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# **NDC SEMINAR PAPER**



## **Proceedings Seminar on**

# **Exploring Marine Resources and Fostering Cooperation in Maritime Trade, Security and Safety through IORA**

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# **NATIONAL DEFENCE COLLEGE BANGLADESH**



**Seminar  
on  
Exploring Marine Resources and Fostering  
Cooperation in Maritime Trade, Security and Safety  
through IORA**



**Organized for  
National Defence Course 2024  
by National Defence College  
on 11 June 2024**



**NATIONAL DEFENCE COLLEGE  
BANGLADESH**

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## Foreword

The Indian Ocean region is a pivotal area of global strategic importance, with its vast and diverse marine resources offering substantial economic potential. In the context of a rapidly evolving geopolitical landscape, the sustainable exploration and management of these resources are crucial for the economic growth and stability of the IORA member states.

The Indian Ocean is not only a vital conduit for international trade but also a region with diverse and rich marine ecosystems. Effective management and utilization of these resources require a collaborative approach among the IORA member countries. In recent years, maritime security has emerged as a pressing concern due to threats such as piracy, illegal fishing, and territorial disputes. These issues necessitate a concerted effort to enhance maritime safety and security protocols.

Moreover, fostering cooperation in maritime trade is vital for regional economic integration and prosperity. The interconnectedness of our economies underscores the need for streamlined trade practices and enhanced maritime infrastructure. By leveraging the strengths and capabilities of each member state, we can create a synergistic environment that promotes sustainable economic development.

It is my pleasure to pen this foreword for the proceedings of the Seminar on 'Exploring Marine Resources and Fostering Cooperation in Maritime Trade, Security, and Safety through the Indian Ocean Rim Association (IORA)'. The theme of this seminar is both time befitting and significant. This seminar, organized by the National Defence College (NDC), presents an invaluable opportunity for all stakeholders to delve into the critical issues surrounding our maritime domain. The discussions and insights from this seminar will undoubtedly contribute to formulating robust strategies to safeguard our maritime interests. This seminar also aligns with the broader objectives of IORA, which include promoting sustainable development and regional cooperation. By addressing key aspects of maritime trade, security, and safety, we are contributing to the overarching goal of ensuring peace, stability, and prosperity in the Indian Ocean region.

I commend the course members for their diligent efforts in preparing the keynote papers and express my gratitude to the resource personnel and SDS for their invaluable support. I am confident that the insights and recommendations from this seminar will pave the way for enhanced cooperation and sustainable development in the Indian Ocean region.

I would like to thank the faculty, ND Course members and college staff for their tireless effort in organizing the seminar and making it a success. Finally I appreciate the sincere efforts of the Research and Academic Wing and acknowledge the solemn endeavor of the editorial board to bring out the seminar paper.



**Lieutenant General Mohammad Shaheenul Haque**  
Chief Patron

## Editorial

I am delighted to present this comprehensive seminar paper on “Exploring Marine Resources and Fostering Cooperation in Maritime Trade, Security, and Safety through the Indian Ocean Rim Association (IORA).” The theme of this seminar is profoundly relevant in today’s context. This significant seminar, orchestrated by the National Defence College (NDC), brings together the insights and expertise of our course members, guided by distinguished resource personnel and generously supported by the Sponsor Senior Directing Staff.

The Indian Ocean, a critical artery of global commerce and a reservoir of vast marine wealth, plays an essential role in the economic and strategic landscapes of IORA member states. The sustainable exploration and judicious management of these resources are vital for ensuring long-term economic growth and environmental stability in the region. In recent years, the strategic significance of the Indian Ocean has been underscored by emerging security concerns, including piracy, illegal fishing, and territorial disputes. These challenges demand robust and coordinated responses to enhance maritime security and safety.

This seminar underscores the necessity of collaboration among IORA member countries to address the multifaceted challenges and opportunities in maritime trade, security, and safety. The deliberations and outcomes of this seminar are poised to contribute significantly to the development of effective strategies and policies that ensure the security of our maritime domains.

I extend my heartfelt appreciation to the course members for their meticulous research and insightful contributions, the resource personnel for their expert guidance, and the sponsor SDS for the steadfast support. It is my firm belief that the knowledge and recommendations distilled from this seminar will forge a path toward greater cooperation and sustainable development in the Indian Ocean region.

In fine, I convey sincere thanks and deep felicitation to all concerned for their invaluable efforts and delicate suggestions in enriching the paper. Moreover, I would like to thank Editorial Board for their relentless support and assistance in publishing this paper. I pledge to continue this endeavor to introduce more diverse and newer topics to the potential readers.



**Rear Admiral Md Ziaul Hoque**  
Editor in Chief

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## Overview of the Seminar

National Defence College (NDC) arranges a good number of seminars and other individual and group research works as part of the course curricula for the ND Course members. Against such backdrop considering the significance of Blue Economy for Bangladesh a seminar on Exploring Marine Resources and Fostering Cooperation in Marine Trade, Security and Safety through IORA (Indian Ocean Rim Association) was arranged on 11 June 2024. Activities of the seminar started on 18 April 2024. Initially all the course members of ND Course 2024 were divided in four groups for conducting a seminar on four sub-themes those were constituted on the core elements of the main theme of the seminar. A number of preparatory sessions were carried out with resource personnel in the syndicates to understand and exemplify the whole gamut of sub-themes/themes. All groups presented their keynote papers on 26 May 2024 and course members, senior directing staffs and resource personnel provided their comments and suggestions to respective groups. Finally, a group of twelve Course Members were selected for a central seminar. They looked at the findings of the syndicate level seminar, analyzed the critique and conducted a thorough research on the main theme. The whole process was guided by a Senior Directing Staffs and four resource personnel. Finally, the team presented the Keynote paper on 11 June 2024 before a large gathering.

The panel of presenters covered the keynote paper in three segments drawn from the theme of the seminar. The segments were identified as Exploring Marine Resources in IOR (Indian Ocean Region), Fostering Cooperation in Marine Trade through IORA, Enhancing Security and Safety through IORA. A special emphasis was given for identifying the opportunities and challenges for Bangladesh in all those areas.

Lieutenant General Md Saiful Alam, SBP, OSP, SUP, awc, psc, PhD, Commandant, National Defence College graced the seminar on 11 June 2024 as Chief Guest. The course members of NDC 2024, faculties of NDC, resource personnel, representative from AFD, representative from Services Headquarters, representative from ministries and other concerned agencies were also present in the seminar.

The theme of the seminar was very much relevant and contemporary for the present context of Bangladesh. All the keynote speakers upheld important sides of the theme and the discussion contributed a lot to fulfill the aim of the seminar. At the end of the presentation there was a vibrant interactive session where the Commandant of NDC, the resource persons, the Sponsor Senior Directing Staff, faculty members, invited guests and course members of National Defence Course 2024 participated and contributed.

## Executive Summary

The Indian Ocean Rim Association (IORA) plays a crucial role in promoting sustainable development and cooperation among its member states by harnessing the Indian Ocean's abundant marine resources and strategic maritime routes. The exploration of these resources, including fisheries, aquaculture, and offshore energy reserves, offers significant economic opportunities. IORA's collaborative approach could ensure these resources are utilized sustainably and equitably.

IORA's commitment to fostering a blue economy aligns with global sustainability goals, balancing economic growth with marine biodiversity conservation. Initiatives like the Blue Carbon Program highlight this focus. By fostering research collaboration, sharing best practices, and developing unified policies, IORA strengthens regional integration and geopolitical stability. This comprehensive approach underscores the importance of regional cooperation in maximizing marine resource potential and ensuring the security and prosperity of maritime trade routes.

Bangladesh being a littoral state, the importance of in-depth study on maritime domain is enormous. Maritime sector is contributing heavily in economy of the country. Almost 90% of our trade and commerce is conducted via sea route. Good amount of foreign currency is earned from the export of sea fish. There are many more resources of maritime domain yet to be explored. As a member state of the Indian Ocean Rim Association (IORA) Bangladesh has huge potentials to explore and use those resources through collaborative actions of the association.

After analyzing various factors, options and challenges of IORA, followings were the key recommendations of the Seminar:

- **Effective Secretariat.** IORA needs a strong secretariat like EU and ASEAN with effective organogram having professional work force for better implementation of the decisions taken in different meetings and forums. Therefore, IORA should make all-out effort to establish an Effective Secretariat.

- **Subscription System.** At present all member states pay the same subscription amount without considering the economy of the member states. A mechanism for equitable contribution system based on economic capabilities of member states may be introduced to ensure fair and sustainable funding.
- **Strengthening Regional Cooperation.** IORA may take necessary steps to work with other organizations like ASEAN and BIMSTEC on maritime security initiatives to address common challenges and promote sustainable development. ASEAN, BIMSTEC and IORA can collaborate to enhance regional trade and investment, leveraging their respective economic communities and agreements.
- **Data and Information Sharing.** For effective information sharing of a common maritime domain information sharing grid may be developed. Necessary arrangement may be made to connect Information Fusion Centre (IFC) of member states.
- **Evaluation and Monitoring.** IORA should have opportunity to measure its output and out comes in regular basis after completing the action plan for future improvement and lesson learning. An organized Evaluation and Monitoring system may be introduced for assessing existing Five-Year Action Plan and help preparing subsequent Five Year Action Plan.
- **Working Group to Oversee Strategies and Policies.** A dedicated working group comprising representatives from member states, experts and academia may be established to develop and oversee IORA's strategies and policies.
- **Climate Change Adaptation and Disaster Resilience.** Collaborative initiatives of IORA member states can enhance their capacity to mitigate the impacts of climate change, protect vulnerable communities and ensure sustainable development in Indian Ocean region. IORA may encourage the member states to adopt practices like Integrated Coastal Zone Management (ICZM) approach of Malaysia for protection of the mangroves which can enhance resilience for disaster.
- **Enhanced security initiative through IONS.** The primary aim of IONS is to ensure maritime security within Indian Ocean. IORA may

take initiative to functionalize both this organization to get consorted output. IORA may formulate comprehensive maritime policy and IONS can be its enforcing agency.

## **Recommendations to Turn Bangladesh's Potential to Reality in the Maritime Domain**

- **Skills Development and Training.** Bangladesh may establish specialized training academies to train personnel on aquaculture, renewable energy technologies and coastal tourism management.
- **Technology Transfer.** Bangladesh can be benefitted from collaborative projects and technology transfer in the field of power generation from offshore wind energy, floating solar photovoltaic (PV) techniques and exploration of Hydrocarbon reserve. Therefore, necessary steps may be taken for initiating collaborative projects and knowledge sharing with other IORA member states.
- **Coordination among Ministries.** In Bangladesh, according to 'Allocation of Business', Cabinet Division is responsible for Inter-Ministerial Coordination. Cabinet division may take lead role for better coordination among different ministries and better implementation of decisions taken by the IORA secretariat.
- **Maritime Affairs Division.** Bangladesh has huge economic potential through its marine resources. Bangladesh may establish a separate 'Maritime Affairs Division' under the 'Ministry of Shipping' for efficient exploration of marine resources.
- **Data and Information Sharing.** Bangladesh may establish an efficient cell for getting connected with IFC of other member states for information sharing regionally and internationally. It will also facilitate proper coordination with different agencies within the country for coordinated information sharing within a short period of time.
- **Combatting Marine Pollution.** Bangladesh should develop and enforce stringent environmental regulations to control pollutions from different sources and strict penalties for noncompliance.

## **Address of Commandant**

**Lieutenant General Md Saiful Alam**

SBP, OSP, SUP, awc, psc, PhD

### **Bismillahir Rahmanir Rahim**

Esteemed Resource Persons, Faculty of NDC

Course Members, Distinguished Guests

Ladies and Gentlemen

Assalamu Alaikum and a very good day to you all.

It is truly a privilege and an honor to address such an august gathering at this Seminar on ‘Exploring Marine Resources and Fostering Cooperation in Maritime Trade, Security, and Safety through IORA.’ I extend my warmest welcome to all the esteemed experts, policymakers, and stakeholders assembled here today to delve into the pressing issues facing the Indian Ocean region.

### **Distinguished Guests**

We are honored to have with us today esteemed experts, policymakers, and scholars who have brought with them a wealth of knowledge and expertise in their respective fields. Through their insights and perspectives, we aim to gain a deeper understanding of the challenges and opportunities that lie ahead and to identify pathways for collaboration and cooperation among IORA member states.

Throughout the course of the seminar, the keynote speakers have explored a wide range of issues. In particular, the sub-themes of our seminar have provided valuable insights into key areas of focus. For example, they have examined the potential for promoting sustainable economic development through the responsible exploitation of marine resources, while emphasizing the need for cooperation among Indian Ocean Rim countries to ensure equitable benefits for all stakeholders. Their discussions have highlighted the evolving geopolitical landscape of the Indian Ocean and its implications for regional trade and economic integration.

The discussions have explored opportunities for enhancing connectivity and trade linkages, while also addressing potential challenges and risks. As we look ahead, we can realize the role of the Indian Ocean Rim Association (IORA) in facilitating regional cooperation and promoting sustainable development. The discussion also recognized Bangladesh's aspirations and contributions to the maritime domain, reflecting its growing importance as a maritime nation.

## **Dear Audience**

The Indian Ocean has been a center for trade and human activity for centuries, dating back to a time before modern nation-states and the era of steamships. The unique phenomenon of the “Monsoon wind” of the Indian Ocean facilitated ancient maritime routes for the Austronesians, trade networks along the Swahili coast, expeditions of Zheng He, and the spice routes of the European colonial powers. The historical connections in this region have greatly influenced its culture, economy, and politics, shaping the growth of communities and civilizations.

The keynote papers today focused on the Sustainable Blue Economy. It emphasized the importance of IORA in promoting sustainable development and cooperation among member countries to achieve economic prosperity and environmental sustainability in the region. Bangladesh has made significant progress in advancing the Blue Economy within IORA, particularly during its Vice Chairmanship when it hosted the third ministerial meeting in Dhaka. The outcome of this meeting was the “Dhaka Declaration on Blue Economy,” which provides guidelines for the responsible use of marine resources. Additionally, the Memorandum of Understanding (MoU) signed in 2022 between the International Seabed Authority (ISA) and IORA aims to enhance cooperation in marine scientific research and deep-sea exploration to promote the Blue Economy. Bangladesh's effective implementation of the Blue Economy program serves as a prime example of how countries can successfully balance economic development and environmental sustainability.

## August Gathering

It's unfortunate that our oceans are threatened by human activities such as resource over-extraction, pollution, oil spills, plastic waste, and climate change. These actions heat up the seawater, putting marine biodiversity in danger. Additionally, many IORA member states are vulnerable to tsunamis and cyclones. Climate change also affects the ecology and lives of plants and animals. It's essential to act swiftly to address these challenges and be vigilant about illegal activities in the ocean. Implementing the discussed efforts are important to enhance IORA's institutional frameworks by improving member states' ability to oversee marine resources and safeguard maritime trade routes.

Sustained dialogue and collaboration among IORA member states are important. Regular meetings, training sessions, and joint efforts will help maintain progress. Establishing platforms for stakeholders to engage in these conversations will enrich our perspectives. Bangladesh has taken significant measures to contribute to regional initiatives to enhance marine security, including the involvement of the Bangladesh Navy in collaborative drills and maritime surveillance through IONS. Bangladesh's efforts to prevent human trafficking and smuggling manifest a holistic approach to marine security.

Embracing technological progress is important for achieving our goals efficiently. Technology, including marine biotechnology, digital trading platforms, and improved security systems, provides the means to accomplish objectives. Investing in marine sciences innovation and research can create new economic opportunities and enhance our ability to address environmental issues.

In an era marked by climate change and environmental uncertainty, integrating resilience into maritime policies and practices is essential. This includes preparing for and mitigating the effects of natural disasters, encouraging sustainable fishing practices, and protecting marine biodiversity. In addition, implementing early warning systems, disaster response strategies, and climate adaptation plans can enhance resilience.

## **Ladies and Gentlemen**

As we conclude this enriching seminar, I would like to express my heartfelt gratitude to all the distinguished guests for gracing us with their presence. Your participation has truly elevated the discourse and enriched our deliberations. I also extend my thanks to all the keynote speakers and resource personnel for their invaluable contributions to this seminar. Your insights have been instrumental in shaping our discussions and guiding us toward meaningful outcomes. I would also like to thank all the participants for their active engagement and valuable contributions throughout the seminar. Your diverse perspectives and expertise have added depth and richness to our deliberations.

My heartfelt thanks to all the faculty and course members of National Defence College for their tireless efforts in organizing this vibrant and thought-provoking seminar. I also sincerely appreciate all the staffs of this college who have worked relentlessly remaining behind the scenes to make it a successful one.

Finally, I am confident that our deliberations over the course of this seminar will yield valuable insights, foster meaningful dialogue, and lay the groundwork for concrete action. By harnessing our collective expertise, experience, and resources, we can overcome the challenges facing the Indian Ocean region and pave the way for a brighter future for generations to come.

