for training and capacity-building initiatives is another anticipated result of a developing Blue Economy's emphasis on marine security. This will be vital to help local nations build efficient coastguard and defence capabilities as well as the requisite abilities and knowledge to support MDA. Therefore, it is conceivable that marine security education and training will become another 'Blue Growth' industry in the IOR.

Conclusion

The Blue Economy and marine security in the IOR are interdependent, according to analysis of their junction. As coastal states attempt to make the most of their larger maritime claims, the UNCLOS has led to a greater focus on the seas' economic potential. As a result, maritime security now plays a bigger and more varied role in the oceans of the world. This growing interest in the economic potential of the resources found within national borders has given rise to the idea of the Blue Economy. acknowledges the value of environmentally friendly practices and sustainable use as prerequisites for maintaining access to the opportunities offered by the oceans. In order to defend these opportunities from a variety of dangers and to ensure a safe and secure environment that supports the growth of these chances, it is also strongly dependent on maritime security. As the importance of maritime security rises, so will investment in and expansion of related sectors, including shipbuilding, technology providers for MDA, and maritime infrastructure like ports. This will provide new economic and employment prospects for the IOR all by itself.

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MARITIME CHOKE POINTS AND ITS IMPACT ON GLOBAL ECONOMY : A REVIEW ON LITERATURE

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Abstract

The global energy transportation system is vulnerable to interruption at critical marine choke points such as the Malacca and Singapore Straits, Bab Al-Mandab, the Suez Canal, the Turkish Straits, and the Strait of Hormuz. The impact of an interruption on energy supply, pricing, and markets is determined by its scope and duration. Price level and volatility are heavily influenced by perceptions and the interplay of the 'wet barrel' and 'paper barrel' markets. Measures to close international straits are typically unlawful in peacetime, and international law mandates that transit rights be maintained during wartime. It is critical to establish and sustain legal and political standards governing the security of maritime choke points including user states, consumer states, and international agencies. Cooperative arrangements between coastal states can boost trust, while business and government initiatives to minimise their consequences can lessen the chance of purposeful disruptions. The security of maritime choke points ultimately depends on the enforcement of international law, as well as the desire and capacity of interested members of the international community to do so if necessary.

Keywords: Choke Points, Global Energy Trade

Introduction

Land is man's natural habitat, and it dominates all of his conscious endeavours, physical, technological, political, and military. Despite this, the ocean covers almost three quarters of the planet. It is the root of all life on Earth; it is the primary mode of global transportation for man's produce, trade, and military power. Although the planet ocean is out of reach for most of humanity, its influence is everywhere.

"Whoever commands the sea commands the economy; whoever commands the trade of the world commands the wealth of the world, and therefore the world itself," Sir Walter Raleigh once said. Unobstructed sea lines of communication are as vital to us today as they were to Raleigh, his contemporaries, and their

predecessors who built a mercantile empire based on the Royal Navy's dominance of the sea lines of communication connecting England, its colonies, and trading partners (Butts, 1997). More than 80% of world trade is now transported by sea, and the United States is reliant on the free and unhindered flow of its share of the commerce (Pală, 2019). Furthermore, the United States and its allies depend on access to the seas to ensure their stability, owing to their power-projection ground powers and almost endless foreign commitments (Guzansky et al., 2011). The idea of unobstructed sea lines of communication underpins the very essence of a national security policy founded on the twin principles of global enlargement and interaction. However, one must question whether the US plan properly tackles the defense of the numerous sea lines of communication and the related chokepoints, which are critical to the country's economic well-being and that of its key allies.

Global Role of Maritime Choke Points

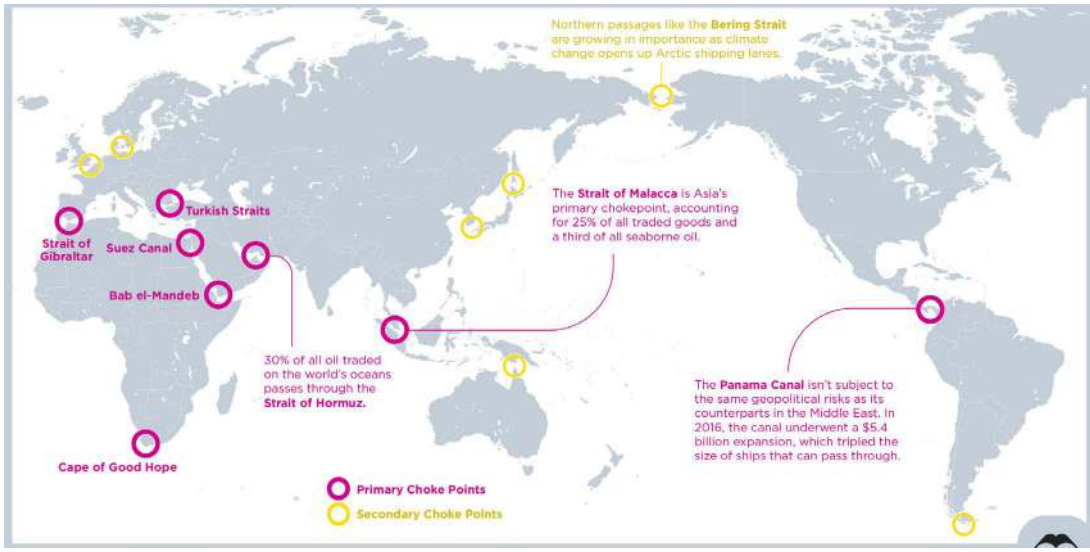

Figure 1 : The World's Key Maritime Choke Points.

Source : GIS vishualcapitalist.com.

The term 'choke point' comes from the military background and refers to terrain. It means a tight passageway that cannot be readily bypassed and provides a ready chance to block armed forces from moving (Guzansky et al., 2011). When it comes to energy trading, the idea quickly gets confusing. The Strait of Hormuz, as well as the Straits of Malacca and Singapore, are comparatively well-documented maritime choke points for the shipment of crude.

However, other choke points in the global oil and gas infrastructure may also limit commodity supply to the consumer market, causing broader market

volatility. Any large-scale industrial system requiring extraction, refining, and delivery is bound to have choke points that can disrupt the system's overall efficiency (Emmerson & Stevens, 2012). Refineries in general will behave in this manner (though the current global availability of refining capacity reduces that risk somewhat). Particular asset concentrations can highlight the importance of such a choke point: for example, the Abqaiq facility in Saudi Arabia processes between 5 and 6 million barrels of crude oil every day. Other examples include the massive loading terminals at Ras Tanura in Saudi Arabia, from which the majority of Saudi exports usually travel, and Kharg Island in Iran. Inadequate tanker capacity could be a significant restriction if disturbances to a maritime choke point resulted in major re-routing of oil tankers to longer routes, resulting in decreased supply.

Aside from these physical bottlenecks, other considerations or future supply constraints may also lead to market fluctuations. Politically motivated restrictions, from whichever source they originate, which further limit supply. Finally, the recent resurgence of piracy, especially in an increasingly large maritime region off the Horn of Africa, poses a danger to steady oil supplies and may result in increased costs (Soğancilar & Asst, 2021).