Thank you, ladies and Gentlemen, Thank you all.

# Speech of the Sponsor Senior Directing Staff

Rear Admiral Md Ziaul Hoque, OSP, ndc, afwc, psc

## **Bismillahir Rahmanir Rahim**

Esteemed delegates, Dear Colleagues, Ladies and Gentlemen.

Assalamu Alaikum and a very good morning to you all

Before commencing my speech, I would like to congratulate all the participants of the Seminar on “Exploring Marine Resources and Fostering Cooperation in Maritime Trade, Security and Safety Through IORA” for your vivid, agile and enthusiastic contribution to make the seminar a successful one. Your thirst for quenching the knowledge for the subject matter has undoubtedly enriched the experience for everyone involved. Your dedication to learning and engagement is truly commendable.

My heartfelt gratitude to the resource personnel for their sincere support, guidance and inclusion of the culmination with the main theme of resource and paper preparation without which it won't be possible to accomplish the Seminar.

## **Distinguished Guests**

On the other hand, The Indian Ocean Rim Association (IORA) serves as a platform for promoting regional cooperation, economic development, maritime security, and sustainable management of marine resources in the Indian Ocean region. By bringing together diverse stakeholders and fostering dialogue and collaboration, IORA contributes to building a more prosperous, secure, and sustainable future for all countries in the region.

The Indian Ocean, with its pivotal role in global trade, security, and sustainability, holds immense significance for the prosperity and well-being of nations across the globe. Considering this importance, NDC has organized this seminar to focus on various critical aspects, including Sustainable Blue Economy by IOR Littorals, Cooperation in Exploration and Exploitation of Marine Resources, Geopolitical Dynamics and Trade Opportunities, Enhancing Maritime Security

and Safety in IOR, and Bangladesh's Maritime Ambitions as sub-themes of the seminar topic. Few of the notable recommendation to be mentioned:

- Greater emphasis could be given on specialized operations for HADR such as diving operations, salvage operations etc.
- Specific emphasis is required on building capability for large area surveillance towards developing better maritime domain awareness.
- Integration of IONS with IORA requires more deliberation.
- Significant potential for renewable energy, particularly in solar and wind.
- Promoting the development and sharing of sustainable ocean technologies.
- Programs focused on sustainable marine practices, aquaculture, renewable energy technologies, and coastal tourism management.

## **Dear Audiences**

I want to extend our profound acknowledgement to the Respected Commandant for envisioning and organizing a Seminar like this, centered on such a relevant theme. Your foresight in recognizing the importance of this subject matter and your decision to bring together experts and enthusiasts alike have resulted in an enlightening and enriching experience for all involved. Your commitment to fostering intellectual exploration and facilitating meaningful discussions is truly admirable. We appreciate your leadership and unwavering commitment to the advancement of knowledge within our community.

Once again, I want to thank the participants from the course, resource personnel for instilling wisdom, knowledge and delineating the resources of the ultimate outcome. My appreciation will be inadequate in words to express my gratitude towards College Secy, Col GS, Col Admin, Dir R&A and all associates to the organizing body of this seminar. Your meticulous planning, attention to detail, and relentless efforts behind the scenes have made this event possible. From coordinating logistics to ensuring smooth execution, your dedication has not gone unnoticed. It's your commitment to excellence that has created a platform for learning, networking, and inspiration.

I would like to express our deepest gratitude to our esteemed guests for gratifying the ceremony. Your expertise, insights, and passion have illuminated this seminar, leaving an indelible mark on all of us. Your willingness to share your knowledge and engage with the audience has enriched our understanding and inspired us to delve deeper into the subject matter. Thank you for your invaluable contribution and for being a guiding light in our pursuit of knowledge.

## **August Gathering**

As we conclude this seminar, I am confident that the discussions held today will enhance cooperation and creativity in harnessing the potential of our marine resources for sustainable development in the Indian Ocean region. Let's uphold the spirit of collaboration and persist in our efforts to achieve a more prosperous and secure marine future.

May we leave this place with a renewed understanding of our goals and a strong commitment to cooperate through IORA, ensuring that the Indian Ocean continues to thrive, remain safe, and thrive for future generations. Together, we have the ability to shift the balance in support of sustainable development, security, and mutual prosperity.

I would like to conclude my closing address with the final note that,

“The Indian Ocean has perpetually served as a conduit linking diverse cultures, economies, and individuals. May it now also serve as a symbol of sustainable development and regional collaboration”

With these few words, I hope this seminar will end with great success.

Thank you all again.

## Comments by Resource Person

**M. Shameem Ahsan**

Member, Bangladesh Public Service Commission  
(Former Secretary and Ambassador)

### **Bismillahir Rahmanir Rahim**

The seminar has been successful in raising some well-known questions and seeking answers to those. And there are few to which no answer is readily available. At the same time, it has also evoked thoughts, both in the national context-relating to exploration of marine resources and in terms of cooperation/collaboration primarily through IORA. The view that one would take of this seminar is one of understanding the landscape, finding the deficiencies and look for way forward. In so doing, given the time available, only a few aspects would be addressed.

The topic of the seminar comprises 3 major elements i.e. IOR, IORA and importance of marine resources and maritime cooperation in IOR.

Given that this ocean and the littoral geography have shaped the socio-economic development of the states and regions connecting those, a bit of history would have added value to the seminar paper. The reasons are:

First, because one cannot deny that over the years a new Indian Ocean Order has been in the making-as a successor to the colonial order. It has five main characters: i) political, cultural and economic heterogeneity; ii) fragmented into sub-regional systems marked by economic integration and political cooperation leading to geopolitical equilibrium; iii) emerging Indian Ocean regionalism which is formalized by Indian Ocean Rim Association (IORA); iv) palpable sub-ordination to foreign powers; v) conflictual and politico-strategic dynamics that make wide-ranging regional cooperation rather uncertain, if not impossible.

Secondly, we are here in the business of contemplating the future of the IOR, and in doing that, the past and also the present could be a guide.

## **Blue Economy**

The Blue Economy conceptualizes oceans and seas as “development spaces” where spatial planning integrates conservation, sustainable use of living resources, oil and mineral wealth extraction, bio-prospecting, sustainable energy production and marine transport (Alam 2014). Activities should contribute to sustainable, inclusive economic growth, employment, well-being, while preserving the health of the Ocean.

### **As for Bangladesh**

- Mention of the Blue Economy (BE) in 7th FYP which called for 12 actions.
- On 22 October 2014, the Government, constituted a 25-member ‘Coordination Committee to tap marine resources and its proper management’. Principal Secretary, Prime Minister’s Office is the coordinator of the Committee.
- In 2017, a BE Cell was set up in the Energy and Mineral Resources Ministry mandated to coordinate activities across various sectors. Until today with the information proffered by the representative of the famed BE cell, how much we know about its activities?
- BE Development Work Plan (2019), updated in 2020 by Maritime Affairs Unit, MOFA.
- Fisheries resources - In 2016, a modern survey vessel named “Meen Sandhani” was procured in order to do stocktaking of available fishing resources in the Bay of Bengal. Again, survey or outcome of any activities of the ship are not much known in the public domain.

### **Cooperation-At Organizational Level and National Level, Section 2.11**

Given the nature of the problems, cooperation is needed both at organizational level and national level.

At organization level, as far as I understood, there is no mention of any IORA-wide or sectoral cooperation model, though there are instances of successful cooperation involving interested states such as CTI (Coral Triangle Initiative) and BOBLME (large marine ecosystems, involving 8 states).

The CTI has successfully implemented Marine Protected areas and deployed fisheries management plans through collaborative efforts. In Bangladesh, is there awareness in the concerned community for emulation or replication? In addition, since the Bay Of Bengal Large Marine Ecosystem (BOBLME) project which ran a Strategic Action Programme from 2009 through 2015, appears to have been completed, one would like to see if its impact is visible in Bangladesh. For example, as indicated in case of Indonesia that IUU fishing was reduced by 50%, is there any statistics regarding Bangladesh in this issue?. At the least, can the results of this project constitute some kind of baseline survey for Bangladesh? Also, a huge no. of training/capacity building courses have been conducted until March 2015, as found from a related website. The question is - how much of the benefits mentioned in 2.11.2 accrued to Bangladesh, since conclusion of the project and its strategic programme of action?

So, the points remain:

- Whether such examples are in anyway related to the IORA or,
- If these are funded by IORA mechanisms such as the Special Fund.
- Yet another area to be explored is through synergy between IORA and other organizations/forums in the region such as BIMSTEC and IONS as they too deal with issues of concern to IORA and its member states.

Though the answer is mostly in the negative, the desirability that such mechanisms evolve under the aegis of the IORA for benefit of larger no of member states is there.

At the national level cooperation, the title of the segment indicates possibility of cooperation with member states with proven track record in achievement. 4 case studies are mentioned – Indonesia, Seychelles, Maldives and Malaysia, highlighting various approaches ranging from multi-sectoral blue economy strategy to marine spatial planning to MPAs and Integrated Coastal Zone Management (ICZM).

It would be of interest to briefly discuss which of these models mentioned in the 4 case studies is likely to be useful for the purposes of Bangladesh or whether a combination thereof would be advisable. Also, if there have been studies to address this issue, in other words, if MPAs and ICZM have been implemented and in what shape or form, what their status is and what issues/challenges they face.

In section 2.16.4 Growth and Development in Marine Exploration, one would expect details of ‘collaborative projects with international organizations and neighboring countries have also facilitated technology transfer and capacity building’.

In section 2.17, Challenges of Bangladesh - one notices a less than encouraging scenario. Investment is a very important issue given that the financial outlay necessary is not insignificant. For both domestic and foreign investment, legal regime and its full enforcement is necessary that assures the safety, security, profitability and, in case of FDI, return of profit. These are among key issues that determine flow/inflow of investment.

Available information from the last budget presentation indicates that blue economy was linked directly with the fisheries sector. But no data was available on how much money the country is investing to advance the sea-based economy. Blue Bond- wherein a financial institution sells bonds to raise money for ocean-based activities-is mentioned in the Mujib Climate Prosperity Plan 2022-2041. In September 2022, Bangladesh Bank issued a Green Bond policy to guide the creation of green bond mechanisms to fund environment-friendly, renewable energy-driven economic activities. So far, it seems no concrete attempts to launch blue bonds or ocean-focused financial tools have been made. Investment in general is an issue that is better handled in a broader context given the deficiencies investors talk about these days and a noticeable downturn.

In section 2.11.2 and 2.13, it is not quite clear if Bangladesh’s involvement with BOBLME and Ecosystem-based Management which accelerates multidimensional uses of ocean space without any conflict among the users has had any reflection on our own planning. Zoning also plays a crucial role in managing conflicting ocean activities through the application of Marine Spatial Planning.

I haven't quite touched upon the trade and security aspect of cooperation – not for the reason that we have it all fine, far from it. Most trade passes through Indian Ocean region so that what happens among the members of the IORA in terms of security impacts all. The fact that, from the economic growth perspective, the IORA members fall in groups of high, medium, lower medium and low income states, the quest for complementarity of trade among them and for gradual reduction of tariff and non-tariff measures and other trade facilitation measures is a natural issue.

Maritime security is, therefore, sine qua non for trade and sustainable development. The least that can be said is to integrate maritime security into the broader national security framework.

## **Future of IORA**

### **IORA and Multilateralism**

There is a saying 'the Indian Ocean was globalized long before the Atlantic Wars -from the 1500 onwards'. This imparts to it a historic role only accentuated by recent geo-strategic positioning of littoral and non-littoral states. For Bangladesh, the issue of future of IORA is one of finding her place, not in the Rim but at the centre or near about. As a well-known multilateral player with reasonable wherewithal and track record, Bangladesh should engage with the IORA in full earnest.

IORA fits the bill for an inter-governmental organization. In addition, given the geo-political and economic significance of the IOR, IORA could also be considered as a mini-lateral platform. The trappings of minilateral forum are important to understand – because of the way it differs from a multi-lateral forum. This is no time, neither this is the place to go into details. I'd just caution that to be successful in minilaterals, it calls for a different set of credentials.

### **Implementation and Funding**

The future of IORA would depend on how best it does what it says – in other words, implementation of the decisions that are taken at the highest

forums. Funding remains a problem which needs to be addressed, both for strengthening the Secretariat and for project funding. How to do that?

- Could a new scale of assessment be considered? Prevailing economic downturn generally affecting many member states would militate against that.
- Alternatively, within the limited scope, could there be a project-based funding approach where major players including the Dialogue Partners (EU, Germany, China) come in for burden sharing in financing. Example, Indonesia-France joint project on developing a policy on IUU fishing, which remains a major concern for IOR nations (16 to 34% of fishing in Indian Ocean is either illegal or unreported).

At the national level, the foremost challenge in implementation is a sector by sector approach and consequential lack of coordination where the role of marine spatial planning is undeniable, legal deficiency, lack of technological and expert management capability and above all lack of clear focus on priorities and where those should belong in the prevailing institutional malaise.

The BE Development Work Plan of the Maritime Affairs Unit of MOFA is a good beginning. It details tasks within defined timelines, identifies implementing agencies and provides a budgetary estimation. This Plan was approved by the 'Coordination Committee to tap marine resources and its proper management' headed by the Principal Secretary and created in 2014. It would have been befitting if this Plan was to be followed while addressing the attendant substantive and relevant implementation issues.

End note: As a learning exercise, this has been an enriching experience. Notable are the methodology followed, research conducted and hard work done. The deliberations, discussion, conclusions and recommendations should be appropriately shared with important centres of public and private knowledge building initiatives and decision making. Congratulations to all involved in this unique, well-researched and well-crafted and Central seminar.

## Comments by Resource Person

**Rear Admiral Mohammad Musa, OSP, NPP, rcds, afwc, psc, PhD**

Vice Chancellor

Bangabandhu Sheikh Mujibur Rahman Maritime University

### **Bismillahir Rahmanir Rahim**

An efficient organizational structure with a skilled workforce is necessary for the IORA to better implement its decisions. Examples of such organizations include the EU and ASEAN. In order to pursue the goals and priority areas, it should have enough financial resources. IORA should step up efforts to overcome the financial constraints by increasing member contributions that are reasonable and justifiable, diversifying funding sources, enhancing fundraising tactics, and implementing effective financial management procedures.

To ensure the successful fulfillment of its goals and objectives, IORA should give priority to common interests and avoid member countries' contentious areas when making decisions. In order to establish a supportive atmosphere for sustainable development projects, it ought to promote the standardization of laws and policies across participating nations. The exchange of best practices and lessons gained in policy design and implementation is critical, particularly in areas such as climate change adaptation, biodiversity conservation, and ocean governance.

Currently, all member states pay the same membership fee without taking their respective economies into account. To guarantee equitable and sustainable finance without unduly burdening smaller economies, a method for an equitable contribution system based on member states' economic capacities is required.

In order to combat the threats of piracy, terrorism, and illegal fishing in the future, enhanced maritime security cooperation is essential. IORA members can collaborate through joint naval exercises to improve interoperability, and member states can work together through coordinated patrols, information sharing, and capacity-building projects. For instance, the introduction of Marine Armed Guards on commercial ships cruising the Gulf of Aden has

resulted in a notable decline in pirate attacks, guaranteeing ship safety and securing important trade routes.

In order to solve shared issues and advance sustainable development, IORA can collaborate on marine security projects with groups such as ASEAN and SAARC. By utilizing their individual economic communities and agreements, ASEAN, SAARC, and IORA may work together to improve trade and investment within the area.

Effective information sharing requires the creation of a standard marine domain information sharing grid. To improve safety and security throughout the Indian Ocean area, we can use the Information Fusion Centre (IFC) in Singapore as an example. The IFC allows regional fleets to share data and information in real time.

Modern technologies can improve disaster management, environmental monitoring, maritime security, and the sustainable management of marine and coastal resources. Examples of these technologies include big data analytics, artificial intelligence, and satellite surveillance. For instance, IORA members can improve their ability to monitor and respond to marine accidents and environmental hazards in the Indian Ocean by utilizing technology from the European Maritime Safety Agency (EMSA).

A competent working group of specialists and interested parties from member nations may tackle common issues and seize chances for regional security and sustainable development. The working group should determine each member's strengths and prospects, as well as potential dialogue partners and other nations' viability for utilizing the advantages that can be shared.

Following the completion of the action plan, IORA should have the chance to regularly assess its output and results in order to make future improvements and learn from past experiences. The assessment report from the Action Plan (2017–2021) must be taken into account when creating the current Action Plan (2022–2027), and so on.

IORA can support policy frameworks and collaborative efforts that advance blue economy initiatives. Through IORA, collaboration in blue economy projects such as marine renewable energy projects, sustainable fisheries management, and maritime tourism has to be encouraged.

It is possible to form a specialized working group with members from academia, experts, and member states to create and manage IORA's policies and strategies. To improve operations on eight priority areas and guarantee follow-up with an efficient reporting mechanism to CSO, the IORA working groups should convene on a regular basis, either in person or virtually. For better coordination, subworking groups may be established under the parent working group.