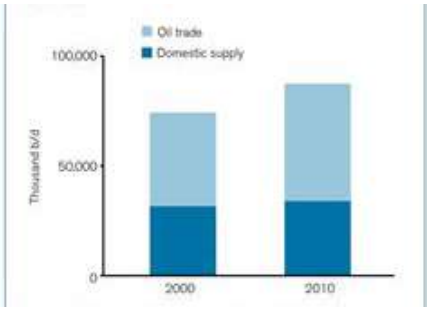

Figure 2: Increcrease in Global Oil Trade
Source : BP Statistical Review of World Energy 2001 and 2011

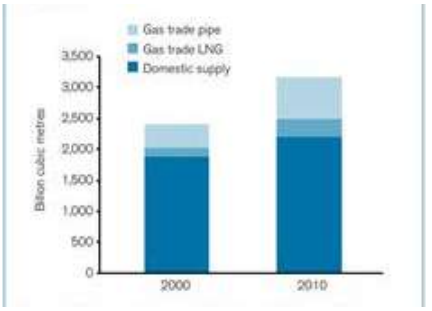

Figure 3: Increcrease in Global Gas Trade.
Source : BP Statistical Review of World Energy 2001 and 2011

Gas Choke Points

Gas choke points are more difficult to identify since it can be delivered by pipeline or by tankers in the form of liquefied natural gas (LNG). Seaborne LNG trade is also as vulnerable to future maritime routing issues and delays to maritime choke points as seaborne oil trade. The expansion of LNG trade (for example, from Qatar) may highlight the importance of these choke points in the energy system as a whole (Danyluk, 2022).

Gas pipelines can also be major bottlenecks in the natural gas delivery chain. The number of pipelines available to deliver a given amount of natural gas is less than the number of LNG ships, resulting in transportation efficiencies. However, since assets are more concentrated, supplies can be diverted more quickly in the case of a disturbance. Pipelines may be more vulnerable to damage the fixed nature of infrastructure.

Disruptions of pipelines transporting natural gas from Russia to the European Union through Ukraine have resulted in severe physical shortages of natural gas in southeast Europe twice in the last five years. Although the effects of gas pipeline interruption can be serious, they appear to be regional rather than national, with a minimal contagion. While oil the prices are genuinely international, with a dynamic mechanism of arbitrage implying that developments in one region have a rapid impact on prices in others, natural gas prices are regionally dependent, and the high cost of gas transport restricts arbitrage possibilities, thus acting as a partial barrier between regional markets. As a result, the study of the significance of maritime choke points on markets would be focused on crude.

Because of the economic and strategic importance of maritime choke points to the global energy market, foreign policymakers must be confident in their stability. A selection of non-exclusive regulation alternatives are briefly listed here. In addition, the costs of disruption are likely to be decreased if the anticipated disruption to global energy supplies is reduced, as this will decrease the appeal of disruption as a tool for state or non-state actors.

Alternative Routes. Making maritime choke points less important to the global energy economy by constructing alternative ways of shipping oil and gas, such as a spur line from Abu Dhabi to Oman to bypass the Strait of Hormuz, or improving and expanding existing infrastructure. The big question here is who will be forced to bear the burden of increased delivery system redundancy, and whether modern infrastructure will introduce new vulnerabilities (Avram, 2012). Alternative routing would theoretically have a beneficial environmental effect if it reduced the likelihood of marine collisions.

Strategic Stocks on a Regional or Global Scale. Although this is generally regarded as a way of improving the stability of the global oil market, the International Energy Agency's track record of stock launches has continued to aggravate rather than dampen market instability. A 'ticketing' scheme for the provision of emergency supplies, on the other hand, may help to solve the characteristics of a price shock being generalized due to competitive bidding

on the part of firms suffering well above normal supply shortages, as seen in the first and second oil shocks.

More Consistent Convoy Cover in Periods of Heightened Tension. This will necessitate any joint management, perhaps by NATO or under the UN Security Council mandate. However, such a strategy could restrict the versatility that currently characterizes the oil tanker trade. The ability of UN member states to have the means for establishing and implementing freedom of passage will inevitably rely on their commitment to do so. Previously, this was primarily accomplished by US naval deployments; but, the recent improvements in reliance on oil supplies transiting maritime choke points and emerging naval forces may be able to contribute to such defence.

Controlling the Paper Barrel Markets. This is a popular refrain that has gotten a lot of coverage since 2008, when prices were very volatile. Until now, regulators have found it difficult to govern or monitor certain markets beyond small adjustments that prohibit those forms of trade. The idea is that if the formal paper economies are too limited, they will simply vanish into cyberspace, where they will be unregulated. This has also occurred to some degree in the advent of 'over-the-counter' transactions between two parties.

Political Declaration from User States, Including China. A political declaration from user states, including China, on the rights of shipping in international straits could change the calculations of any state considering closing an international strait to neutral shipping during a crisis or conflict. Obviously, the deterrent effect will be determined by the exact wording of such a declaration as well as the identities of the signatories (Miah et al., 2019). Although a declaration is issued by the G20 (a group that includes all five permanent members of the United Nations Security Council) it would not bind certain states to a specific course of action, it would indicate that the impact of closing an international strait during a time of war was likely to be limited by a coordinated international response (potentially including UN Security Council action). China, as a major importer of oil and gas through foreign shipping lanes, has a strong potential interest in promoting such a declaration.

Political Declaration from Coastal States. Coastal states could issue a political resolution reaffirming the terms of the UN Convention on the Law of the Sea on transit passage and stating that they will continue to apply in times of conflict or war. While this would be a diplomatic pledge confirming existing international law rather than a treaty of legal force, it could help to create

trust in the straits' protection by showing coastal states' acknowledgement of, and therefore approval of, genuine consumer issues. For such a declaration to be credible, coastal states that have yet to ratify UNCLOS will need to do so. However, if one or more coastal states view the option of bullying shipping in the event of friction or war , having its own deterrence effect on others, then such a diplomatic declaration to uphold transit passage may be difficult to evoke (Maros & Juniar, 2016).

Cooperative Mechanisms. If the political situation were more permissive, cooperative agreements between littoral states of a strait used for international navigation could be made, which could then be assisted by user states. Though littoral states are likely to resist strait internationalization on the grounds that it violates their sovereign rights under international law, cooperative arrangements modelled after the Malacca and Singapore Straits could reassure consumer states and global oil and gas markets (Datwurina & Rizkiana, 2022).

A Specific Convention on Maritime Choke Points. Although UNCLOS will continue to be the foundational basis for the law of the sea, a specific convention on maritime choke points may more specifically recognise their importance to the global economy and define the interests of various parties. However, this would take a long time to discuss and could be seen as undermining the wider equilibrium created by UNCLOS.

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THE ECONOMIC PROSPERITY AND SECURITY, IT'S EVOLUTION: HOW IT CAN BE USED FOR GROWTH OF A DEVELOPING COUNTRY

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Abstract

Economy cannot be supported. Numerous conferences on marine security have overwhelmingly endorsed the Blue Economy concept, particularly in the Indian Ocean region (IOR). In this study, with a focus on the IOR, the co-evolution and dependence of the maritime security and blue economy agendas will be investigated. It identifies two crucial connections between interests in the blue economy and concerns about maritime security. First and foremost, maritime security aids in the development of the blue economy by, for example, safeguarding critical oceanographic data for the marine industries and defending ownership rights to valuable marine resources and activities inside claimed maritime jurisdiction zones. Second, marine security, a frequently underestimated function, supports the Blue Economy by contribute substantially expansion and growth. A growing blue economy will stimulate investment and expansion in marine security capabilities in response to rising demand for these services. The increased and more varied role that maritime security will continue to play in the Blue Economy is evident across all IOR sectors.

Keywords: Intersection, Security, Maritime, Economy, Ocean

Introduction

The term 'Blue Economy' was first used at the 2012 Rio+20 Conference, also known as the United Nations Convention on Sustainable Development (UNCSD), and it has gradually incorporated into the vocabulary of ocean governance. At the Rio+20 Conference, this concept was promoted as the maritime element of the broader 'green economy,' which was defined as an economy 'that greatly reduces environmental risks and ecological scarcities while promoting human well-being and social fairness' (UNEP, 2011 p16). The phrase 'blue economy' was created since more than 70% of the surface of the globe is covered by water. The seas are crucial to preserving a sustainable planet because they are the primary sink for surplus heat and carbon in the atmosphere and they significantly regulate the climate.