Enhancing the region's ports, shipping lanes, and coastal infrastructure is essential for promoting connectivity and trade. Creating a smart port with cutting-edge technology and an effective, contemporary cargo handling system will increase the port's efficiency and make doing business there easier. The mobilization of resources and skills for large-scale infrastructure construction can be facilitated via public-private partnerships.

IORA member states may strengthen their ability to protect vulnerable populations, lessen the effects of climate change, and guarantee sustainable development in the Indian Ocean area by working together on collaborative initiatives. Member states should embrace best practices, such as Malaysia's Integrated Coastal Zone Management (ICZM) approach, to safeguard mangroves and increase their resilience to disasters.

By fostering communication between governments, corporations, and international organizations, IORA can improve Public Private Partnerships (PPP) for regional development and foster an atmosphere that encourages investment and innovation. IORA can use the collaboration between private investors and Kenyan port authorities to establish and run the "Port of Mombasa" as an example. Due to this collaboration, port efficiency, capacity, and infrastructure have significantly improved, improving trade facilitation and promoting regional economic growth.

Using digital media campaigns and educational programs to showcase IORA's initiatives and regional implications is one way to raise awareness about the organization. Universities, colleges, and schools can host international conferences and seminars to highlight the significance of IORA.

Bangladesh can set up specialized training institutes to provide knowledge to workers in the aquaculture, renewable energy, and coastal tourism management sectors. These staff will be trained in skills necessary for using contemporary maritime technologies and practices. The Bangladesh Oceanographic Research Institute (BORI) has to be strengthened, and cooperation with relevant Ministries and universities is required for staff skill development.

For innovations and data-driven solutions for sustainable maritime development and growth, investments in research and technology are essential. The Ministry of Finance may set aside a sufficient amount of money for research in science and technology and to gather the information needed to take the appropriate action. To get the necessary data for thorough oceanic study, the Ministry of Science and Technology may purchase or lease oceanographic research vessels.

In order to promote sustainable development, IORA's cooperative initiatives and knowledge-sharing can enable Bangladesh to embrace cutting-edge technologies and best practices. In the areas of hydrocarbon reserve discovery, floating solar photovoltaic (PV) technologies, and offshore wind energy power generation, Bangladesh stands to gain from cooperative initiatives and knowledge transfer.

Long-term sustainability in fisheries and mariculture requires a shift in perspective from managing particular fish stocks to taking the entire marine ecosystem into account (Pikitch et al., 2004). The Ministry of Fisheries and Livestock may teach fishermen in deep sea fishing using technology. For instance, Indonesia has made great progress in promoting marine conservation and opposing IUU fishing. Indonesia has given the local people more authority to manage the region's marine resources by involving them. Due to Indonesia's community-based strategy, IUU fishing has decreased by 50% and over 23 million hectares of maritime area have been protected.

To reduce pollution from many sources, Bangladesh should create and implement rigorous environmental legislation with severe consequences for noncompliance. For efficient pollution control, the Ministry of Environment, Forests, and Climate Change (MOEFCC) may work in conjunction with other pertinent ministries.

IOR countries are particularly susceptible to the effects of climate change. Collaboration is essential for ecological and economic resilience when it comes to adaptation and mitigation activities. MoEFCC may keep pursuing practical solutions to sea level rise, port infrastructure upgrades, mangrove forest ecosystem preservation, and funding early warning systems for extreme weather occurrences with the necessary ministries.

The Cabinet Division is in charge of inter-ministerial coordination, per “Allocation of Business.” improved coordination between ministries and improved execution of IORA secretariat decisions can be achieved by the cabinet division taking the lead. The lead ministry should be chosen for any action where multiple ministries are participating in the implementation process since they are the ones who will be accountable and responsible for seeing the action through to completion.

## Keynote Paper Presenters



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**Air Commodore  
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# INTRODUCTORY NOTE ON EXPLORING MARINE RESOURCES AND FOSTERING COOPERATION IN MARITIME TRADE, SECURITY AND SAFETY THROUGH IORA

## Introduction

**The Indian Ocean Region (IOR).** The Indian Ocean Region (IOR) encompasses the vast maritime area of the Indian Ocean and the surrounding coastal countries of Asia, Africa, and the Middle East. Covering approximately 70.56 million square kilometers, it is the third-largest oceanic division, playing a pivotal role in global geopolitics, trade, and environmental diversity. This region is a crucial conduit for major sea routes, facilitating international trade between key global markets. Rich in biodiversity, the IOR supports diverse marine ecosystems and numerous coastal communities. The region faces significant challenges, including territorial disputes, piracy, and environmental issues, requiring coordinated international efforts for sustainable management and security.

**Significance of IOR.** The Indian Ocean Region (IOR) is of immense strategic and economic importance. It serves as a vital maritime pathway for global trade, connecting the Middle East, Africa, and Asia. It ensures the steady flow of essential commodities like oil and natural gas. Key chokepoints such as the Strait of Hormuz, the Strait of Malacca, and the Bab el-Mandeb are critical for global energy security and commerce. The IOR's abundant natural resources, including fisheries and mineral deposits, significantly bolster the economies of coastal nations. Geopolitically, the IOR is a hotspot for power dynamics among major global and regional players, influencing international relations. Furthermore, the region's rich ecosystems contribute to its environmental significance. Thus, the Indian Ocean Region is crucial not only for its role in facilitating international trade but also as a strategic arena for military and diplomatic engagements, impacting global stability and economic growth.

**The Indian Ocean Rim Association (IORA).** Established in 1997, IORA facilitates cooperation across a range of areas including maritime safety and security, trade and investment facilitation, fisheries management, disaster risk management, science and technology, tourism, and academic collaboration.

## Objectives of IORA

IORA has three objectives. These are:

- To promote sustainable growth and balanced development of the region and Member States
- To focus on those areas of economic co-operation which provide maximum opportunities for development, shared interest and mutual benefits; and,
- To promote liberalization, remove impediments and lower barriers towards a freer and enhanced flow of goods, services, investment, and technology within the Indian Ocean rim.

**Member States.** IORA comprises the following 23 member states that span across Africa, Asia, Europe and Oceania:

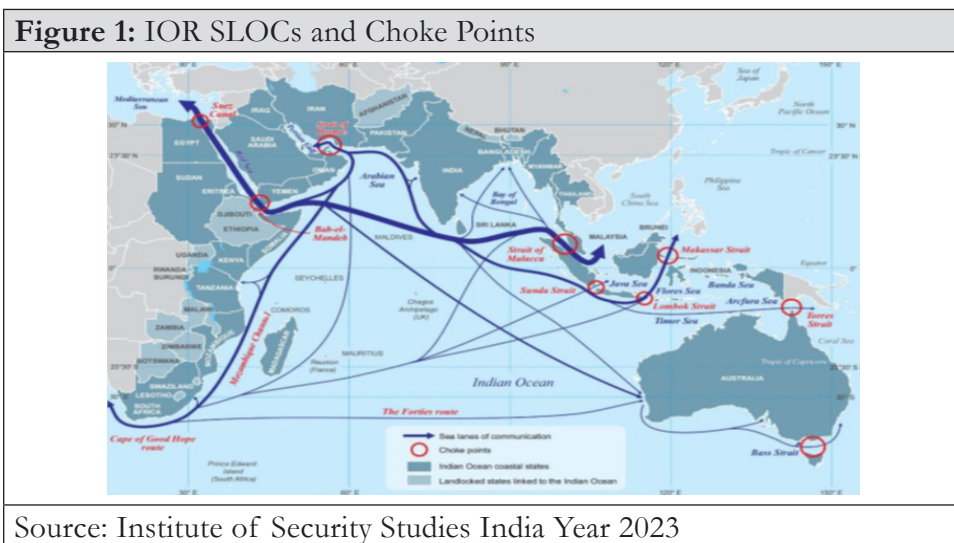
<b>Africa (9 Member States)</b>	<b>Asia and Europe (12 Member States)</b>	<b>Oceania (2 Member States)</b>
<ul style="list-style-type: none"> <li>• Comoros</li> <li>• Kenya</li> <li>• Madagascar</li> <li>• Mauritius</li> <li>• Mozambique</li> <li>• Seychelles</li> <li>• Somalia</li> <li>• South Africa</li> <li>• Tanzania</li> </ul>	<ul style="list-style-type: none"> <li>• Bangladesh</li> <li>• France</li> <li>• India</li> <li>• Indonesia</li> <li>• Iran</li> <li>• Malaysia</li> <li>• Maldives</li> <li>• Oman</li> <li>• Sri Lanka</li> <li>• Singapore</li> <li>• Thailand</li> <li>• United Arab Emirates</li> </ul>	<ul style="list-style-type: none"> <li>• Australia</li> <li>• Yemen (Geographically part of the Arabian Peninsula, but often categorised with Oceania in IORA due to its location relative to the Indian Ocean)</li> </ul>

**Dialogue Partners.** IORA has the following dialogue partners who participate in the association’s activities:

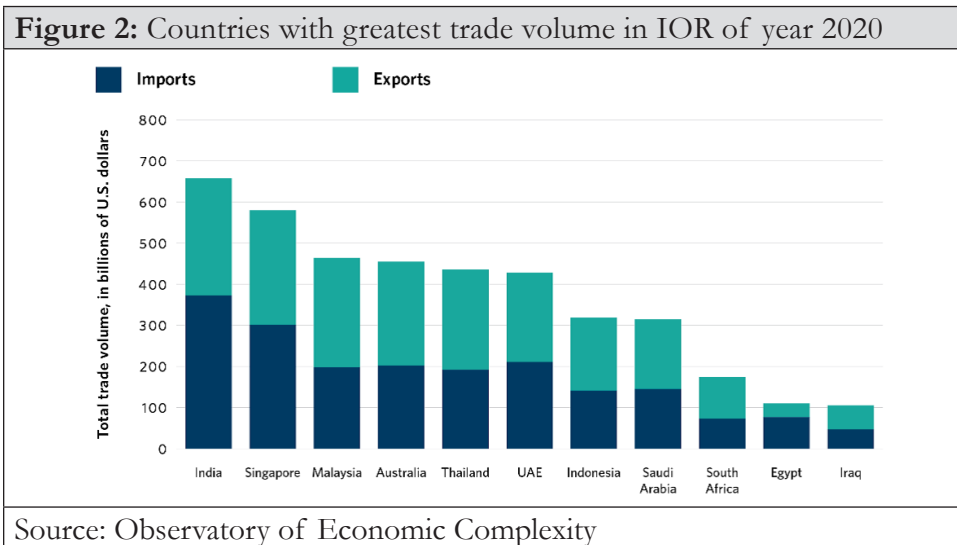
Asia	Europe	North America	International Organizations
<ul style="list-style-type: none"> <li>China</li> <li>Egypt</li> <li>Japan</li> <li>Russia</li> <li>South Korea</li> <li>Saudi Arabia</li> <li>Turkey</li> </ul>	<ul style="list-style-type: none"> <li>European Union</li> <li>Germany</li> <li>Italy</li> <li>United Kingdom</li> </ul>	<ul style="list-style-type: none"> <li>United States of America</li> </ul>	<ul style="list-style-type: none"> <li>The Indian Ocean Tourism Organization (IOTO)</li> <li>The Indian Ocean Research Group (IORG)</li> </ul>

**Importance of Marine Resources and Maritime Cooperation in the Indian Ocean Region.** Marine resources and maritime cooperation are crucial in the Indian Ocean Region for several reasons which are discussed subsequently.

**Economic Importance.** The Indian Ocean is a vital trade route connecting the Middle East, Africa, South Asia, and Southeast Asia. It facilitates the transportation of goods, energy resources, and raw materials, contributing significantly to the global economy as shown in Figure1.



**Commercial Ports.** IOR possess 18 of the world’s top 50 container ports, which handle a massive flow of containerized cargo. These ports, strategically located along major trade routes, act as vital hubs for trans-shipment and distribution, ensuring the smooth movement of commodities. Countries with higher trade volume in the IOR are shown below in Figure 2:

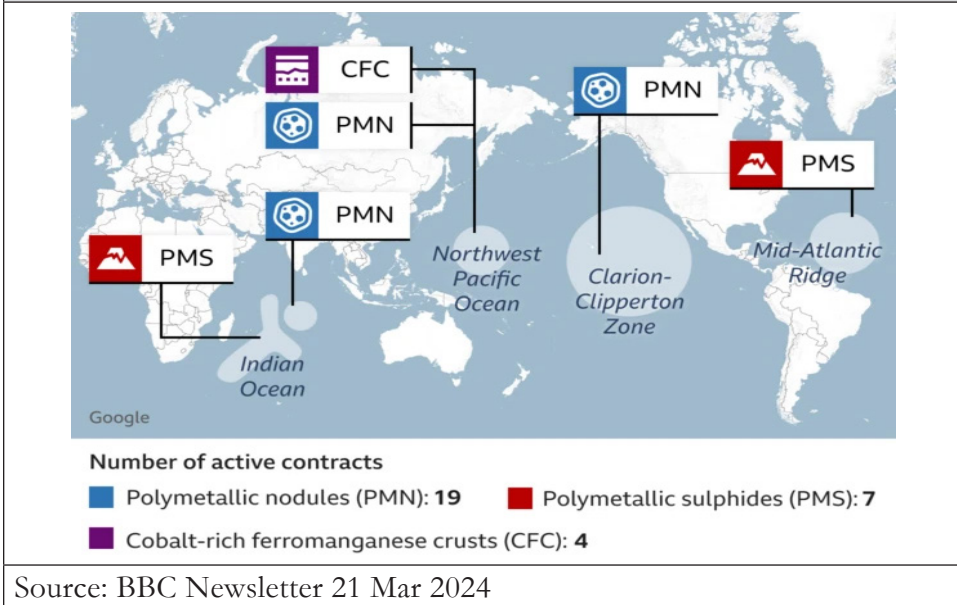


**Blue Economy.** Blue economy encompasses the sustainable use of ocean resources for economic growth, improved livelihoods, and jobs while preserving the health of ocean ecosystems. It is particularly significant for the littoral states of the IORA, where the ocean plays a crucial role in their economies. The Indian Ocean is home to hydrothermal vents with mineral deposits containing copper, cobalt, nickel, zinc, gold, and rare earth elements. Scientists estimate that the Indian Ocean nodule field an area of the ocean floor that contains fragments of minerals, rocks, or biological materials covers 300,000 square kilometers with 1.4 billion tons of nodules valued at over \$8 trillion USD.

**Fisheries.** The Indian Ocean is home to some of the most important fisheries on Earth, accounting for over 14% of global wild-caught fish. IUU fishing is a major concern for IOR nations, approximately 16-34% of Indian Ocean fishing is either illegal or unreported. Thus, a comprehensive approach to maritime security on IUU fishing is duly needed.

**Energy Resources.** The Indian Ocean is rich in oil and natural gas reserves, with major energy-producing countries located along its shores. Cooperation in the exploration and extraction of these resources is essential for energy security and economic development.

**Figure 3:** Exploration areas for minerals in the international seabed area



**Environmental Conservation.** The Indian Ocean is a biodiversity hotspot, hosting unique ecosystems such as coral reefs and mangroves. Cooperation among countries in the region is crucial to protect and conserve these valuable marine resources for future generations.

**Security.** The Indian Ocean is increasingly becoming a strategic area for geopolitical competition and maritime security challenges, including piracy, illegal fishing, and maritime terrorism. Enhanced maritime cooperation is essential to address these security threats and maintain peace and stability in the region.

## KEYNOTE PAPER-1

# EXPLORATION OF MARINE RESOURCES IN THE IOR

The Indian Ocean harbours immense potential for exploration and resource utilization. From vital maritime trade routes to offshore energy prospects, fisheries, and mineral wealth, this vast expanse offers a wealth of opportunities waiting to be harnessed. The Bay of Bengal is also blessed with rich coastal and marine ecosystem, hosting wide range of biodiversity.

In the Indian Ocean Region Marine Resources can be described as i) 'finite', 'infinite' and 'renewable' based on the volume of stock and regeneration, ii) 'living' and 'non-living' based on their status/state of life, iii) 'capital/stock' and 'potential' based on their immediate availability and readiness for harvest/utilization, and iv) 'carbon positive', 'carbon negative' and 'carbon neutral' based on their greenhouse carbon-dioxide emission signatures when used (Hossain et al. 2014). Indian Ocean has immense marine resources in its surface and subsurface.

### Marine Resources in IOR

**Marine Fisheries.** The fisheries resources in the Indian Ocean have been an important source of food, and play a significant role in fulfilling the demand of animal protein and socio-economic development. Industrial fisheries extract large quantities of many different species, including tuna, mackerel, bonito, and sea cucumbers, both for domestic consumption and export to international markets. Due to rising populations and incomes, there is an increased demand for Indian Ocean fish, encouraging industrial fishing vessels to pursue increased production (FAO, 2014). The Bay of Bengal is also blessed with fishes, shrimps, crabs, lobsters, mammals, etc.