Small Island and Developing States (SIDS) have taken the lead in pushing the concept of a 'Blue Economy' in recognition of their broad maritime territories and the relevance of the ocean and marine sectors to their national economies (Silver, Gray, Campbell, Fairbanks, & Gruby, 2015 Whisnant and Reyes, 2015). Since then, the concept of the 'Blue Economy' has gained popularity throughout the world, but there is still no agreement on what the term actually means because it is still employed differently in different contexts (Keen, Schwarz, & Wini-Simeon, 2017; Silver, et al., 2015).

The Blue Economy is important to the Indian Ocean Rim Association (IORA), as well as to individual countries like Seychelles, Mauritius, India, and Australia (Llewellyn, English, & Barnwell, 2016; Mohanty, Dash, Gupta, & Gaur, 2015; National Marine Science Committee, 2015; National Maritime Foundation, 2017; Purvis, 2015, p. 226; Spammer, 2015). IORA clearly distinguishes the Blue Economic concept from more traditional ocean and coastal economy approaches. As a segment of the economy that depends on the ocean for the necessary manufacturing inputs, they refer to this as the ocean economy.

The ocean economy can exist anywhere, not just on or in the waters or along the shore. Contrarily, the coastal economy is defined geographically and consists of all economic activities that occur along the coast or in its vicinity. The blue economy, according to IORA, is a subset of the ocean economy that 'covers all ocean-related activities, including direct and indirect supporting activities required for the functioning of these economic sectors, while adjusting for the costs of environmental damage and ecological imbalance caused by the exploitation of ocean resources for consumption.' Consequently, the blue economy has a considerably broader scope (Mohanty et al., 2015, p. 9).

Additional definitions of the 'blue economy' or 'blue growth' have been established by the World Oceans Council, the Australian government, the United Nations, the World Wildlife Fund, the Partnership for the Environmental Management of the Seas of East Asia (PEMSEA), the European Union, and The Economist magazine, among others. The majority of these definitions emphasize the crucial roles that innovation and integrated management play in accomplishing these objectives, and the majority also accept economic, social, and environmental objectives. These definitions share a number of other characteristics as well (Keen, et al., 2017).

One of the ongoing and significant issues that is constantly raised in these debates is the sectoral diversity of the Blue Economy. Recognizing and appreciating the elements of the ocean economy is typically the first step in the process of

coordinating Blue Economy development or identifying new Blue Economy opportunities because the Blue Economy is sometimes thought of as a subset of the ocean economy (Colgan, 2016).

Maritime History

The study of human connections with and activities at sea is known as maritime history. Even though national and regional histories continue to predominate, it cover a broad thematic aspect of history and frequently adopt a global perspective. It frequently crosses traditional disciplinary boundaries as a field of study unfocused on the numerous connections that people have with the world's oceans, seas, and major rivers. Historical events involving ships, shipping, navigation, and seafarers are documented and interpreted in nautical history.

whaling, international maritime law, naval history, history of ships, design of ships, construction of ships, history of navigation, and history of the many marine sciences. The large area of marine history encompasses sea exploration, maritime commerce and trade, shipping, yachting, seaside resorts, the history of lighthouses and aids to navigation, nautical themes in literature, maritime themes in art, and maritime elements in architecture.

The ocean is always around because Sri Lanka is an island nation. The future of the country is intertwined with this large body of water, which is geographically connected to the Indian Ocean and is strategically situated in the center of the busiest shopping channels in the entire globe. For millennia, Sri Lanka's political, security, and strategic narratives have been heavily influenced by the Indian Ocean. The nation's influence in the affairs of the Indian Ocean has diminished throughout time as a result of local and regional issues. Its awareness of its maritime identity weakened as it embraced an inward orientation that made its South Asian identity more apparent and caused its own imagination to begin to shift towards the Indian hinterland.

Maritime Economy

Any economic activity that takes place directly or indirectly 'in the ocean,' to use the outputs of the ocean, or 'to the ocean' is considered a part of the marine economy. Fishing, aquaculture, offshore oil and gas exploration and production, cruise ships, maritime transportation, and other economic activities take place in the water. Ocean-related industries include seafood processing, marine biotechnology, marine chemicals, and coastal tourism. Making marine equipment, offering marine business services, and building ships and boats are all activities

associated with the water. In comparison to the terms 'maritime economy' and other comparable terms relating to the economic use of oceanic resources, the term 'blue economy,' which emerged from growing global concern about the degradation of the ocean environment as a result of the overharvesting of ocean resources in maritime economic activities and industries, is relatively new. To distinguish between socioeconomic progress and environmental damage, the blue economy emphasises the necessity of integrating and developing marine commercial activity in a sustainable manner. It focuses on maximising potential in order to more effectively handle the growing problems facing oceans, notably those caused by climate change.

Sri Lanka has a vast coastline of one thousand six hundred and twenty kilometers. We have exclusive rights to fish and do other whole-economy activities in our exclusive economic zone. It includes five hundred and seventeen thousand square kilometers. By using that vast sea boundary, we can help the growth of the country's sustainable fisheries. In the Indian Ocean, yellowfin tuna contributes the most to Sri Lanka's export revenues. If the mentioned yellowfin tuna is overharvested, the harvest cannot be increased for exports. For its recovery procedure, it is a must to have a properly functioning government.

The Co-Evolution of Maritime Security and the Blue Economy

Both marine security and the blue economy are modern concepts with significant historical implications for ocean governance. The negotiated and implemented United Nations Convention on the Law of the Sea (UNCLOS) established a major increase of maritime claims seaward (UNCLOS, 1982). The second was the overarching goal for sustainable development, which was created as a result of the 1992 Rio Earth Summit and the Brundtland Report in 1987. (Bueger and Edmunds, 2017; Eikeset et al., 2018). The economics of utilizing, safeguarding, and regenerating the marine environment is referred to as the blue economy. Depending on the context, organizations have varying opinions about it. However, the phrase is generally used in the context of international development when discussing a sustainable development strategy for coastal resources.

In the Indian Ocean, where 25-30% of all global maritime movements occur, are some of the busiest shipping routes in the world (Llewellyn, et al., 2016). Aproximately 100,000 ships transit the region each year, carrying up to one-third of all bulk cargo, half of all containers, and two-thirds of all the world's oil (Upadhyaya, 2014). This presents both enormous opportunities and a number of possible risks. With the thriving cruise line sector in the region, tourism has a ton of space to expand. Cruise tourism is presently expected to be worth 35.5 billion

dollars, but the most of it occurs in the Mediterranean and Caribbean, with only a little amount in the IOR (Statista, 2016).

The Role of Maritime Security in the Indian Ocean Blue Economy

The vast maritime expanse known as the Indian Ocean, which has an area of 68.56 million square kilometers and comprises states along its coastline from the southernmost tip of South Africa to its western shore (Upadhyaya, 2014). 36 countries with a wide range of cultural, social, and economic characteristics have access to the Indian Ocean. The world's efforts to combat poverty, increase food security, and develop new economic opportunities might greatly benefit from the contribution of the Indian Ocean. A third of the world's population lives there and it is the third-largest ocean in the planet (Upadhyaya, 2014). The development of these prospects in an inventive and ecologically conscious manner is the goal of the concept known as the Blue Economy. One of the biggest industries on the planet is maritime, and it takes a deliberate effort to make sure operations at sea continue securely. In order to improve security enforcement without impeding the timely flow of international trade, maritime security must be implemented with expertise and care.

Commerce and Trade in and Around the Ocean

In 2012, as nations all over the world struggled with the dual trends of growing expansion in the ocean economy and changes in the underlying ecosystems, the idea of a blue economy began to take hold. The phrase blue economy refers to plans for the development of the ocean economy in a way that does not deplete the nation's total natural resources and where the preservation of ecological commons aids in reducing poverty.

The interconnection of the global economy helps commercial endeavours like seaweed farming provide innovative economic opportunities in rural regions. In comparison to other aquaculture practices, they may also be more environmentally benign. The fact that seaweed and other types of algae just require sunlight, carbon dioxide, and water for growth is one factor. These all serve as examples of how trade, economic development, and environmental preservation may all work in concert.

In this sector of the ocean economy, which encompasses shipping and transportation, ports, coastal development, and marine and coastal tourism, maritime crime is the biggest danger to a stable and sustainable blue economy. Since many of these hazards cut over national boundaries, a comprehensive marine security plan is required. The cornerstone of the world economy, which accounts

for more than 80% of all trade and more than 10 billion tons of commodities exported in 2015, was maritime transport (UNCTAD, 2016).

Maritime Security as a Sector within the Blue Economy

Another essential but sometimes overlooked way that marine security operations and organizations support the Blue Economy is by serving as a source of their economic growth and development. The demand for marine security capabilities will increase as the Blue Economy develops and flourishes as a result of coordinated efforts within the region. For instance, it is anticipated that the operations of the Maritime Silk Road will result in significant investments in shipping and port development in the region, necessitating corresponding investments in security and defense. Therefore, navies, coastguards, and private maritime security groups will play a wider role in a larger Blue Economy that includes combating marine crime, conducting monitoring and surveillance, and participating in search and rescue.

The shipbuilding sector and accompanying infrastructure in the area will undoubtedly attract greater investment as a result of this. For instance, the Australian Defense White Paper highlights considerable spending in submarines, frigates, offshore patrol vessels, amphibious vessels, and frigates while emphasizing innovation in these fields.

Another projected outcome of a burgeoning Blue Economy's focus on marine security is the increased need for training and capacity-building efforts. This is crucial for assisting local nations in developing effective coast guard and defense systems as well as the requisite skills and expertise to participate in MDA activities (Bueger and Edmunds, 2017). Consequently, it is projected that marine security education and training will be another 'blue growth' industry in the IOR and beyond.

Given the diverse range of industries, it encompasses and the difficulties in accurately defining the scope of maritime security activities across both the public and private sectors, the sector of maritime security's contribution to the Blue Economy is challenging to define. Due to this, attempts to estimate the current value of ocean or blue economies frequently omit it. Because of this, the actual magnitude of marine security's contribution to the world's economy is unknown, but it is likely to be substantial and expanding.

Conclusion

The Blue Economy and marine security in the IOR are interdependent, according to the analysis of their junction. As coastal states attempt to make the most of their larger maritime claims, the UNCLOS has led to a greater focus on the seas' economic potential. As a result, maritime security now plays a bigger and more varied role in the oceans of the world. This growing interest in the economic potential of the resources found within national borders has given rise to the idea of the Blue Economy. It recognises the importance of eco-friendly behaviours and sustainable use as requirements for preserving access to the opportunities provided by the oceans.

It is also heavily reliant on maritime security to protect these opportunities from a variety of threats and to ensure a safe and secure environment that fosters the growth of these opportunities. As the importance of maritime security rises, so will investment in and expansion of related sectors, including shipbuilding, technology providers for MDA, and maritime infrastructure like ports. This will provide new economic and employment prospects for the IOR all by itself.

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දියත් ආර්ථිකය සමෘද්ධිමත් කිරීමෙහිලා සමුද්‍රීය දායකත්වය සහ මානව මැදිහත්වීම

නායක සංඥා කේඩිඩි සම්පත්

සුළු නිළධාරී සුදුසුකම් ලැබීමේ සංඥා පුහුණු පාඨමාලාව 01-2022

හැඳින්වීම

ලෝක ජනගහනයෙන් 40% ක් වෙරළබඩ ප්‍රදේශවල ජීවත් වන අතර බිලියන 3 කට වැඩි ජනතාවක් ඔවුන්ගේ ජීවනෝපාය සඳහා සාගරය භාවිතා කරනු ලබයි. තවද ලෝක වෙළඳාමෙන් 80% ක් සම්පූර්ණ කරගනු ලබන්නේ සාගරය භාවිතා කරමිණි සාගර මුහුදු සහ වෙරළබඩ ප්‍රදේශ ආහාර සුරක්ෂිතතාවයට සහ දරිද්‍රතාවය තුරන් කිරීමට දායක වේ. එසේ වුවද සාගරය මානව ක්‍රියාකාරකම් හේතුවෙන් දැඩි තර්ජනයකට ලක්ව ඇති අතර ආර්ථික ලාභය පාරිසරික පරිහානියට පත්වේ. ආම්ලිකරණය දූෂණය සාගර උණුසුම සුපෝෂණය සහ ධීවර කර්මාන්තය කඩා වැටීම සමුද්‍ර පරිසර පද්ධතිවල ප්‍රතිවිපාක පිළිබඳ උදාහරණ කිහිපයක් පමණි. මෙම තර්ජන පෘථිවියට අහිතකර වන අතර සාගර සහ ඒවා මත යැපෙන මිනිසුන් ආරක්ෂා කිරීමට කඩිනම් ක්‍රියාමාර්ග ඉල්ලා සිටින දිගු කාලීන ප්‍රතිවිපාක වේ. ආර්ථිකය සමෘද්ධිමත් කිරීමෙහිලා සමුද්‍රීය දායකත්වය සහ මානව මැදිහත්වීම පිළිබඳව සාකච්ඡා කිරීම මෙම ලිපියේ අරමුණ වේ.

තිරසාර සංවර්ධන ඉලක්ක 14 සහ තිරසාර සාගර භාවිතය

2015 වර්ෂයේදී එක්සත් ජාතීන්ගේ සියලුම සාමාජික රටවල් තිරසාර සංවර්ධන ඉලක්ක 14 (Sustainable Development Goals - SDG) වටා කේන්ද්‍රගත වන තිරසාරභාවය පිළිබඳ සංවර්ධන ප්‍රතිපත්තියක් සම්මත කරන ලදී මෙම තිසරසාර සංවර්ධන ඉලක්ක 14 මඟින් පෘථිවියේ සාමය සහ සමෘද්ධිය සඳහා ගෝලීය සැලැස්මක් සපයන අතර 2030 වන විට එය සම්පූර්ණ කර ගැනීමට නියමිත වේ. තවද සාගර මුහුදු සහ සමුද්‍ර සම්පත් සංරක්ෂණය සාර්ථක කර ගැනීම සඳහා තිරසාර භාවිතය කෙරෙහි අවධානයට යොමු කිරීම ඉතාම වැදගත් වේ. එමෙන්ම තිසරසාර සංවර්ධන ඉලක්ක 14 මුදුන් පමුණුවා ගැනීමට ගෝලීය ක්‍රියාමාර්ග අවශ්‍ය වන අතර ආයතනික සහ නීතිමය රාමු හරහා ජාත්‍යන්තර බලවේග ක්‍රියාත්මක කිරීම සඳහා කැඳවීම් අවශ්‍ය වේ.

සාගරය ආහාර බලශක්තිය සහ ඔනිජලවණ සඳහා ප්‍රධාන මූලාශ්‍රයක් වන අතර බහු අංශ ක්‍රියාකාරකම් සඳහා වැඩි වැඩියෙන් භාවිතා කරනු ලබයි. පොදු උදාහරණයක් ලෙස ධීවර හා ජලජ ජීවී වගාව, වෙළඳාම පෙන්වා දිය හැකිය. තවද සමුද්‍රීය ප්‍රවාහනය ගෝලීයකරණය වූ වෙළඳපොලේ බහාලුම් ටැංකි සහ යාත්‍රා සඳහා වරායන් ලෙස විශාල කාර්යභාරයක් ඉටු කරයි. එමෙන්ම රැකියා සම්බන්ධයෙන් සාගර ආශ්‍රිත ක්‍රියාකාරකම්වල විශාලතම ව්‍යාපාරය වන්නේ වෙරළබඩ සංචාරක ව්‍යාපාරයයි.