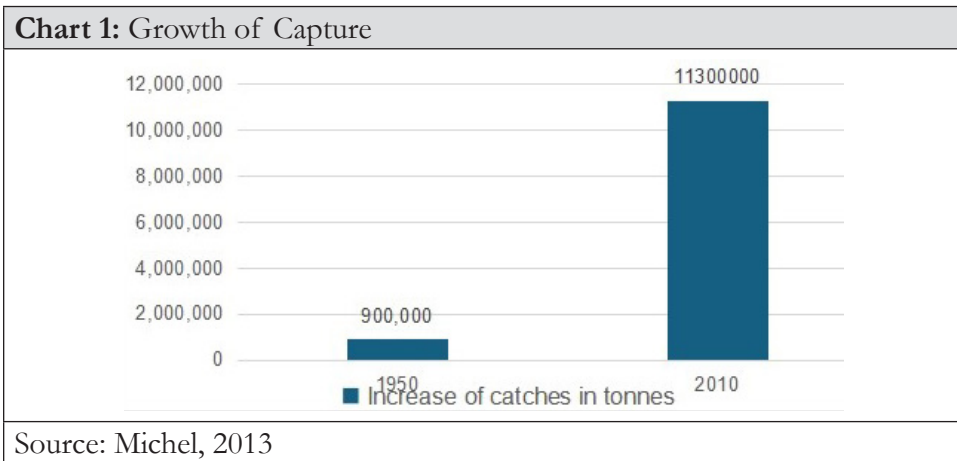
**Fisheries Management.** Implementing sustainable fishing practices and aquaculture to maintain fish stocks and support livelihoods based on IOR littoral demand. With a total estimated IORA population of approx. 2.6 billion in 2030, total regional demand is calculated at about 60 million metric tons per year (Table 1). Per capita consumption of fish in 2030 is an estimate based on

indications cited in FAO Fisheries Circular no. 972/57 (Mapfumo & Hempel, 2021). Based on the predicted demand, a smart fisheries management and support network can be established through collaboration among IOR littorals.

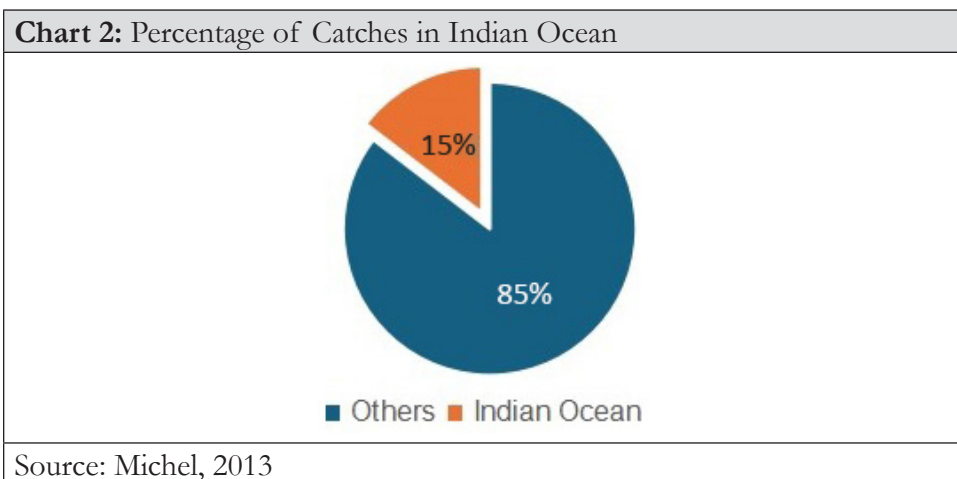
<b>Table 1: Population and Demand Forecasts of IOR Littorals</b>					
<b>Country</b>	<b>Population</b>		<b>Kg/ person</b>	<b>Kg/ person</b>	<b>MT</b>
<b>Year</b>	<b>2017</b>	<b>2030</b>	<b>2017</b>	<b>2030</b>	<b>Demand 2030</b>
Australia	24 584 620	28 177 480	9.0	9.2	259 232 816
Bangladesh	159 685 424	178993 870	12.4	13.3	2 380 618 471
Comoros	813 892	1 063 111	39.8	41.6	44 225 418
India	1338676 785	1503642 327	16.6	17.8	26 764 833 421
Indonesia	264 650 963	299198 430	55.2	57.5	17 203 909 725
Iran	80 673 883	92 663 698	15.1	15.5	1 436 287 319
Kenya	50 221 142	66 449 655	7.9	8.5	564 822 068
Madagascar	25 570 512	35 622 312	16.9	18.2	648 326 078
Malaysia	31 104 646	36 095 052	38.9	40.5	1 461 849 606
Maldives	496 402	519 348	70.0	75.3	39 106 904
Mauritius	1 264 499	1 274 036	18.7	20.1	25 608 124
Mozambique	28 649 018	41 184 834	53.2	57.2	2 355 772 505
Oman	4 665 928	5 936 083	19.0	19.5	115 753 619
France	876 131	954 814	...	...	...
Seychelles	96 418	102 538	51.1	54.9	5 629 336
Singapore	5 708 041	6 262 465	21.8	22.7	142 157 956
Somalia	14 589 000	21 191 041	3.2	3.4	72 049 539
South Africa	57 009 756	65 956 090	4.8	5.0	329 780 450
Sri Lanka	21 128 032	22 023 018	57.9	62.2	1 369 831 720
Tanzania	54 660 339	79 162 723	23.4	25.2	1 994 900 620
Thailand	69 209 810	70 345 543	37.5	39.1	2 750 510 731
UAE	9 487 203	10 661 076	15.0	15.4	164 180 570
Yemen	27 834 819	36 406 895	9.4	9.6	349 506 192
<b>Total</b>	<b>2271657 263</b>	<b>2603886 439</b>			<b>78 893 186</b>

Source: Agence Francaise De Development, Technical Report – 02, 2019

**Revenue Generation.** Fisheries generate revenue through exports, employment, and related industries (processing, transportation, etcetera). According to the FAO, catches from Indian Ocean marine capture fisheries have soared from less than 900,000 tonnes in 1950 to 11.3 million tonnes in 2010 as in Chart 1 below:



A total of 14.6 per cent (Chart 2) of the world’s catch comes from the Indian Ocean (Michel, 2013). Aquaculture – farming fish, shellfish, and other aquatic animals in captivity – has expanded equally rapidly, growing twelve-fold globally since 1980 about.



Collaboration among IOR littorals in deep sea fishing and technology sharing with appropriate training will solidify the position in the export market which will eventually benefit all the IOR littorals.

**Aquaculture and Mariculture.** Aquaculture includes fish, shrimp, crab, oyster and pearl cultivation. Mariculture includes fish, algae and seaweed cultivation in cages and other enclosures. Aquaculture, or the raising of fish in captivity for food production has seen significant interest in recent decades, due to its potential to increase fish production without affecting wild fish stocks. Further, aquaculture can lead to regular, reliable fish production, which is not always possible with wild fisheries. In addition to helping preserve wild fish stocks, these aquaculture initiatives have led to other benefits including increased income, food security, and economic opportunities for women.

**Other Living Resources.** There are marine algae, seaweed, various marine plants and animals, which are used as raw materials for pharmaceutical and cosmetics industries.

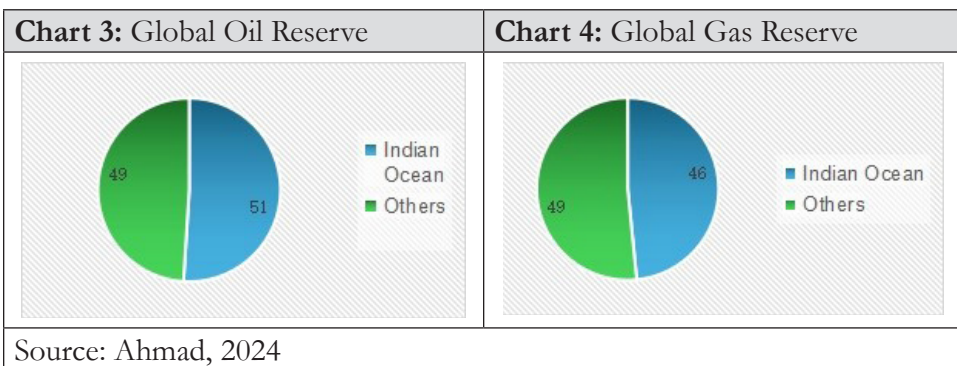
**Non-Living Resources.** These are like salt and brine, potable water by desalination, oil and gas to produce fuel and other valuable minerals. World energy consumption has more than doubled over the past four decades, mostly driven by the developing economies. Increased economic activities demand more energy and nearly 62% is currently supplied from oil and gas. There are significant oil reserves in the Indian Ocean, and 40% of ocean-based oil production is located in the Indian Ocean. In addition to energy reserves, there is potential for deep-sea mining in the Indian Ocean. Oceanic crust is a potential source of metals such as copper, nickel, cobalt, and manganese.

## **Minerals and Hydrocarbons**

**Coastal and Near Shore Minerals.** Coastal dunes, beaches, and near shore areas harbour significant mineral deposits. Heavy minerals and diamonds are carried by fluvial processes and accumulate in coastal regions. Extracting these minerals sustainably is essential for blue economy development.

**Phosphate Minerals.** Phosphates form in place through natural chemical processes in specific coastal areas worldwide. These minerals are valuable for agriculture (as fertilizers) and industrial applications.

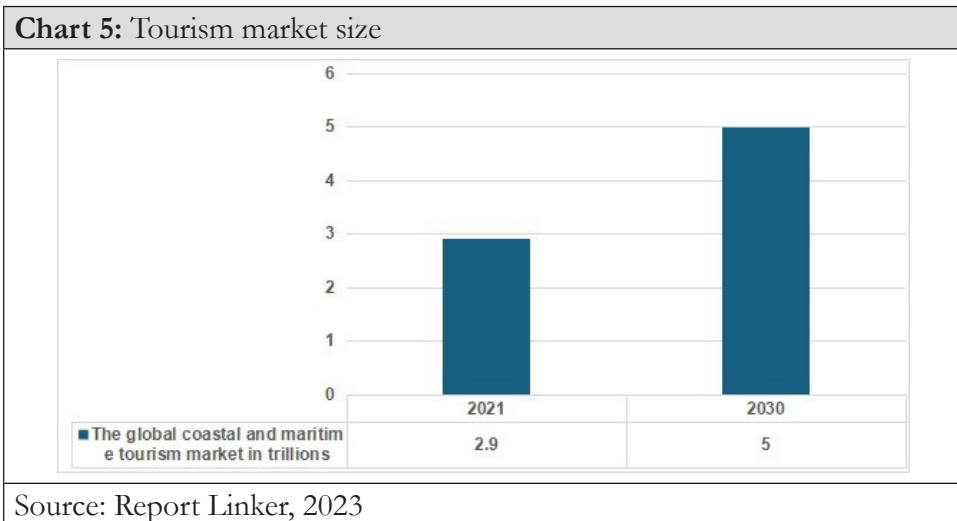
**Marine Hydrocarbons.** The Indian Ocean holds vast reserves of oil and natural gas beneath its depths. Exploration and extraction of hydrocarbons significantly contribute to the blue economy. According to Ahmad (2024) the IOR holds over 50% of global oil reserves (Chart 3) and more than 46% of the world’s proven gas reserves (Chart 4). Bangladesh has resolved the limitation of maritime boundaries in 2011 and 2017 with Myanmar and India respectively. Both the neighbouring countries has successfully identified the hydrocarbon reserves and in the process of exploration, whereas Bangladesh of late conducted open tendering for such effort.



## Recreation and Trade

**Recreational Utilization of Ocean.** This includes coastal and marine tourism in cruise-ship, yacht, floating hotel and restaurant; and also marine sports like surfing, diving, snorkeling, boating, sport fishing, etc. Coastal and ocean-dependent tourism is an important industry for many Indian Ocean countries contributing to economic development. In 2016, global arrivals to Indian Ocean nations reached 1.2 billion, a figure which is projected to rise to 1.4 Billion by 2030. Further, tourism is worth more than US\$1 Billion in GDP per year for over a dozen IORA countries. The IORA Action Plan (2017 – 2021) identified tourism, and specifically cultural exchanges within the Indian Ocean region, as a strategic priority.

**Tourism Development.** The global coastal and maritime tourism market was estimated to be USD 2.9 trillion in 2021. It is projected to expand at a CAGR of 5.7% from 2022 to 2030 (Chart 5), reaching a size of USD 5.0 trillion by 2030 (ReportLinker, 2023). There are opportunities to capture a fair share of this global market of coastal and maritime tourism.



**Use of Ocean in Maritime Trade and Transportation.** This includes trade expansion, fleet expansion, port development, transit and transshipment. Due to geography and increasing economic output, transportation within the Indian Ocean will remain an important part of the Blue Economy. The Indian Ocean is home to many of the world’s most significant shipping lanes, and nearly 100,000 ships traverse this ocean annually.

**Maritime Trade and Shipping.** Enhancing port infrastructure, improving shipping efficiency, and ensuring maritime safety are pivotal for fostering trade and driving economic growth in the IOR. Bangladesh to date contributes only 2% of the seafarers whereas the Philippines supplies 46% of mariners.

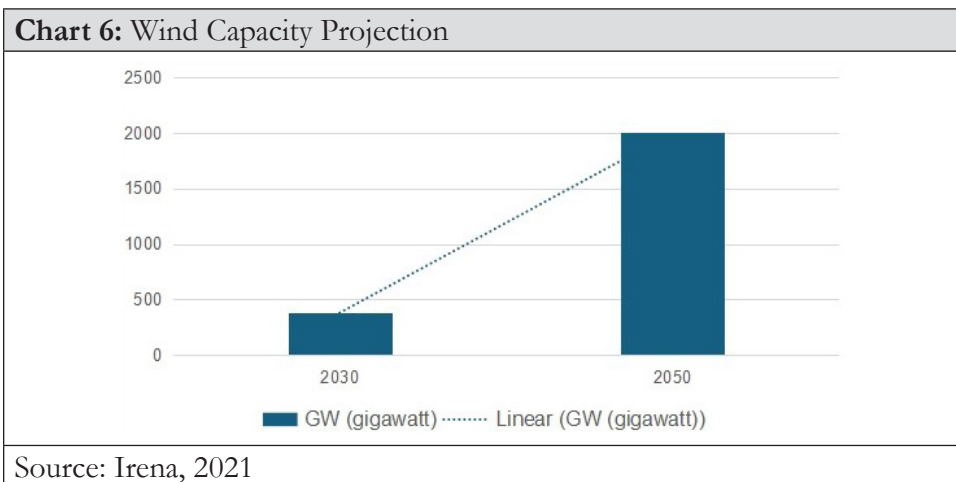
**Port Infrastructure Development.** Investing in world-class port facilities is essential. Modern ports facilitate efficient cargo handling, reduce turnaround times, and enhance connectivity. Developing smart ports with advanced technologies improves the ease of doing business. These ports integrate digital solutions, automate processes, and enhance overall efficiency.

**Economic Impact.** Efficient ports and shipping play a crucial role in trade facilitation, boosting trade volumes. Additionally, maritime activities generate employment opportunities, contributing significantly to wealth creation in littoral cities. Ports serve as integral nodes in the global supply chain, impacting industries and consumers worldwide.

## Energy Production

**Energy Development.** This includes power generation from current, tide, wave and maritime wind; bio-gas and bio-fuel from marine algae. Renewable energy sources may be helpful in tackling the challenges of energy security and global climate change. The renewable energy sources include hydropower, solar, wind, ocean, and geothermal energy. In contrast with the more established oil and gas sector, the wind, wave and tidal energies are embryonic sectors and barely register economically because of the low level of activity.

**Offshore Wind Energy.** Offshore wind farms harness the power of wind over the open sea. They can be installed on fixed foundations or floating platforms. By 2030, global offshore wind capacity is projected to reach 380 GW and by 2050, (Chart 6) it could exceed 2,000 GW (Irena, 2021).



**Ocean Wave Energy.** Wave energy converters capture energy from ocean waves. Although still in the early stages, wave energy has great potential. It can provide a consistent and reliable source of electricity.

**Tidal Energy.** Tidal stream turbines generate electricity from the kinetic energy of tidal currents. Coastal regions with strong tidal flows are ideal for tidal energy projects. Tidal energy is predictable and environmentally friendly.

**Ocean Thermal Energy Conversion (OTEC).** OTEC systems utilize the temperature difference between warm surface water and cold deep water. They produce electricity by evaporating and condensing a working fluid. OTEC can provide continuous power, especially in tropical regions.

**Floating Solar Photovoltaic (PV).** Floating solar panels placed on water bodies maximize land use efficiency. They benefit from natural cooling due to water contact. Floating PV can be integrated with other offshore technologies.