පසුගිය වසර කිහිපය තුළ 'Blue Economy' යන යෙදුම වැඩි වී ඇති අතර උදාහරණ ලෙස එක්සත් ජාතීන් (United Nations - UN) යුරෝපීය සංගමය (European Union - EU) ආර්ථික සහයෝගීතාව සහ සංවර්ධනය සඳහා වූ සංවිධානය (The Organization for Economic Co-operation and Development - OECD) සහ ලෝක බැංකුව විසින් තිරසාරත්වය ආර්ථිකය සහ සාගරය අතර සම්බන්ධය පැහැදිලි කිරීමට භාවිතා කරන ලදී. සත්‍ය වශයෙන්ම තිරසාර සංවර්ධන ඉලක්ක 14 (Sustainable Development Goals - SDG) Life Below Water යන සංකල්පයන් ක්‍රියාත්මක කිරීම සඳහා නිල් ආර්ථිකය නිසැකවම අවශ්‍ය බව එක්සත් ජාතීන් ප්‍රකාශ කර සිටී.

නිල් ආර්ථිකයක් යනු කුමක්ද ?

එක්සත් ජාතීන්ගේ සංවිධානය ප්‍රථම වරට 2012 සමුළුවකදී "නිල් ආර්ථිකය" හඳුන්වා දුන් අතර සාගර පරිසර පද්ධති සෞඛ්‍ය සම්පන්න වූ විට ඒවා වඩාත් ඵලදායී වේ යන තර්කය මත පදනම්ව තිරසාර කළමනාකරණය අවධාරණය කරන ලදී. පෘථිවි සම්පත් සීමිත බවත් හරිතාගාර වායූන් පෘථිවියට හානි කරන බවත් විද්‍යාත්මක සොයාගැනීම් මගින් සනාථ වී ඇත. තවද පරිසර දූෂණය, නීති විරෝධී මසුන් ඇල්ලීම, වාසස්ථාන විනාශය ආදිය සාගර ජීවීන්ට හානි කරන අතර එහි වර්ධනයක් දිනෙන් දින පෙන්නුම් කරනු ලැබේ. පරිසර බිඳීයාම සෞඛ්‍යයට අහිතකර පරිසර පද්ධති ඇති කරයි.

සාගර, මුහුදු සහ වෙරළබඩ ප්‍රදේශ හා සම්බන්ධ ආර්ථික ක්‍රියාකාරකම් පරාසයක් ලෙස එක්සත් ජාතීන් නිල් ආර්ථිකය සඳහන් කරයි. මෙම ක්‍රියාකාරකම් තිරසාර සහ සමාජීය වශයෙන් සමාන ද යන්න අවිනිශ්චිතය. නිල් ආර්ථිකයේ වැදගත් ප්‍රධාන කරුණක් වන්නේ තිරසාර මසුන් ඇල්ලීම, සාගර සෞඛ්‍යය, වනජීවී සහ දූෂණය නැවැත්වීමයි. නිල් ආර්ථිකය "ආර්ථික වර්ධනය, සමාජ ඇතුළත් කිරීම සහ ජීවනෝපායන් සංරක්ෂණය හෝ වැඩිදියුණු කිරීම ප්‍රවර්ධනය කළ යුතු අතරම සාගර සහ වෙරළබඩ ප්‍රදේශවල පාරිසරික තිරසාරභාවය සහතික කළ යුතු" බව එක්සත් ජාතීන් අවධාරණය කරයි. දේශසීමා සහ අංශ හරහා ගෝලීය සහයෝගීතාවයේ වැදගත්කම මෙයින් පෙන්වා දෙයි. මෙයින් ගම්‍ය වන්නේ රජයන්, සංවිධාන සහ තීරණ ගන්නා අංශයන් තම ප්‍රතිපත්ති එකිනෙකාට වළක්වා නොගන්නා බව සහතික කිරීම සඳහා එක්විය යුතු බවයි.

මිනිස් ක්‍රියාකාරකම් හේතු කොටගෙන සාගරය සහ වෙරළබඩ ප්‍රදේශ භාවිතය පසුගිය වසර කිහිපය තුළ වේගවත් වී ඇති ධනය, ආර්ථික වර්ධනය, රැකියා සහ නවෝත්පාදන සඳහා විභවයන් ඇති බැවින් ආර්ථික සහයෝගීතාව සහ සංවර්ධනය සඳහා වූ සංවිධානය (The Organization for Economic Co-operation and Development - OECD) සාගරය ඊළඟ මහා ආර්ථික මායිම ලෙස විස්තර කරයි. ආර්ථිකයට ධීවර කර්මාන්තය, වෙරළබඩ සංචාරක සහ නාවික කටයුතු වැනි පවත්නා ව්‍යාපාර ඇතුළත් වන අතර, එය වසර 20 කට පෙර නොතිබූ නව නැගී එන අංශවල සංවර්ධනය කෙරෙහි බලපා ඇති උදාහරණ වශයෙන් නිල් කාබන් අනුක්‍රමණය, සමුද්‍ර ශක්තිය සහ පෙව තාක්ෂණය, පුහුණුව සහ රැකියා සඳහා විභවයන්, අවස්ථා නිර්මාණය කරන ආංශික ක්‍රියාකාරකම් ඒ අතර පෙන්වාදිය හැකිය.

Blue Economy සංකල්පයේ මූලාරම්භය බොහෝ විට සොයාගනු ලබන්නේ "The Blue Economy : 10 වසර - නවෝත්පාදන 100 - රැකියා මිලියන 100" Gunter Pauli විසින් රචනා කරන ලද, 2010 දී ප්‍රථම වරට ප්‍රකාශයට පත් කරන ලද ග්‍රන්ථයෙනි. එම Pauli ගේ සංකල්පය ඉලක්ක කරගත් ව්‍යාපාරික ආකෘතිය වෙත යොමු වීම ද වැදගත් වේ. පාරිසරික හා ඒ ආශ්‍රිත ගැටලු විසඳීම සඳහා නව්‍ය ක්‍රියාමාර්ග අනුගමනය කිරීම තුළින් දේශීයව පවතින සම්පත් ආධාරයෙන් සමාජය හිඟයේ සිට බහුලත්වය දක්වා පරිවර්තනය සිදුවීම දක්නට ලැබේ. එය මූලික වශයෙන් සාගරය පදනම් වූ ආර්ථික අපේක්ෂාවන් අදහස් නොකරයි. මෙම පදය නිර්මාණය කිරීමේ ගෞරවය පාවුලිට හිමි වුවද, නිල් ආර්ථිකය යන සංකල්පය දැන් සාගර මත පදනම් වූ මානව ක්‍රියාකාරකම් හැඳින්වීමට බහුලව භාවිතා වේ. සමහර පාර්ශව පාරිසරික දෘෂ්ටිකෝණයන් අවධාරණය කිරීමට උත්සාහ කරන අතර තවත් සමහරක් තිරසාරත්වය පිළිබඳ කිසිදු සඳහනක් නොමැතිව සාගර සම්පත් භාවිතා කරමින් සිදු කරන සමුද්‍රීය අංශයේ සියලුම ආර්ථික ක්‍රියාකාරකම් සඳහා කුඩා යෙදුමක් ලෙස සලකන බව පෙනේ.

එවැනි වැරදි වැටහීම් මඟහරවා ගැනීම සඳහා එහි ආර්ථික, සමාජීය සහ පාරිසරික මානයන් අවධාරණය කරමින් සංකල්පය පිළිබඳ සමබර දැක්මක් හඳුන්වා දීම අරමුණු කරගත් අර්ථකථන සමඟ ඇතැම් ජාත්‍යන්තර ආයතන ඉදිරිපත් වී ඇති ලෝක වනජීවී අරමුදල (World Wildlife Fund - WWF) 'තිරසාර' නිල් ආර්ථිකය නිර්වචනය කර ඇත්තේ විවිධත්වය, ඵලදායිතාව, ඔරොත්තු දීමේ හැකියාව, මූලික ක්‍රියාකාරකම් සහ ආවේණික වටිනාකම ප්‍රතිස්ථාපනය කිරීම, ආරක්ෂා කිරීම සහ නඩත්තු කිරීම අතරම වර්තමාන සහ අනාගත පරම්පරාවන් සඳහා සමාජ හා ආර්ථික ප්‍රතිලාභ ලබා දෙන සමුද්‍ර පාදක ආර්ථිකයක් ලෙසිනි. සමුද්‍ර පරිසර පද්ධති පිරිසිදු තාක්ෂණයන්, පුනර්ජනනීය බලශක්තිය සහ එක් ග්‍රහලෝකයක සීමාවන් තුළ වක්‍ර ද්‍රව්‍ය ප්‍රවාහයන් මත පදනම් වේ. එක්සත් ජාතීන්ගේ පාරිසරික වැඩසටහන (United Nations Environment Programme - UNEP) නිල් ආර්ථිකය හරිත ආර්ථිකයට (Green Economy - GE) සමුද්‍ර හා වෙරළබඩ යන අදහස ප්‍රවර්ධනය කළේයි නිල් ආර්ථිකය, සමුද්‍ර හා වෙරළබඩ පරිසර පද්ධතිවල අද්විතීය හා ප්‍රතිස්ථාපනය කළ නොහැකි භූමිකාවට හරිත ආර්ථිකයේ සංකල්ප යොදා ගනිමින් සිටින බව එයින් ගම්‍ය වේ. මෙම නිර්වචන සංකල්පය ඉදිරියට ගෙන යාමේ අඟය එකතු කිරීමකින් තොරව තිරසාර මානය අවධාරණය කරමින් වැරදි වැටහීම් දුරු කිරීමට උපකාරී වේ. අවසාන වශයෙන් නිල් ආර්ථිකයක් සත්‍ය වශයෙන්ම හරිත ආර්ථිකයක් විය යුතුය. 2015 දී එක්සත් ජාතීන්ගේ මහා මණ්ඩලයේ දී ලෝක නායකයින් විසින් තිරසාර සංවර්ධන ඉලක්ක (Sustainable Development Goals - SDG) සම්මත කර ගැනීම හේතුවෙන් සංකල්පයේ නීත්‍යානුකූලභාවය තවදුරටත් වැඩි දියුණු කරන ලදී. තිරසාර සංවර්ධන ඉලක්ක (Sustainable Development Goals - SDG) හි ඉලක්ක අංක 14, 'ජලය පහළින් ජීවිතය', සංරක්ෂණය සහ වැඩිදියුණු කිරීම අරමුණු කර ගෙන ඇති සාගර ආශ්‍රිත සම්පත් තිරසාර ලෙස භාවිතා කිරීම, සම්පත් ඥානවන්තව කළමනාකරණය කිරීම සහ සාගර ආම්ලිකතාවයේ බලපෑම් ඇතුළුව සාගර සහ වෙරළබඩ පරිසර පද්ධති දූෂණයෙන් ආරක්ෂා කිරීම කෙරෙහි අවධානය යොමු වී ඇත.

නිල් ආර්ථිකයේ ප්‍රතිලාභ

නිල් ආර්ථිකයට සමුද්‍ර පරිසර පද්ධතිවල වඩා හොඳ පාලනයක්, අඩු විමෝචනයක්, වඩාත් සාධාරණ සෞඛ්‍ය ප්‍රතිඵලයක් සහ දේශගුණික විපර්යාසවලට එරෙහිව සටන් කිරීමේ අවස්ථාවක් උදා වී ඇත. මෑත වසරවලදී, බලශක්තිය තුළ නැගී එන අංශ ගණනීය ලෙස වර්ධනය වී ඇති අතර, සාගර පුනර්ජනනීය බලශක්ති ඒ අතර ජනප්‍රිය වී ඇති සුළං බලශක්තිය, ජල විදුලිය සහ උදම් බලශක්තිය වැනි විකල්ප බලශක්ති ප්‍රභවයන් සමුද්‍ර පරිසර සඳහා සුදුසු වේ. විශේෂයෙන්ම අක්වෙරළ සුළං (පාවෙන සුළං ටර්බයින ඇතුළුව) වේගයෙන් වර්ධනය වන අතර වසර ගණනාවක් පුරා පවතී. පළමු අක්වෙරළ සුළං උද්‍යානය 1991 දී ඩෙන්මාර්කයේ ඉදිකරන ලද අතර ලෝක ආහාර සංවිධානයට (World Food Organization - WFO) අනුව 2020 දී අක්වෙරළ සුළං ගොවිපල ප්‍රමාණය 162 ක් විය. ජාත්‍යන්තර බලශක්ති ඒජන්සිය (International Energy Agency - IE) විසින් නිකුත් කරන ලද Offshore Wind Outlook 2019 වාර්තාවට අනුව, අද වන විට ගෝලීය විදුලි ඉල්ලුම මෙන් 18 ගුණයකට වඩා වැඩි ප්‍රමාණයක් නිපදවීමට අක්වෙරළ සුළං බලයෙන් හැකියාව ඇති සුළං ගොවිපල සඳහා විශේෂිත අක්වෙරළ සුළං බලශක්තිය ලොව පුරා වඩ වඩාත් ජනප්‍රිය වී ඇත. එමගින් වෘත්තීන් සහ එම ඉදිකිරීම්, නඩත්තු කිරීම සහ පරිපාලනය පිළිබඳ රැකියා නිර්මාණය වෙමින් පවතී.

අක්වෙරළ සුළං බලශක්තිය නිල් ආර්ථිකයේ ප්‍රතිලාභ සඳහා එක් උදාහරණයක් පමණි. අනෙකුත් ඒවා නම් අක්වෙරළ ජලජීවී වගාව, තරංග සහ උදම් බලශක්තිය, මුහුදු පත්ලේ පතල් කැණීම සහ නිල් ජෛව තාක්ෂණය, සෞඛ්‍ය ආරක්ෂණ සහ බලශක්ති නිෂ්පාදනයේ සංවර්ධනය සඳහා සිප්පිකටු, බැක්ටීරියා සහ ඇල්ගී භාවිතා පෙන්වා දිය හැකිය. එපමණක් නොව, පවතින කර්මාන්ත, නැව්ගත කිරීම සහ සංචාරක ව්‍යාපාරය, නව හරිත තාක්ෂණයන් සමඟ වර්ධනය වීමට හැකියාව ඇත.

නිල් ආර්ථිකයට සහායවීම සඳහා යුරෝපීය සංගමය සහ එක්සත් ජාතීන්ගේ සංවිධානය දිගුකාලීන උපාය මාර්ගයක් සකස් කර ඇති අතර එය මානව බලපෑම අවම කරන දේශගුණයට ඔරොත්තු දෙන නිල් ආර්ථික ප්‍රතිපත්ති ක්‍රියාත්මක කිරීමෙන් තිරසාර සාගර පදනම් කරගත් ආර්ථික ප්‍රතිලාභ සඳහා පහසුකම් සැලසීම අරමුණු කරයි. නිල් ආර්ථිකය පිළිබඳ අදහසට අනුබල දෙන උපාය මාර්ග සහ ප්‍රතිපත්ති ක්‍රියාවට නැංවීම ද සමහර රටවල් භාරගෙන ඇති අතර ඩෙන්මාර්කය සහ නෝර්වේ නැව් කර්මාන්තය කෙරෙහි පැහැදිලි අවධානයක් යොමු කරයි.