## **Marine Biotechnology**

Marine biotechnology, a captivating field, explores the vastness of the Indian Ocean to unravel novel possibilities. Here is a glimpse of its essence:

**Bioactive Compounds and Pharmaceuticals.** Marine organisms yield unique molecules with potential therapeutic applications. From coral reefs to deep-sea vents, these compounds inspire drug development. Examples include antiviral agents, anticancer drugs, and pain relievers.

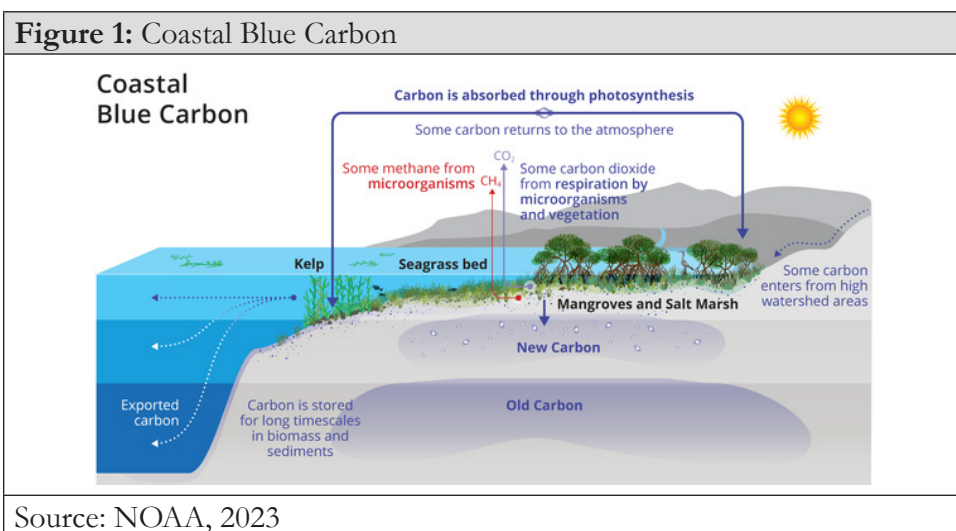
**By-products and Biomaterials.** Marine biotechnology contributes to sustainable materials. Biodegradable plastics, bioadhesives, and wound dressings emerge from oceanic resources. Seaweeds, sponges, and molluscs inspire innovative biomaterials.

**Bioremediation and Biofouling Control.** Marine ecosystems face pollution and invasive species. Bioremediation techniques use microorganisms to clean up oil spills and pollutants. Biofouling management prevents unwanted growth on ship hulls and infrastructure.

**Genomic Exploration and Biodiversity.** Scientists delve into the genomes of marine organisms. Understanding genetic diversity aids conservation and adaptation. The Indian Ocean harbours a treasure trove of genetic information.

## Blue Carbon

Blue carbon refers to carbon captured from the atmosphere and stored in marine and coastal ecosystems, including seagrass meadows, mangroves, and tidal marshes. Despite only covering about 0.5% of the seafloor, these ecosystems store up to 5 times more carbon per area than tropical forests. They also absorb carbon from the atmosphere about 3 times as quickly. See (Figure: 1) of the blue carbon ecosystem (Battle, 2022).



**Co-Benefits to People and Nature.** Blue carbon ecosystems, such as mangroves, sea grasses, and salt marshes, play a multifaceted role. They naturally remove carbon from the atmosphere, enhancing climate change mitigation efforts. Simultaneously, these habitats bolster resilience against climate impacts, preserve biodiversity, ensure food security for coastal communities, and provide crucial protection against erosion and storm damage.

**Global Importance and Urgency.** Worldwide interest and investment in blue carbon are growing. However, these ecosystems are being destroyed rapidly. Without intervention, they could vanish globally within a century. Sustainably managing blue carbon ecosystems offers an immediate and viable way to address climate change, alongside other mitigation measures.

## **Bangladesh`s Potentials in Exploring Marine Resources**

Bangladesh, a South Asian nation known for its vibrant culture and rich history, is blessed with a significant maritime territory. This maritime region includes the Bay of Bengal, which is part of the broader Indian Ocean. The strategic geographic location offers Bangladesh immense potential for marine resource exploration.

**Maritime in Bangladesh's Development Dream.** Bangladesh Maritime Ambition was set on motion just immediately after the birth of the country. The strategic importance of maritime resources for Bangladesh's economic development was recognized and 'The Territorial Waters and Maritime Zones Act 1974' was enacted much before the UNCLOS came into existence. The maritime boundary demarcation was ascertained in 2012 and 2014 with Myanmar and India respectively. It has opened a golden opportunity for Bangladesh to explore and exploit the vast resources in the Bay of Bengal and inspired her to undertake the ideas of 'Blue Economy' in 2014 to fulfill development targets in SDG 14. And for that, bilateral, regional and international cooperation is off course essential making IORA as one of such platforms to extend our national interest within the agreed scopes and principles.

**Maritime Potentials of Bangladesh.** Bangladesh now exercises sovereignty over more than 118,000 square kilometers of maritime territory, including a 200 NM Exclusive Economic Zone (EEZ) and 354 NM of continental shelves. Rich in biodiversity, this area hosts 475 species of finfish, 36 species of shrimp, 16 species of crab, and 165 species of seaweed. Notably, marine waters contribute to 55.48% of the nation's Hilsha production. Despite the Bay of Bengal's bounty, only 15% of its total fish production (4.4 million tons) comes from sea. However, the marine and coastal resources hold substantial economic promise, estimated at up to \$34 billion annually. Presently, the ocean economy contributes \$6.2 billion or three percent to Bangladesh's GDP. Sea routes facilitate 90% of the country's trade, emphasizing its maritime importance.

## **Present Status of Bangladesh in Marine Resources Exploration**

**Blue Economy Aspirations.** The concept of the Blue Economy has gained significant traction in Bangladesh. It emphasizes the sustainable use of ocean resources for economic growth, improved livelihoods, and marine ecosystem health. The government of Bangladesh has adopted a comprehensive Blue Economy policy framework aimed at harnessing the full potential of its marine resources while ensuring environmental sustainability. The survey at Bay of Bengal for oil and gas exploration has been conducted. The upcoming Matarbari Deep Sea Port is likely to be a trade hub, once completed. The feasibility for commercial cultivation of seaweed and mariculture has been carried out. A draft Marine Spatial Plan is also prepared which is at the concerned ministry for approval.

**Strategic Initiatives.** Several strategic initiatives have been launched to promote the Blue Economy. The establishment of the Blue Economy Cell in 2017 under the Ministry of Power, Energy and Mineral Resources is a notable step. However, presently the Blue Economy Cell has been shifted under Cabinet Division. This specialized unit is tasked with coordinating Blue Economy activities, facilitating investment, and promoting research and innovation in marine resource exploration. The survey conducted in Bay of Bengal has discovered a gas reserve of 49 tcf, out of which 32 tcf gas is suitable for exploration. Currently, bidding is ongoing for tender allotment for the gas exploration. Two areas in Bay of Bengal have been declared as Marine Protected Areas such as Saint Martin Island and Swatch of No Ground.

**International Collaboration.** Bangladesh has also sought international collaboration to enhance its Blue Economy efforts. Partnerships with countries like Norway, Japan, and India have been instrumental in technology transfer, capacity building, and joint research initiatives. Participation in regional forums such as the Indian Ocean Rim Association (IORA) and the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) has further bolstered Bangladesh's Blue Economy aspirations.

## KEYNOTE PAPER-2

# FOSTERING COOPERATION IN MARITIME TRADE WITHIN IORA WITH SPECIAL EMPHASIS ON BANGLADESH

### Introduction

The Indian Ocean is a critical artery for global trade, with over half of the world's container traffic and one-third of its bulk cargo passing through its waters. IORA member states occupy key positions along these trade routes, making the association a pivotal platform for facilitating economic cooperation and enhancing maritime connectivity among member countries. Member countries increasingly recognize the benefits of cooperation for trading with neighbouring states, leading to the development and supply networks.

### Significance of Cooperation in Enhancing Maritime Trade with Special Emphasis on Bangladesh

**Collective Benefits of Cooperation.** IORA is made up of a diverse group of countries spread over three continents. Cooperation among IORA member states is essential for promoting maritime trade in the region, some of which are mentioned below:

**Enhancing Connectivity.** Collaboration among IORA member states can lead to the development of efficient and interconnected maritime infrastructure, including ports, shipping routes, and logistics networks. This can facilitate smoother trade flows and reduce transportation costs, ultimately boosting economic growth in the region.

**Trade Facilitation.** By working together, member states can harmonize trade regulations, customs procedures, and standards, making it easier for businesses to engage in cross-border trade. This can streamline the trade process, reduce bureaucratic hurdles, and increase the competitiveness of the region in the global market.

**Security and Stability.** Cooperation in maritime trade can also contribute to enhancing security measures and ensuring the safety of sea routes. By sharing information, intelligence, and resources, member states can combat common threats such as piracy, illegal fishing, and maritime terrorism, thereby safeguarding the stability of maritime trade in the Indian Ocean region.

**Sustainable Development.** Collaborative efforts in promoting maritime trade can also focus on sustainable practices, environmental protection, and the preservation of marine resources. By working together to address common challenges such as pollution and overfishing, member states can ensure the long-term viability of maritime trade while promoting sustainable development goals.

**Knowledge Sharing.** Sharing best practices, technology, and information related to maritime trade can enhance the efficiency and competitiveness of businesses operating within the region. This exchange of knowledge can lead to innovation, improved productivity, and ultimately, economic growth for all involved.

**Infrastructure Development.** Cooperation in maritime trade can spur investments in infrastructure development, such as the construction of modern ports, shipping lanes, and transportation networks. This not only facilitates smoother trade operations but also attracts foreign investments and boosts economic development in the region.

**Economic Benefits of Cooperation.** Enhanced maritime trade within the member states of IORA can bring about significant economic benefits for all member states, including Bangladesh. Some of the potential economic benefits include:

**Increased Trade Volume.** Improved maritime trade infrastructure and cooperation can lead to an increase in trade volume among member states. This can result in higher export and import activities, boosting economic growth and creating new business opportunities for industries in Bangladesh and other member states.

**Economic Diversification.** Enhanced maritime trade allows member states to diversify their economies by tapping into new markets and industries.

Bangladesh, for example, can expand its export base beyond traditional sectors like textiles and garments, leading to a more resilient and diversified economy.

**Job Creation.** The growth of maritime trade can create new job opportunities in sectors such as shipping, logistics, and port operations. This can help reduce unemployment rates and improve livelihoods for individuals in Bangladesh and other member states.

**Cost Efficiency.** Collaborative efforts in maritime trade can lead to cost efficiencies through economies of scale, shared resources, and streamlined processes. This can lower transportation costs, reduce trade barriers, and improve the overall competitiveness of businesses in Bangladesh and other member states.

**Market Access.** Through cooperation, member states can negotiate trade agreements and partnerships that provide better market access for their goods and services. This can open up new opportunities for businesses to expand their reach and increase trade volumes with other IORA member states and beyond.

**Importance of Bangladesh in Maritime Trade.** Bangladesh, located in South Asia, holds a strategic geographical position that plays a crucial role in maritime trade within the region. Situated at the crossroads of South and Southeast Asia, Bangladesh has access to the Bay of Bengal, making it a key player in regional trade and connectivity. The country's extensive coastline and numerous river systems provide ample opportunities for maritime transportation and trade activities.

## **Challenges and Opportunities for Bangladesh**

Bangladesh's current maritime trade situation is characterized by both opportunities and challenges. As a country with a long coastline along the Bay of Bengal, Bangladesh has significant potential for maritime trade and economic growth. To get the benefits, Bangladesh has to address the challenges of infrastructures development, regulatory issues, security and environmental sustainability. By fostering cooperation with member states, Bangladesh can play a crucial role in facilitating international trade and commerce.

### Trends/Present Status of Maritime Trade in the Indian Ocean Region.

The member states of IORA varies in their economies. According to the World Bank’s classification of countries for 2024, the grouping consists of six high-income economies (Australia, France, Oman, Seychelles, Singapore, and UAE); seven upper middle-income economies (Iran, Indonesia, Malaysia, Maldives, Mauritius, South Africa and Thailand); six lower middle income economies (Bangladesh, Comoros, India, , Kenya, Sri Lanka and Tanzania); and four low-income economies (Madagascar, Mozambique, Somalia, and Yemen).

**GDP in IORA Member States.** In 2017, the Gross Domestic Product (GDP) (at 2010 constant US\$) for the whole IORA region reached US\$ 8.19 trillion. In 2017 India, Australia, and Indonesia were the three biggest economies.

**Figure 1: GDP in IORA member states in billion US\$ (for selected years)**

Member State	1996	1999	2002	2005	2008	2011	2014	2017	2023
Australia	720	820	900	1000	1100	1200	1300	1400	1790
Bangladesh	55	64	73	86	100	120	150	180	455
India	700	840	950	1200	1400	1800	2100	2700	3940
Indonesia	470	430	490	570	680	800	940	1100	1480
Iran	290	300	340	400	460	500	480	560	464
Malaysia	140	150	170	200	240	270	310	360	445
Singapore	110	130	140	170	210	250	290	320	525
South Africa	240	260	280	320	370	390	410	430	405
Thailand	220	210	240	280	320	340	380	420	548
UAE	160	180	210	260	300	310	360	390	527
Total	3243	3537	3963	4677	5408	6236	7021	8190	14352

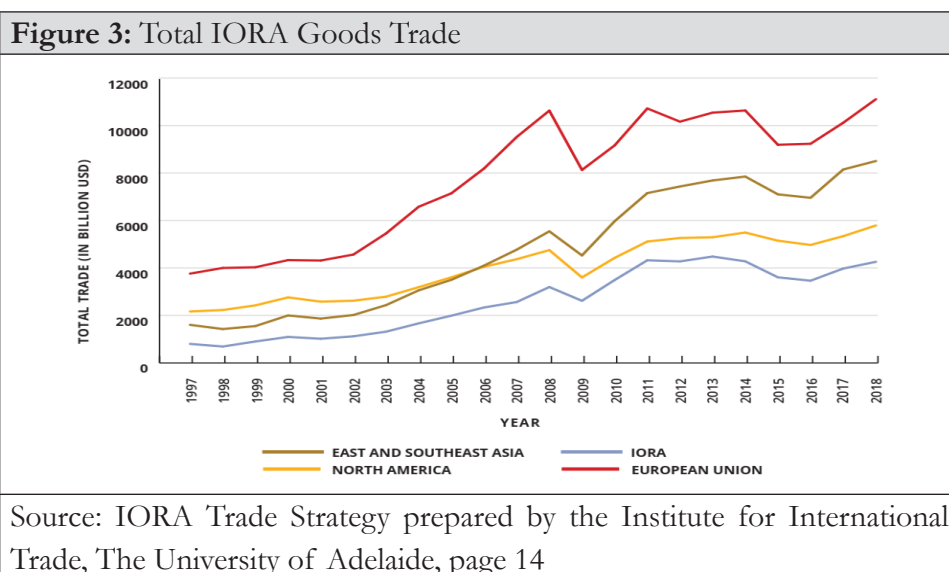
Source: Study Team

Global Growth Rate vs IORA Growth Rate. Between 1997 and 2017, average annual economic growth rates were above global annual growth rates (Draper, 2020).

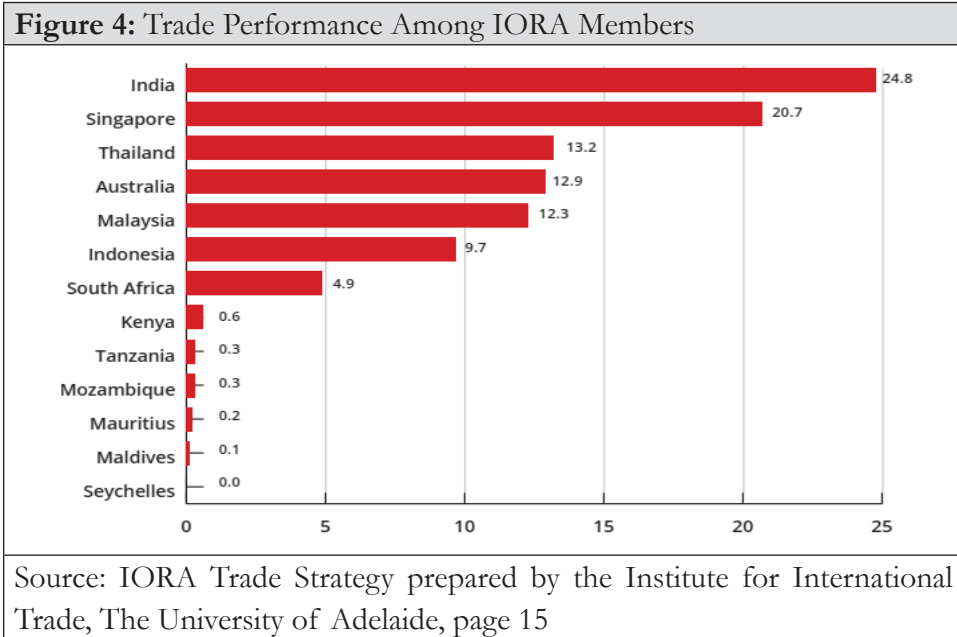
Figure 2: Global Growth Rate vs IORA Growth Rate						
	1997	2002	2007	2013	2018	CAGR 2002-2018
A. TOTAL TRADE, IN US\$ BILLION						
World	9,768.4	12,556.3	26,805.5	36,096.7	36,662.7	8.6%
IORA	806.2	1,126.1	2,574.2	4,497.7	4,274.7	11%
East and Southeast Asia	1,610.7	2,026.6	4,787.2	7,712.6	8,534.6	11%
EU25	3,775.9	4,581.3	9,548.8	10,578.6	11,146.7	7.0%
North America	2,176.3	2,630.4	4,385.8	5,312.8	5,810.8	6.3%

Source: IORA Trade Strategy prepared by the Institute for International Trade, The University of Adelaide, page 39

**Total IORA Goods Trade.** Since IORA's formal establishment in 1997, member states' total goods trade has almost quintupled, from US\$ 806 billion to US\$ 4,275 billion in an increase of 10.9% per year. Compared to other regions, IORA trade has grown as fast as East and Southeast Asia (10.9% per year) but faster than the EU (7% per year), and North America (6.3% per year).