ගෝලීය මට්ටමේ අභියෝග සහ මූල්‍ය බාධක

නිල් ආර්ථිකයක් ලබා ගැනීම සඳහා ස්ථාවර ආර්ථිකයක් සහ දිගුකාලීන මූල්‍ය සැලසුම් අවශ්‍ය වන අතර එය COVID-19 හේතුවෙන් සමහර රටවලට විශාල බාධාවක් විය. නිල් ආර්ථිකය ක්‍රියාත්මක කිරීමේදී මූල්‍ය බාධක විශාල කාර්යභාරයක් ඉටු කරන අතර සාමාන්‍යයෙන් එහි මිල ගෙවන්නේ සංවර්ධනය වෙමින් පවතින රටවල්ය. සමහර සංවර්ධනය වෙමින් පවතින රටවල විදේශ ණය ඉහළ මට්ටමක පවතින අතර එම නිසා රටේ කෘෂිකාර්මික පද්ධතිය නිල් ආර්ථිකයක් වෙත මාරු කිරීම කෙරෙහි අවධානය

යොමු නොවනු ඇත. ධාරිතාව සහ තාක්ෂණයේ උෆනතාවය හේතුවෙන් සමහර රටවලට සංක්‍රාන්තිය දුෂ්කර වී ඇත. තවද, රටට නිපුණ ශ්‍රම බලකායක් අවශ්‍ය වන අතර එම නිසා ක්ෂේත්‍රය තුළ පුහුණුවක් ද අවශ්‍ය වේ.

සමාජ සාධාරණත්වය

නිල් ආර්ථිකයකට සහාය දීමේදී සාධාරණත්වය අමතක නොකළ යුතු බව එක්සත් ජාතීන්ගේ සංවිධානය අවධාරණය කරයි. ඉඩම් සහ සම්පත් බොහෝ විට ප්‍රජාවන්ට අයත් වන අතර, වෙරළබඩ සංචාරක ව්‍යාපාරය වැනි අංශ විශාල ලාභයක් ගෙන දෙන්නන් ලෙස සලකන බැවින්, සාගරය මත යැපෙන ප්‍රජාවන්ගේ අවශ්‍යතා බොහෝ විට කොන් කරනු ලැබේ. මෙයින් අදහස් කරන්නේ Blue Economy SDG 14 සාක්ෂාත් කර ගැනීමට උපකාර කළ යුතු නමුත්, 2030 න්‍යාය පත්‍රයේ අනෙකුත් ඉලක්කවලට එකවරම හානි නොකළ යුතු බවයි.

විද්‍යාව සහ නවෝත්පාදනය

නිල් ආර්ථිකය සාගර විද්‍යාව තුළ බහුවිධ ක්ෂේත්‍ර මත පදනම් වී ඇති අතර එබැවින් අන්තර් අංශ විශේෂඥයින් සහ පාර්ශවකරුවන් අවශ්‍ය වේ. රාජ්‍ය නොවන සංවිධාන, ධීවර සංවිධාන, ආදිවාසී ජනතාව සහ ප්‍රජාවන් ආදී සියලු අංශයන් සඳහා සුදුසු ආර්ථිකයක් ඉතා වැදගත් වේ. කෙසේ වෙතත්, නිල් ආර්ථිකයක පාරිසරික හා සමාජ-ආර්ථික අංශ තේරුම් ගැනීමට විද්‍යාව සහ නවෝත්පාදන අවශ්‍ය වේ. මේ අනුව, නිල් ආර්ථිකයක් නිර්මාණය කිරීමේ පදනම ඉල්ලා සිටිය හැකි අතර සමහර රටවලට ප්‍රවේශ විය නොහැකි විවිධ ක්ෂේත්‍රවල ප්‍රවීණයන් රාශියක් අවශ්‍ය වේ. එවිට සංවර්ධනය තම ජාතික විශේෂඥයන් මත පමණක් නොව, වෙනත් රටවල විශේෂඥ දැනුම ද ලබා ගත යුතුය.

නිල් ආර්ථික සංක්‍රාන්තියට සහාය වීම

බොහෝ රටවල් තම සාගර ආර්ථිකය ඉදිරියට ගෙනයමින් හරිත න්‍යාය පත්‍රයක් සඳහා ක්‍රියා කරන අතර, එවැනි උත්සාහයන් සම්පූර්ණ කර ගැනීම තවමත් අභියෝගාත්මක වී ඇති ගෝලීය වශයෙන් සෞඛ්‍ය සම්පන්න නිල් ආර්ථිකයක් සම්පූර්ණ කර ගැනීම සඳහා ඒ ඒ රටවල් වල ආර්ථිකයේ කුඩා කොටසක් සංක්‍රමණය කළ යුතුය. නවීන යටිතල පහසුකම් සහිත තාක්ෂණය, පර්යේෂණ සහ සංවර්ධනය, අධ්‍යාපනය සහ රැකියා උත්පාදනය සඳහා ආයෝජනය කිරීම කෙරහි අවධානය යොමු කළ යුතුය. මෙයින් අදහස් කරන්නේ නිල් ආර්ථිකයන් තිරසාර කිරීමට පර්යේෂණ සහ දැනුම බෙදා ගැනීමට රජයන් එකට වැඩ කළ යුතු බවයි.

සාගරය පෘථිවි පෘෂ්ඨයෙන් තුනෙන් දෙකක් ආවරණය වන අතර බිලියන තුනකට අධික ජනතාවක් සෘජුව සහ වක්‍රව තම ජීවනෝපාය සඳහා සමුද්‍ර සහ වෙරළබඩ පද්ධති මත යැපෙන බව ගණන් බලා ඇති මසුන් ඇල්ලීම, මුහුදු ප්‍රවාහනය, සංචාරක ව්‍යාපාරය, අක්වෙරළ පතල් කැණීම සහ බලශක්ති උත්පාදනය වැනි වැදගත් සමුද්‍රීය ක්‍රියාකාරකම් ශ්‍රී ලංකාව ඇතුළු බොහෝ රටවල ජාතික ආර්ථිකයන්හි සැලකිය යුතු කාර්යභාරයක්

ඉටු කරයි. සාගර ආර්ථික ක්‍රියාකාරකම් පුළුල් කිරීම ගෝලීයකරණයේ එක් මායිමක් ලෙස සැලකිය හැකියි අවාසනාවකට මෙන්, සාගරවල වර්ධනය වන මානව ක්‍රියාකාරකම් ලොව පුරා සමෘද්ධිය වැඩි කිරීමට උපකාරී වන අතරම සාගර පරිසර පද්ධති සංහාරය සඳහා ද වගකිව යුතුය.