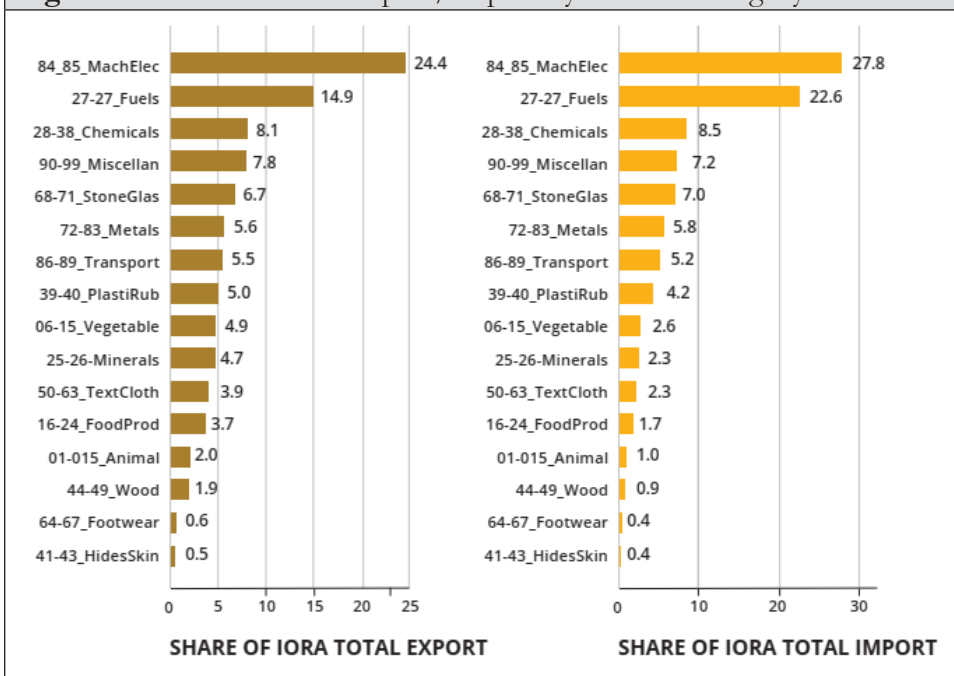


**Trade Performance among IORA Members.** The region’s trade is dominated by a small group of countries. India is the largest trading country in IORA with a 24.8% share of total IORA trade, followed by Singapore, Thailand, Australia and Malaysia. Trade from these five economies represents nearly 85% of IORA members’ total trade (Draper, 2020)



**Trade Structure of IORA Members:** The trade structure of IORA members is quite concentrated. About 39.3% of exports to the world comprise machinery and electronic products, and fuels. These two product groups also represent about half of IORA members’ imports. The other major traded product categories include chemicals, stone and glass, metals, transportation, plastics and rubber, vegetables, and minerals. The figure conceals substantial variation at the member state level, it indicates that trade diversification strategies are an important matter for IORA members.

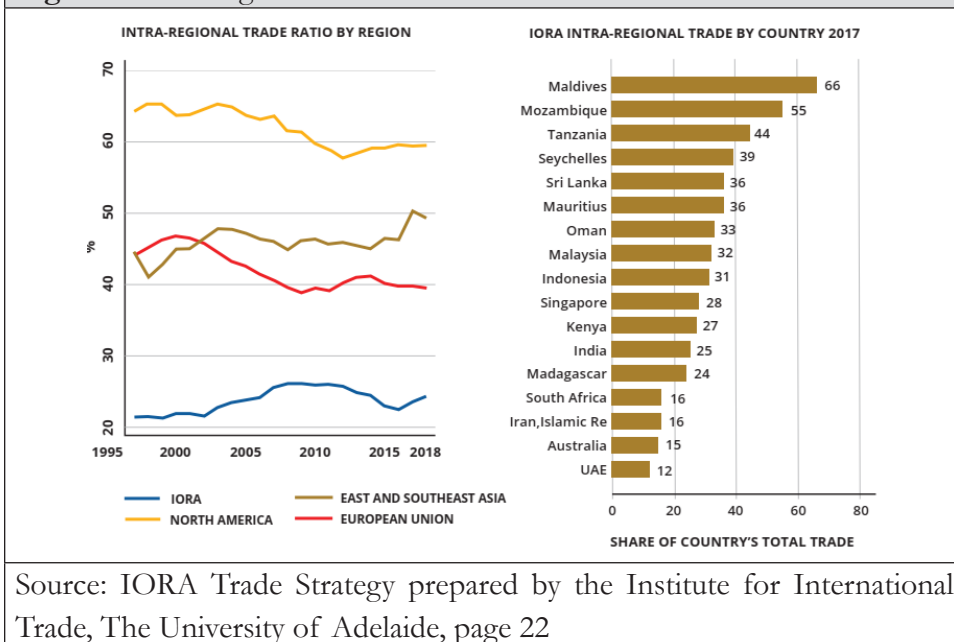
**Figure 5: Share of IORA Export/Import by Product Category**



Source: IORA Trade Strategy prepared by the Institute for International Trade, The University of Adelaide, page 17

**Intra-regional Goods Trade.** Intra-regional trade within IORA has a similar trend to the region's total trade with the world. The total volume of exports and imports has increased almost six fold from US\$ 171.8 billion in 1997 to US\$ 954.8 billion in 2018, amounting to approximately 9 per cent annual growth. Despite this, the intensity of intra-regional trade remains significantly below the comparator regions. The intra-IORA trade ratio stood at 21% in 1997. Twenty-one years later the ratio had risen slightly to 24.2% in 2018, although sustained growth is not evident. The current intra-IORA trade ratio is 35% and 15% lower than corresponding levels in the EU (59.4%) and North America (39.4%), respectively. (Draper, 2020)

**Figure 6: Intra-regional Goods Trade of IORA**



Source: IORA Trade Strategy prepared by the Institute for International Trade, The University of Adelaide, page 22

## Existing Collaboration Mechanisms among IORA Member States

**IORA Action Plan.** The IORA has endorsed its 1st action plan and the second Action Plan (2022-2027) is in preparation stage. The action plan serves as a strategic framework for member states of the IORA to collaborate and address key priority areas for the region’s development. The Action Plan focuses on enhancing cooperation in various sectors, with a particular emphasis on maritime safety and security, trade and investment facilitation, and sustainable development.

**Maritime Safety and Security.** The Action Plan emphasizes the importance of ensuring safe and secure maritime routes within the Indian Ocean region. It aims to strengthen cooperation among member states in combating maritime threats such as piracy, illegal fishing, and environmental hazards.

**Trade and Investment Facilitation.** The Action Plan seeks to promote trade and investment opportunities within the Indian Ocean region by reducing barriers and enhancing connectivity. It focuses on streamlining customs

procedures, improving infrastructure, and facilitating cross-border trade to boost economic growth and regional integration.

**Sustainable Development.** The Action Plan underscores the importance of sustainable development practices to ensure the long-term prosperity of the region. It aims to promote environmental conservation, resource management, and social inclusivity in economic development initiatives.

**Bilateral or Multilateral Agreements among Member States.** These are few examples of the bilateral or multilateral agreements within IORA that aim to enhance cooperation in areas such as maritime trade, environmental protection, and cultural exchange. These agreements demonstrate the commitment of member states to collaborate and address common challenges for the mutual benefit of the region.

**Indian Ocean Tuna Commission (IOTC).** A multilateral agreement among IORA member states aimed at promoting sustainable management of tuna and tuna-like species in the Indian Ocean. This agreement focuses on conservation measures, data sharing, and cooperation in fisheries management to ensure the long-term sustainability of tuna stocks.

**Indian Ocean Naval Symposium (IONS).** A multilateral maritime security initiative that brings together navies from IORA member states to enhance cooperation in areas such as maritime trade security, counter-piracy efforts, and disaster response.

**Indian Ocean Rim Academic Group (IORAG).** A multilateral platform for academic and research collaboration among IORA member states. It facilitates knowledge exchange, joint research projects, and academic partnerships to promote innovation, education, and cultural exchange within the region.

**Indian Ocean Tourism Organization (IOTO).** A multilateral initiative aimed at promoting sustainable tourism development and cultural exchange among IORA member states. IOTO focuses on enhancing cooperation in tourism infrastructure, marketing strategies, and environmental protection to boost the tourism industry in the Indian Ocean region.

## Opportunities and Challenges in Fostering Enhanced Cooperation in IORA

### Opportunities

The IORA member states aim to promote sustainable growth and balanced development of the region. IORA identifies several opportunity areas of cooperation for trade and investment, driven by the region's strategic location, diverse economies, and rich natural resources. Key opportunity areas include:

- **Maritime and Shipping.** The Indian Ocean is a major route for global trade, connecting the Middle East, Africa, South Asia, and Southeast Asia. Investments in port infrastructure, logistics, and shipping services are crucial to facilitate trade between and among member states.
- **Blue Economy.** Includes sustainable fishing, aquaculture, marine biotechnology, and ocean energy, represents a growing sector with significant potential for investment in sustainable practices and technologies.
- **Energy Sector.** The Energy sector has vast potential for renewable energy, including solar, wind, and hydropower, with countries like India, Australia, and South Africa investing heavily in renewable energy projects. Several IORA member states, including Indonesia, Malaysia, and Mozambique, have substantial oil and gas reserves, offering opportunities for exploration and production activities.
- **Tourism Sector.** Tourism presents opportunities for investment in tourism infrastructure and services, especially in eco-tourism and cultural tourism, leveraging the diverse natural landscapes and rich cultural heritage of the IORA countries. Coastal and marine tourism, including beach resorts and cruise tourism, is also expanding.
- **Agriculture and Agro-processing.** Presents significant opportunities for investment, particularly in IORA member countries with vast agricultural potential such as India and Kenya. Investments in modern farming techniques, agro-processing, and supply chain improvements can enhance food security and increase exports.

- **Manufacturing and Industrial Development.** Is facilitated by many IORA countries developing Industrial Zones and Special Economic Zones (SEZs) to attract foreign investment, offering incentives such as tax breaks and infrastructure support. Diversification of industries, including textiles, electronics, automotive, and pharmaceuticals, is being promoted by several member states. The Bangladesh Special Economic Zone (BSEZ), in collaboration with Japan's Sumitomo Corporation, offers favourable policies and infrastructure to attract international manufacturers, fostering economic growth and technology transfer in Bangladesh.
- **Information and Communication Technology (ICT) Sector.** The sector is experiencing significant potential for investment, particularly in digital infrastructure, including broadband networks, data centres, and smart city projects.
- **Healthcare and Pharmaceuticals.** Includes investment in healthcare infrastructure to improve access and quality of medical services. The pharmaceutical manufacturing sector, particularly the production of generic medicines and vaccines, offers substantial opportunities.
- **Education and Skills Development.** This area is increasingly important, with a growing demand for higher education and vocational training to meet the needs of evolving industries. Investment in EdTech solutions and online learning platforms was accelerated by the COVID-19 pandemic.
- **Infrastructure Development.** An area crucial for enhancing transportation and logistics, including improving road, rail, and air connectivity within and between IORA member states. Urban development, including housing, water supply, and sanitation, is also essential to accommodate growing urban populations.
- **Environmental Sustainability.** The area is gaining prominence, with investments in climate resilience projects and sustainable resource management becoming imperative to address the impacts of climate change.

## Challenges

Though these sectors collectively offer a diverse range of opportunities for trade and investment, it has some challenges as well. Addressing these challenges will require proactive engagement, diplomatic efforts, capacity-building initiatives, and a commitment to shared goals and values among member states.

- **Diverse Priorities.** Member states may have diverse priorities, interests, and levels of development, which can pose challenges in aligning goals and strategies for cooperation.
- **Political Differences.** Political differences, historical tensions, and territorial disputes among member states can hinder effective collaboration and decision-making within IORA.
- **Resource Constraints.** Limited resources, funding, and capacity within member states may impede the implementation of cooperative initiatives and projects.
- **Coordination and Communication.** Challenges in coordination, communication, and decision-making processes can slow down progress and hinder the effectiveness of cooperative efforts within IORA.
- **External Influences.** External factors, such as geopolitical dynamics, global economic trends, and security threats, can impact the ability of member states to engage in enhanced cooperation within IORA.

## Case Studies on Effective Cooperation within Member States

**Trilateral Maritime Security Cooperation Initiative between India, Sri Lanka, and Maldives:** The Trilateral Maritime Security Co-operation Initiative was launched by India, Sri Lanka, and Maldives at Male in October 2011 to enhance maritime security in the neighbourhood. A fresh impetus has been given during the visit of the PM of India to Mauritius and Seychelles in March 2015 to revitalize and expand this construct given the growing maritime security challenges. (Ghosh, P. K. 2014).

## **Trilateral Coordination Patrol between Indonesia, Malaysia, and Philippines:**

As per the Maritime Cooperation Agreement, Indonesia, Malaysia, and the Philippines are to endeavour for cooperation on security in the Celebes and Sulu seas, prevent intervention by outside nations, and forge trilateral maritime security agreements. In the Strait of Malacca, Singapore, Malaysia, Indonesia, and Thailand have managed to coordinate aerial and naval patrols, intelligence sharing, and incident management to safeguard the choke point. The three nations have also launched trilateral air patrol operations recently to fight Islamic State militants in the region. (Gusty Da Costa, 2023).

**Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia (ReCAAP):** The Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia (ReCAAP) is the first regional government-to-government agreement established 04 September 2006 to promote and enhance cooperation against piracy and armed robbery in Asia. (ReCAAP, 2017).

**Australia-Indonesia Partnership:** Australia and Indonesia have long running understanding and agreement for maritime cooperation! The cooperation has blossomed since 2005 and in culminated as a Joint Declaration on Maritime Cooperation, which was signed 26 February 2017. It aspires for a peaceful, secure and stable maritime domain in which people, commerce and the environment can flourish .

## KEYNOTE PAPER-3

# ENHANCING MARITIME SECURITY AND SAFETY THROUGH IORA

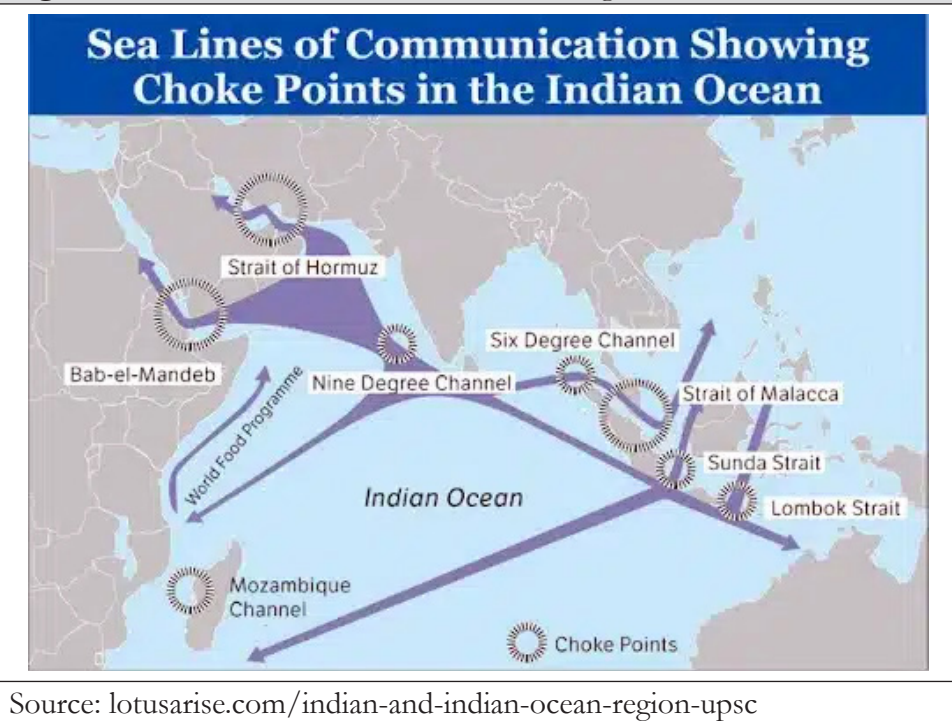
Indian Ocean Region has tremendous economic potential. Blue economy of the region, if properly harnessed can lead to vast improvement in the living standards by infusing growth, lending prosperity and ensuring sustainability. For any economic activity to be undertaken unhindered, the security of the ecosystem and safety of all those involved is paramount. Indeed, on security hinges the viability and success of all economic activity. To that extent maritime security and safety in the IOR are critically important for the region.