සාගර පරිසර පද්ධති මිනිසුන්ගේ සහ අනෙකුත් ජීවීන්ගේ පැවැත්ම සඳහා අත්‍යවශ්‍ය පාරිසරික කාර්යයන් ඉටු කරනු ලබයි. මිනිසුන් විසින් නිපදවන කාබන්ඩයොක්සයිඩ් විමෝචනයෙන් ප්‍රධාන කොටසක් සාගර අවශෝෂණය කරයි. ගෝලීය දේශගුණික පද්ධතිවල ස්ථායිතාව සඳහා වැදගත් කාර්යභාරයක් ඉටු කරනු ලබන අතරම ගෝලීය ජෛව විවිධත්වයේ ප්‍රධාන කොටසකට ඉඩ සැලසීම සහ ආරක්ෂා කිරීම, ලෝකය අප සැමට වාසය කිරීමට උචිත කරවයි. සම්පත් අධික ලෙස සූරාකෑම, නීති විරෝධී-වාර්තා නොකළ-නියාමනය නොකළ (Illegal Unrecorded) Unreported - IUU) ධීවර කටයුතු, සමුද්‍ර සහ වෙරළ දූෂණය, වාසස්ථාන විනාශය සහ මානව දේශගුණික විපර්යාස වැනි මානව ක්‍රියාකාරකම්වල ප්‍රතිඵලයක් ලෙස සාගරවල මෙම ගෝලීය පරිසර පද්ධති සේවාවන් තර්ජනයට ලක්ව ඇති එවැනි ක්‍රියාවන්ගේ බලපෑම් වඩ වඩාත් දෘශ්‍යමාන වන අතර ගෝලීය මත්ස්‍ය සම්පතෙන් සියයට 30කට වැඩි ප්‍රමාණයක් ඒවායේ තිරසාර සීමාවෙන් ඔබ්බට අධික ලෙස මසුන් අල්ලන බව ගණන් බලා ඇත. පූර්ව කාර්මික යුගයට සාපේක්ෂව සාගර ආම්ලිකතාවය සියයට 25 කින් පමණ වර්ධනය වී ඇති සාගර දූෂණය භයානක මට්ටම් කරා ළඟා වී ඇති අතර, සාගරය ගෝලීය වශයෙන් විශාලතම අපද්‍රව්‍ය බැහැර කරන ස්ථානය බවට පත් වී ඇත. මෙම පසුබිම තුළ, නැගී එන නිල් ආර්ථිකය පිළිබඳ සංකල්පය තරඟකාරී ඉල්ලීම් සමතුලිත කිරීම සඳහා මාර්ගයක් සපයන අතර, සාගරවල තිරසාර අනාගතය සඳහා පදනම දරයි.

ශ්‍රී ලංකාවේ නිල් ආර්ථිකය සඳහා වූ අපේක්ෂාවන්

ශ්‍රී ලංකාව ඉන්දියන් සාගරයේ කේන්ද්‍රීය ස්ථානයක පිහිටා ඇති දූපතක් වීම නිල් ආර්ථික උපාය මාර්ගයක් අනුගමනය කිරීම ශ්‍රී ලංකාවට අත්‍යවශ්‍ය දෙයක් නොව අනිවාර්ය අංගයක් වී ඇත. භූගෝලීය වශයෙන් ශ්‍රී ලංකාවේ පිහිටීම වාසි ඇති නමුත් විවිධ අභියෝගවලට ද මුහුණ දීමට සිදු වේ. නිල් ආර්ථිකයක් සඳහා ඇති ප්‍රධාන වාසි අතර භූගෝලීය පිහිටීම, රට වටා ඇති දිගු වෙරළ තීරයේ සිට සාගර සම්පත් සඳහා ඉහළ අවධානක් තිබීම, ප්‍රධාන මුහුදු මංතීරුවලට සමීප වීම, රටේ ඉඩම් සම්පත් හා සසඳන විට සැලකිය යුතු මුහුදු ප්‍රදේශයක් හිමිවීම ආදිය වැදගත් වේ. කෙසේ වෙතත්, මෙම අවස්ථාවන්ට අභියෝගයන් ද නිර්මාණය වී ඇත. රට වටා ඇති සාගරය වෙත ගෝලීය බලවතුන්ගේ උකුසු ඇස් යොමු වී ඇති බැවින් දැඩි ලෙස තරඟකාරී වන ආර්ථික සහ ගෝලීය දේශපාලන ක්ෂේත්‍රයේ ශ්‍රී ලංකාවට ප්‍රවේශම් සහගත මාවතකට පියවර නැගිය යුතුව ඇත.

ශ්‍රී ලංකා රජය 2016 ඔක්තෝබර් මාසයේදී (Sri Lanka NEXT) වැඩසටහන යටතේ නිල් ආර්ථික මුලපිරීමක් ප්‍රවර්ධනය කර ඇති අතර මෙය කාලෝචිත උත්සාහයක් ලෙස සැලකිය හැකිය. මීට අමතරව මධ්‍යම භූගෝලීය පිහිටීම සහ ප්‍රධාන මුහුදු මංතීරුවලට සමීප වීමේ වාසිය ලබා ගනිමින් කලාපයේ සමුද්‍රීය කේන්ද්‍රස්ථානයක් බවට පත්වීමට රට අපේක්ෂා කර ඇති ඒමෙන්ම රට සංචාරක ගමනාන්තයක් ලෙස එහි ප්‍රතිරූපය සුවිශේෂී

සාගර සහ වෙරළබඩ ආකර්ෂණයක් සහිතව යම් සාර්ථකත්වයක් සහිතව ප්‍රවර්ධනය කරමින් සිටී. කෙසේ වෙතත්, මෙම තාවකාලික ප්‍රයත්නයන් තිබියදීත් ශ්‍රී ලංකාව තවමත් මෙම ප්‍රයත්නවල ශක්තිය ඒකාබද්ධ කරන නිල් ආර්ථික උපාය මාර්ගයක් සමඟ පැමිණ නැත. වත්මන් තත්වය මේ අයුරු වුවත් නිවැරදි දැක්මක් යටතේ ශ්‍රී ලංකාව තුල සැගව පවතින්නා වූ නව්‍ය තාක්ෂණික ඥානය උපයෝගී කර ගනිමින් සහ මනා කලමණාකරණ ක්‍රියාදාමය තුලින් ඉන්දියානු සයුරේ ආකර්ෂණීයම නීල ආර්ථික කේන්ද්‍රස්ථානය බවට පත්කිරීමට අවශ්‍ය දායකත්වය දැක්වීම ජාතික ආරක්ෂාවේ හිමිකරුවන් වන අපගේ තවත් එක් වගකීමක් බව අවධාණය කර ගතයුතු කාලය දැන් එළඹ ඇත්තේය.

සාරාංශය

ශ්‍රී ලංකාව ඉන්දියන් සාගරයේ කේන්ද්‍රීය ස්ථානයක පිහිටා ඇති රටක් ලෙස ශ්‍රී ලංකාව නිල් ආර්ථික උපාය මාර්ගයක් අනුගමනය කිරීම අත්‍යවශ්‍ය කරුණක් වී ඇත. භූගෝලීය වශෙයන් ශ්‍රී ලංකාවේ පිහිටීම වාසි වන නමුත් විවිධ අභියෝගවලට ද මුහුණ දීමට අපට සිදු වී ඇත. විශේෂයයෙන් වර්ථමානයේ ශ්‍රී ලංකාව මුහුණපා ඇති ආර්ථික අභියෝග, මුහුදේ ඇතිවන ඇතැම් ජාවාරම්, නාවික පරිසර පද්ධති වලට සිදු වන හානි, නාවික අනතුරු සහ භූගෝලීය උෂ්ණත්වය ඉහල යාම ඉන් ප්‍රධාන වේ. එසේ හෙයින් භූගෝලීය පිහිටීම, රට වටා ඇති දිගු වෙරළ තීරයේ සිට සාගර සම්පත් සඳහා ඉහළ අවධානක් තිබීම, ප්‍රධාන මුහුදු මංතීරුවලට සමීප වීම, රටේ ඉඩම් සම්පත් හා සසඳන විට සැලකිය යුතු මුහුදු ප්‍රදේශයක් හිමිවීම ආදි වාසි දායක කරුණු ප්‍රයෝජනයට ගනිමින් නීල ආර්ථිකයක් ඇති කිරීම මගින් ඉහත අභියෝග වලට සාර්ථකව මුහුණ දීමේ හැකියාව ලැබේ.

පරිශීලිත මූලාශ්‍ර

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