### Overview of Security and Safety in the IOR

**Maritime Security Environment in IOR.** The Indian Ocean region faces many traditional and non-traditional maritime safety and security (MSS) challenges including piracy, armed robberies at sea, terrorism, illegal trafficking of humans, drugs, weapons and wildlife, crimes in the fisheries sector including illegal, unreported and unregulated fishing, degradation of ocean health including pollution from land and vessels, unlawful exploitation of marine resources, climate change with its related repercussions to list from the IORA web site.

**Geographical Peculiarities and Choke Points.** Geography of the Indian ocean is such that the trade routes and SLOCs pass through many choke points. The figure below depicts the SLOCs and the choke points are all clearly discernible. Strait of Hormuz in the west and Strait of Malacca in the East being the most prominent ones, it also has others like the Mozambique channel, Lombok strait, Sunda Strait, Bab-el-Mandeb etc. Confluence of the trade traffic through these straits poses its own security and safety challenges, which are all too obvious.

**Figure 1.** Sea Lines of Communication Showing Choke Points in the IOR



**Maritime Piracy and Armed Robbery.** Piracy imposes high costs on the global economy. It is estimated that piracy accounts for \$7 billion to \$12 billion USD loss per year. In 2009–2014, the hijacking of tugboats and barges was dominant; in 2011–2017, the theft of oil cargo from tankers became more prevalent; and in 2016–2021, the abduction of crew for ransom became piracy target. The 2023 International Maritime Bureau (IMB) annual report recorded 120 incidents of maritime piracy and armed robbery against ships in 2023 in various countries and subregions of IOR. Data for first six months of the year during the period 2019-2023 is shown in Tables below. In 2023, over half the incidents have taken place in the IOR. The on and off trend of piracy off Somalian waters and West Indian Ocean has led to widespread concern amongst nations resulting in heightened cost of insurance and, therefore, of trade besides life threatening episodes for the operating crew.

**Table 1.** Locations of Actual and Attempted Incidents: Jan-Jun (2019-2023)

	<b>Location</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>
S E ASIA	Indonesia	11	15	5	7	7
	Malaysia	3	2	1	1	1
	Philippines	3	4	5	2	5
	Singapore Straits		11	16	16	20
	Thailand		1			
EAST ASIA	China	3				
	Vietnam		2	1		2
INDIAN SUB CONTINENT	Bangladesh		2		4	1
	India	2	5		2	2
AMERICAS	Brazil	2	2	1	4	1
	Colombia	3	1	4		2
	Dominican Republic	1				
	Ecuador	2	3	1		1
	Guyana				1	
	Haiti		3	1		
	Mexico		4			
	Panama	1				1
	Peru	4	4	9	7	8
	Venezuela	6			1	
AFRICA	Angola		4	3	4	2
	Benin	1	6	2		
	Cameroon	1		1		3
	Democratic Republic of Congo	1		1	1	
	Democratic Republic of Sao Tome & Principe		1	5		
	Equatorial Guinea	2	2			
	Gabon		2	2		1
	Ghana	3	1	3	5	3
	Guinea	1	1			1
	Gulf of Aden			1		
	Ivory Coast	1	2		1	2
	Liberia	1			1	

	<b>Location</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>
	Morocco	1				
	Mozambique	1	3	1		
	Nigeria	21	14	4		1
	South Africa				1	
	The Congo		1	1		1
	Togo	3	1			
REST OF WORLD	Iraq		1			
	Sub Total	78	98	68	58	65
	<b>Total at year end</b>	<b>162</b>	<b>195</b>	<b>132</b>	<b>115</b>	

<b>Region</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
East Asia	07	05	05	01	02
India East and west coast	22	06	17	06	15
South East Asia	60	53	61	21	58

**Maritime Terrorism.** Maritime terrorism by all accounts is more sinister than any other maritime security challenge. By definition, it implies terrorism at sea or from the sea examples being the suicidal attack on USS Cole and French Tanker Limburg in the Gulf of Aden in 2000 and 2002 respectively. Amongst many such lethal atrocities the 2008 terror attack on Mumbai is a grim reminder of nations’ vulnerability to such attacks. The terror attack by Tehrik-i-Taliban in collaboration with Al-Qaeda at Pakistan Naval Dockyard Karachi to seize the frigate PNS Zulfiqar is another. Maritime terrorism is taking a whole new meaning with tacit support from states. The Houthi rebels are using sophisticated missiles and platforms including UAVs and helicopters. Distinct possibility exists of targeting the internet fiber optics in the Red Sea which could jeopardize 17% of the world’s internet traffic.

**Natural Disasters.** The IOR is a geographically disaster-prone area but ironically has one of the least developed coordination arrangements for disaster response. Tropical cyclones have caused an estimated 1.9 million

deaths during the past two centuries. During 1980–2000, an average of 11,800 deaths per year were attributed to cyclones. The two deadliest cyclones in the IOR produced catastrophic loss of life: 300,000 deaths and 138,000 deaths in the Bangladesh cyclones of 1970 and 1991 respectively. In 2004 Indian Ocean Tsunami killed nearly 300,000 and affected over two million people in twelve Asian states. (U.S. Geological Survey, 2005).

**Man Made Disasters.** The table below depicts some of the recent ship related accidents. There are many such which need to be tackled to minimise the damage to oceanic environment and mitigate the resultant human sufferings.

Table 3: Recent Oil Spill and Fire Incident in IOR				
Date	Vessel	Incident	Amount of Oil Spilled (Tons)	Remarks
July 2020	MV Wakashio (Japan)	Mauritius coast	1000	France, India & Australia provided assistance.
September 2020	MT New Diamond	40 miles off Sri Lanka	270,000	Sri Lankan and Indian navy and coast guards took more than a week to put out the fire.
May 2021	X-Press Pearl	Near Colombo	Burnt all oil	After burning for 12 days, the vessel sank
Source: www.oilspillresponse.com				

It is evident that IOR has multitude of threats and disasters, none of which understand interstate boundaries. In fact most of the security challenges thrive precisely because of lack of coordination and collaboration amongst the affected states. Our best chance, therefore, lies in a joint response based on coherent understanding of the challenges, alignment of thought and ideas, evolution of joint SOPs, interoperable systems and giving a little more consideration to multinational problems by accommodating and readjusting little bit of national priorities. IORA has the potential to be just the platform to enable all this.

**Role of IORA in Promoting Maritime Safety and Security.** Alfred Thayer Mahan, is often quoted for saying in 1897, “Whoever controls the Indian Ocean will dominate Asia. This ocean will be the key to the seven seas in the 21st Century. The destiny of the world will be decided on its waters”. Who

better to control the Indian Ocean than the dwellers of this ocean, the resident powers? As elucidated earlier, IORA with its pan IOR presence can help achieve this novel objective. A point to ponder over is that there is no dearth of organisations and groupings: regional, sub-regional, multilateral, minilateral and what have you, in the region. There is GCC, SAARC, BIMSTEC, ReCAAP, DCoC, ASEAN and many others but when a ship gets hijacked, which is none too irregular these days, there is no clearly demarcated set of actions for most of the IOR littorals who cannot afford their own protection. IORA can fill this role amongst many other potential areas of concern.

**Security as a Priority Area of IORA.** IORA has acknowledged the presence of various non-traditional security challenges in the IO including piracy, armed robberies at sea, terrorism, human trafficking, irregular movement of persons, drugs trafficking etc. and aims at building upon existing national, regional and multilateral measures to support a more effective utilisation of resources for enhanced cross-border co-operation and sharing of knowledge, experiences and best practices to secure the Indian Ocean as an ocean of peace strengthening maritime cooperation for a peaceful, stable, and prosperous region. Since the inclusion of maritime security as a focal area, IORA has held multiple meetings and seminars, focusing on non-traditional security issues and promoting international collaboration in security and governance in order to address these issues effectively. Among the various initiatives undertaken by IORA, the 'IORA Working Group on MSS' (WGMSS), and its flagship initiative, the Indian Ocean Dialogue stand out as key endeavours aimed at tackling the challenges associated with maritime crime in the region. Maritime Safety and Security is one of the six priority areas for IORA. This involves promoting MSS in the Indian Ocean Region through effective coordination between Member States and relevant international organisations for sharing of expertise and resources, strengthening regional cooperation to address Trans Boundary challenges, and ensure freedom of navigation in accordance with International Law, including UNCLOS, while ensuring collaboration across IORA Working Groups on common areas of interest.

**Thematic Areas of WGMSS.** The four thematic areas of WGMSS include Search and Rescue, maritime crime, maritime partnership and information sharing.

**Objectives of WGMSS.** The three objectives within which are included a host of sub-objectives are:

- Building the foundation for a collaborative IORA MSS framework based on the respective needs and priorities of IORA's 23 Member States.
- Establishing an integrated policy approach on MSS, including through capability enhancement and capacity building.
- Establishing a coordinated regional vision for MSS in IORA to address existing and emerging issues.

**Forum to Discuss and Address Emerging Security Threats.** In 2013, the IORA held its first ever Indian Ocean Dialogue (IOD), a stand-alone Track 1.5 discussion on maritime security and safety to enable open and free flowing debate by IORA Member States. This is now an important fixture in the IORA's annual calendar and provides a platform for the Member States to debate-discuss maritime security and safety issues concerning the region. Indeed, in recent times, ensuring the safety and security on the sea has become the topmost priority of IORA. In October 2015 at the 15th COM of IORA, a maritime declaration was adopted which highlighted the need for greater coordination and cooperation among search and rescue services in the Indian Ocean region. Subsequently, it resulted into the signing of an MoU on Search and Rescue Cooperation to expand the channels of communication and cooperation among the search and rescue agencies of the member states. Effort towards SAR has clearly been a success story of IORA.

**Real Time Sharing of Information in Maritime Domain.** One of the objectives of IORA is to facilitate information sharing amongst member countries. An initiative in this regard is the planned MoU with Information Fusion Centre-Indian Ocean Region (IFC-IOR), New Delhi. It has been included as a part of Second Action Plan (2022-2027). WGMSS is expected to take up the issue with India for finalising the MoU. Depending on the exact terms and conditions of the MoU, member countries could get white shipping information of the IOR in real time. Besides, member states may establish their own IFC and remain interconnected for sharing real time information.

This will bolster security and safety by enabling quickest response in case of contingencies.

**Bangladesh's Role in Enhancing Maritime Safety and Security.** Generally speaking, Bangladesh has played a fairly constructive and positive role in the IORA functioning. In the Dhaka declaration of 2019, IORA members expressed their determination to combat the global menace of marine pollution which inflicts great disruption on marine ecosystems and causes irreversible damage to marine life. Document reflected the concern of members about the emerging threats arising from human acts that are placing oceanic biodiversity and marine resources into jeopardy such as overexploitation of resources, ocean acidification, increase in marine plastics debris and nutrient pollution, illegal, unreported and unregulated (IUU) fishing, over fishing, destructive fishing, drug and human trafficking by sea, maritime crime and terrorism, illegal mining and the impacts of global climate change. Inclusion of such safety and security related concerns was an act of great foresight by Bangladesh.

**Bangladesh as a Pivot Player.** Professor Peter Draper, who has written extensively on IORA, talks about a few important players within the sub regions of the regional grouping. Moving from East to West, he mentions Singapore, Malaysia, Indonesia and Thailand in the ASEAN region, India and Bangladesh in the South Asian region and South Africa followed by UAE and Kenya in the Western extremity of the org to take on greater responsibility and role for effective trade enhancements. I would add that the same applies to contribution towards evolving, sustaining and maintaining safe and secure posture in the region. Bangladesh has taken on its responsibilities and delivered on them, both as part of joint effort and contribution in individual capacity. HADR effort provided by Bangladesh is shown in table 4.

<b>Table 4: Bangladesh's HADR During Cyclone, Tsunami and Covid</b>				
Serial No	Ship	Country	Year	Support
1.	TURAG	Sri Lanka	2005	Relief and Medical campaign
2.	SANGU	Maldives	2005	Relief and Medical campaign
3.	SOMUDRA JOY	Philippines	2013	Relief goods
4.	SOMUDRA JOY	Maldives	2014	Relief goods and essentials
5.	BANGABANDHU	Sri Lanka	2016	Relief goods and water plants
6.	SOMUDRA JOY	Maldives	2020	Covid Medical Team
Source: Bangladesh Navy				

**Search and Rescue Exercise.** IORA members are entrusted with the responsibility of conducting exercises, seminars, workshops etc. on topics and issues of common interest and mutual benefit. IORA Search and Rescue Exercise, 2022 was hosted by Seychelles and Bangladesh with Australian support.

**IORA's Outlook on Indo Pacific.** IORA's outlook on Indo Pacific was promulgated during Bangladesh's chair. It is a document specifying many of the tenets pertaining to maritime safety and security, more prominently freedom of navigation over ocean areas and overflights.

**Effectiveness of IORA.** There have been a number of seminars, meetings, workshops, training sessions etc. under the aegis of IORA towards broad ambit of Maritime Safety and Security. However, notwithstanding the persistent convening of meetings and the formulation of work plans, the working group has yet to achieve substantial growth in a pragmatic manner. With respect to maritime security, it is often cited that IORA can perhaps establish something on the lines of EUNAVFOR (European Union Naval Force) or Operation 'Sea Guardian' by NATO or Djibouti Code of Conduct. Progress in that direction remains to be seen.

## RECOMMENDATIONS AND CONCLUSION

**Recommendations to Make IORA Effective, Responsive and Responsible.** A comprehensive approach that integrates governance reforms, capacity building, stakeholder engagement, and strategic planning is essential to enhance the effectiveness, responsiveness, and responsibility of the Indian Ocean Rim Association (IORA). Here are recommendations across key areas:

- **Effective Secretariat.** For better implementation of the decision taken by IORA, it needs to have a strong secretariat like EU and ASEAN with effective organogram having professional work force. It should have sufficient financial resources to pursue the priority areas and targets. IORA should enhance efforts to address the funding limitations through rational, justified member contributions, diversify funding sources, improved fund raising strategies and efficient financial management practices.
- **Consensus on Common Interests.** IORA should prioritize the common interests and bypass the conflicting areas of member countries for making decisions effectively, which will contribute to the successful implementation of its goals and objectives. It should advocate for the harmonization of policies and regulations among member countries to create a conducive environment for sustainable development initiatives.
- **Subscription System.** At present all member states pay the same subscription amount without considering the economic capabilities of the member state. A mechanism for equitable contribution system based on economic capabilities of member states to ensure fair and sustainable funding without over burdening smaller economies is needed.
- **Enhanced Maritime Security Cooperation.** Enhanced maritime security cooperation is significant to encounter the future threats of piracy, terrorism and illegal fishing, where IORA members can conduct joint naval exercises to enhance interoperability and member states may join forces through joint patrols, information sharing and capacity-building initiatives.
- **Strengthening Regional Cooperation.** IORA can work with other organizations like ASEAN and BIMSTEC on maritime security initiatives

to address common challenges and promote sustainable development. ASEAN, BIMSTEC and IORA can collaborate to enhance regional trade and investment, leveraging their respective economic communities and agreement.

- **Data and Information Sharing.** Development of a common maritime domain information sharing grid is needed for effective information sharing. We can take the example of Information Fusion Centre (IFC) in Singapore, which facilitate real time data and information sharing among regional navies for enhancing safety and security through Indian Ocean region.
- **Technology and Knowledge Sharing.** Advanced technologies such as satellite surveillance, big data analytics, and artificial intelligence can be shared to enhance maritime security, environmental monitoring, disaster management and sustainable management of marine and coastal resources.
- **Capable Working Group for Harnessing the Area of Cooperation and Benefits.** A capable working group of experts and representatives from member states can address shared challenges and harness opportunities for sustainable development and regional security. The working group should identify the strength and opportunities of each member and dialogue partners and also identify the feasibility of other countries to harness the mutual benefits.
- **Evaluation and Monitoring.** IORA should have opportunity to measure its output and out comes in regular basis after completing the action plan for future improvement and lesson learning. Assessment report of the Action Plan (2017-2021) needs to be considered in the preparation phase of present Action Plan (2022-2027) and so on.

## **Recommendation for Future Strategies and Action Plan for Further Enhance Maritime Cooperation**

**Promotion of Blue Economy Initiatives.** IORA can promote blue economy initiatives by facilitating collaborative projects and policy frameworks. The

cooperation in blue economy initiatives like sustainable fisheries management, marine renewable energy projects and maritime tourism needs to be promoted through IORA.

**Institutional Leadership.** A dedicated working group comprising representatives from member states, experts and academia can be established to develop and oversee IORA's strategies and policies. Under the working group, sub working groups can also be formed for more effective coordination.

**Investment in Maritime Infrastructure.** Improving maritime infrastructure such as ports, shipping lanes and coastal facilities are crucial for facilitating trade and connectivity within the region. Developing smart port with advanced technologies and modern efficient cargo handling system will improve efficiency of the port as well as will improve ease of doing business.

**Climate Change Adaptation and Disaster Resilience.** Collaborative initiatives of IORA member states can enhance their capacity to mitigate the impacts of climate change, protect vulnerable communities and ensure sustainable development in Indian Ocean region. Best practices like Integrated Coastal Zone Management (ICZM) approach of Malaysia can be adopted by the member states for protection of the mangroves to enhance resilience for disaster.

**Public-Private Partnerships (PPP).** IORA can enhance Public Private Partnerships (PPP) for regional development by facilitating dialogue between Governments, businesses and international organizations, creating environment conducive to investment and innovation.

**Awareness Building.** Awareness-building about IORA may include leveraging digital media campaigns and educational programs to highlight its initiatives and regional impacts. International conferences and workshops can be organized in Universities, Colleges, and Schools to reflect importance of IORA.

**Enhanced Security Initiative through IONS.** As the primary aim of IONS is to ensure maritime security within Indian Ocean, IORA can take initiative to functionalize both this organization to get consorted output. IORA can formulate comprehensive maritime policy and IONS can be its enforcement tool.

## **Recommendations to Turn Bangladesh's Potential to Reality in the Maritime Domain**

**Skill Development and Training.** Bangladesh can establish specialized training academies to train personnel related aquaculture, renewable energy technologies and coastal tourism management sectors to develop skills essential for utilizing modern maritime technologies and practices. Collaboration with University, concerned Ministries and private sector are needed for skill development of related personnel.

**Investment in Science and Technology.** Investment in science and technology is crucial for innovations and data driven solutions for sustainable maritime development and growth. The Ministry of Finance may allocate an adequate budget for science and technology research and to obtain the data required for necessary actions. Ministry of Science and Technology may acquire or hire oceanographic research vessels to collect the required data for comprehensive oceanographic research.

**Technology Transfer.** Collaborative projects and knowledge sharing within IORA can empower Bangladesh to adopt advanced technologies and best practices, fostering sustainable development. Bangladesh can be benefitted from collaborative projects and technology transfer in case of power generation from offshore wind energy, floating solar photovoltaic (PV) techniques and exploration of Hydrocarbon reserve.

**Sustainable Fisheries and Mariculture.** Ministry of Fisheries and Livestock may provide training to the fishers for technology based deep sea fishing. For example, Indonesia has taken significant steps to combat IUU fishing and promote marine conservation. Indonesia has involved the local communities for empowering them to manage local marine resources.

**Combatting Marine Pollution.** Bangladesh should develop and enforce stringent environmental regulations to control pollutions from different sources and strict penalties for noncompliance. Ministry of Environment, Forest and Climate Change (MoEFCC) may collaborate with other relevant ministries for effective pollution control.

**Climate Change Adaptation and Mitigation.** IOR nations are highly vulnerable to climate change's impacts. Cooperation in adaptation and mitigation efforts is crucial for ecological and economic resilience. MoEFCC may continue to pursue with relevant ministries for effective measures on sea-level rise, upgrading port infrastructure, maintaining the ecosystem of mangrove forest, and investing in early warning systems for extreme weather events.

**Coordination among Ministries.** According to 'Allocation of Business' Cabinet Division is responsible for Inter-Ministerial Coordination. Cabinet division can take lead role for better coordination among different ministries and better implementation of decisions taken by the IORA secretariat.

**Maritime Affairs Division.** Bangladesh has huge economic potential through its marine resources. Bangladesh needs to establish a separate 'Maritime Affairs Division' under the 'Ministry of Shipping' for efficient exploration of marine resources.

**Data and Information Sharing.** Bangladesh needs to have an efficient Cell for getting connected with IFC and also proper coordination with different agencies within the country for coordinated information sharing within a short period of time.

**Zero Carbon Initiative.** Bangladesh needs to take zero carbon initiative by adopting cleaner technologies, green engines and alternative fuel to reduce carbon foot print and to avoid carbon tax.

**Action Plan for Implementation.** Bangladesh has formulated lots of policies, however, we are lagging behind in case of implementation. Bangladesh needs to formulate short term, midterm and long term action plan with specific target and timeline.

**Conservation of MPAs.** Bangladesh can share the best practices and updated technologies from IORA member countries for conservation of Marine Protected Areas.

**Synergy with National Priorities.** Bangladesh is implementing 8th five year plan, we also have SDG targets. Bangladesh needs to enhance synergies

between the IORA agenda and its domestic and foreign policy objectives for enhancing its role within Indian Ocean region and better harnessing the potentials from this association.

## **Conclusion**

The exploration and sustainable utilization of maritime resources, coupled with robust cooperation in maritime trade, security and safety are essential for the prosperity of the IORA member states. The strategic significance of the Indian Ocean is crucial for its role as a critical conduit for global trade and its wealth and natural resources, including fisheries, hydrocarbons and minerals. IORA member states can establish a framework that balances economic growth with environmental stewardship, thereby contributing to regional and global sustainability goals through coordinated efforts.

Maritime security is another crucial aspect that underpins the stability and economic vitality and of the Indian Ocean region. The prevalence of challenges such as piracy, illegal fishing and maritime terrorism necessitates a collaborative approach to security. IORAs role in fostering a cooperative security environment is vital for ensuring safe and secure maritime navigation. This can be achieved through joint naval exercise, intelligence sharing, and the establishment of regional security protocols. Enhancing maritime domain awareness and building capacity of member states to respond to security threats are also key components of a comprehensive maritime security strategy.

Facilitation of maritime trade is vital for economic development of IORA member states. IORA can play a pivotal role in harmonizing trade policies, reducing non-tariff barriers, and promoting investments in maritime infrastructure. By fostering an environment conducive to trade and investment, IORA can significantly contribute to the economic resilience and growth of its member states.

IORA can facilitate capacity building programs, technical assistance and knowledge exchange to enhance the safety standards of member states. Promoting the adoption of best practices can contribute to the economic development of this region. The future of the Indian Ocean region depends on the concerted effort of the nations to work collaboratively towards a common vision of sustainable development, security and economic integration.

The study's recommendations for policymakers include enhancing regional cooperation through policy coordination, regulatory harmonization, and public-private partnerships. Strengthening maritime security, promoting sustainable development, and fostering innovation through collaborative research are crucial for advancing shared objectives within the IORA framework. Additionally, promoting cultural and tourism exchanges and building resilience against natural disasters can further enhance regional cooperation and economic integration.

In conclusion, the IORA plays a crucial role in shaping the future of maritime trade in the Indian Ocean region. By addressing the geopolitical challenges and leveraging the opportunities for cooperation, the association can enhance regional integration, promote sustainable development, and contribute to global connectivity.

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## Rapporteurs



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## **RAPPORTEURS REPORT**

### **Report by the First Rapporteur**

As part of course curricula of NDC, a lively seminar on ‘Exploring Marine Resources and Fostering Cooperation in Maritime Trade, Security and Safety through IORA’ was held which explored the marine resources, challenges and opportunities and the role of IORA in this respect..

At the beginning, the moderator Air Commodore M Neyamul Kabir welcomed all, introduced the topic and the keynote speakers. He did set the platform for subsequent speakers by highlighting the importance of Indian Ocean region in terms of marine resources, trade, maritime security relating to present day global geopolitics and economy.

The first keynote speaker Brigadier General Md Khairuzzaman Mollah talked about the exploration of marine resources in the Indian Ocean region which includes resources starting from vital maritime trade routes to offshore energy prospects, fisheries and mineral wealth. He categorized these resources basing on various factors like volume, life status, availability and carbon footprint. Finding is that, Fisheries alongwith industrial fisheries, aquaculture, mariculture, Marine biotechnology, etc. can play a crucial role in providing food and driving socio-economic development and sustainability. Besides, the Indian Ocean and its coastal area harbors non-living resources like oil, gas, hydrocarbons and mineral deposits, which hold substantial economic value. Offshore wind, wave and tidal energies are emerging as promising renewable energy sources elsewhere in the world. He has also shown the promise of its Blue carbon ecosystems, such as seagrass meadows and mangroves that contribute to climate change mitigation and carbon sequestration.

However, inadequate policy frameworks, limited investment and environmental degradation including climate change effects in IOR countries has been identified as major challenges in harnessing these resources. For that, The speaker has referred ‘The Coral Triangle Initiative and the Bay of Bengal Large Marine Ecosystem Project’ as multilateral efforts. They also sighted examples of Indonesia and Seychelles about their implementation of innovative strategies, like blue economy models and financial mechanisms to support sustainable marine development.

Finally, the speaker sighted observation for Bangladesh that despite its rich marine biodiversity, the full potential of Bangladesh's marine resources remains largely untapped. policy inconsistencies, limited investment, and environmental threats have been identified as major hindrances. However, the government's adoption of a Blue Economy policy framework and international collaborations show that, lately it is stepping towards sustainable marine resource exploration and economic growth.

The second keynote speaker Brigadier General Selim Hassan presented the chapter which delves into the importance and challenges of fostering cooperation in maritime trade through the Indian Ocean Rim Association (IORA), with a particular focus on Bangladesh. He discussed about the Collective Benefits of Cooperation among IORA member states in terms of enhancing connectivity, trade facilitation, sustainable development, knowledge and information sharing, infrastructure development, security and regional stability.

However, the researcher found that, IORA member states vary in economies from high to low-income categories. But, still, total goods trade among member states has almost increased by four times since IORA was established. Nevertheless, intra-regional trade remains significantly below levels in other regions than South East Asia. Hence, Enhanced maritime trade within member states can result in increased trade volume, economic diversification, job creation, cost efficiencies, and better market access. He also discussed the Importance of Bangladesh in Maritime Trade, its strategic geographical position and access to the Bay of Bengal and associated challenges.

In this context, He measured the opportunity with existing collaboration mechanisms among IORA Member States. and found that, IORA has planned its actions to address 08 key priority areas which may open opportunities for cooperation in shipping, blue economy, energy sector, tourism, agriculture and industrial development. However, challenges such as political divisions, historical tensions, territorial issues, etc. may not be the area of interest.

The third keynote speaker Air Commodore Suresh Kumar Tiwary talked about the critical importance of maritime security and safety in the Indian Ocean Region (IOR) and the role of IORA in addressing the challenges.

He opines that, In response to wide range of security and safety challenges in IOR like maritime terrorism, piracy, armed robberies, illegal trafficking, crimes in the fisheries sector, degradation of ocean health, natural disasters, and geographical vulnerabilities, etc. IORA can play its role by building upon existing national, regional, and multilateral measures. The measures can be supporting effective resource utilization, enhancing cross-border cooperation, sharing knowledge and best practices, and ensuring freedom of navigation in accordance with international law. Key initiatives such as the IORA Working Group on Maritime Safety and Security (WGMSS) and the Indian Ocean Dialogue demonstrate the commitment of IORA member states to address common challenges collectively.

However, he discussed Bangladesh's Role in this regard by referring Dhaka Declaration of 2019, Indo-Pacific outlook of IORA, and hosting the IORA Search and Rescue Exercise in 2022. Moreover, he pointed out that, Bangladesh is recognized as a key player in the South Asian region that always has actively participated in joint efforts and individual contributions towards enhancing maritime safety and security.

Finally, He opined, the effectiveness of IORA in addressing maritime security and safety challenges is subject to scrutiny. While the organization has convened meetings and formulated work plans, substantial progress comparable to other regional groupings is yet to be achieved. Structural, organizational, and functional issues need to be addressed for more effective and efficient functioning of IORA. Nonetheless, optimism and commitment are emphasized, with recognition that organizations of such geographical extent and cultural diversity take time to produce tangible results.

At the end Joint Secretary Dilshad Begum presented few specific recommendations under three broad headline.

Firstly, she recommended to establish of a strong secretariat with permanent staff with specified expertise. Implementation of an equitable subscription system based on economic capabilities and arranging alternative source of fund was another key recommendation. Besides, she recommend to prioritize cooperative efforts of common interests and avoid conflicting bi-lateral issues.

Secondly, she recommended strategies and action plans for further maritime cooperation enhancement. She suggested promotion of blue economy initiatives, appropriate leadership in institutional frameworks, investment in maritime infrastructure with special emphasis in public-private partnerships and awareness-building about IORA in this regard.

Finally, she presented recommendations to turn Bangladesh's potential into Reality in the maritime domain. Skills development and training in aquaculture, renewable energy, and coastal tourism, technology transfer within the IORA region for advanced exploration activities, focus on sustainable fisheries and mariculture through community empowerment, combatting marine pollution and climate change adaptation and mitigation efforts are prominent suggestions she left.

Thereafter, there was a vibrant and knowledge enriching Question & Answer session.

## **Rapporteurs' Report: Interactive Session**

The interactive session witnessed wide ranging participation, both from the course members and invitees, with questions and updates on the topic with Blue Economy as the central theme. The encouraging participation of the audience underpins the importance of the topic as part of the growth story of Bangladesh in particular and the Indian Ocean Rim Region in general. A brief summary of the proceedings of the interactive session are enumerated in the following paragraphs.

**Brigadier General Mahmud Mawla Don, NDC 2024**, pointed out the issue of dominance of few member states of IORA in the trade in the region. He sought views of the panel on actions to be taken by Bangladesh to enhance her share of trade among the member states. The panel responded that the trade among the IORA nations is dominated by Australia and India not only due to their historical trade engagements but also due to their size of the economy, technological prowess, vast manufacturing sectors duly supported by skilled manpower. The panel suggested that to enhance the share of trade among the member states, each nation has to individually prepare themselves

and Bangladesh also has to prepare in terms of infrastructure development, regional connectivity, port facilities, diversification of the export basket, skilled human capital and expansion of the manufacturing sector.

**Captain Mohammad Abdus Samad, Bangladesh Navy** from the Blue Economy Cell, Government of Bangladesh, responded to the remark that the effort of the Government of Bangladesh towards development of the Blue Economy is not visible by giving a brief update on the aspect. He mentioned that post delimitation of the Exclusive Economic Zone (EEZ) between Bangladesh, India and Myanmar, the Bangladesh Government has gone for bidding for exploring 32tcf explorable natural gas out of 49 tcf available in April 2023 which is completing in September 2024 with pragmatic production sharing outlook, which should be able to fuel Bangladesh for 30 years. He further updated on the effort towards exploration of the off shore resources for which technology is presently unavailable. He mentioned that the development of Matarbari deep sea port which will build capacity and make Bangladesh a regional hub. Further, he updated on the completion of research work on sea weed cultivation awaiting commercialization, initiative towards preparing Marine Spatial Plan, increased government spending on development of the Blue Economy and focus of the government to transfer the Blue Economy Cell from the Ministry of Power, Energy and Mineral Resources to the Cabinet Division. He also sought clarification regarding ensuring the implementation of restrictions imposed on commercial activities in the Marine Protected Areas of Swatch of no grounds and St Martin Islands along with the neighbouring countries through the IORA platform, to which the panel responded that it's a work in progress while Bangladesh authorities have to ensure the same on activities by own people first.

**Mr Navid Safiullah, Additional Secretary, Ministry of Commerce** sought comments of the panel on barriers to trade, realtime information sharing on maritime trade and matrix to measure success in the trade domain. The panel responded that other than the tariff and non-tariff barriers, absence of bilateral, mini lateral and muti lateral trade agreements, lack of infrastructure, regional connectivity and other trade related aspects are main barriers to enhanced trade in the region, primarily with respect to Bangladesh. Responding to the question on real time information on maritime trade it was mentioned that

while the same is available on the maritime safety and security part, with the same being available at IFCs at Djibouti, New Delhi and Singapore. As far as the matrix for measuring success in trade in the region is concerned, the panel mentioned that there are no such matrix available except the discussion on the same during the ministerial meetings to ensure implementation of the action plans of IORA. Commodore Mustaq, NDC 2024, at this juncture pointed out the lack of real time information at the national level and emphasized the importance of having own IFC and also a separate ministry or department to take care of the maritime domain. The panel mentioned about the cost benefit and sustainability of own IFCs by all, which exemplifies the importance of collaboration between the member states on resource sharing.

**Mautusi Islam, Research Fellow, Bangladesh Institute of International and Strategic Studies** provided an update on role played by Bangladesh in various important aspects in IORA as the chair and vice chair. She mentioned that in Dhaka Declaration, the aspect of balance between trade and conservation has been given due importance. Bangladesh also played an important role in working out the Indo Pacific Outlook and preparation of the IORA Action Plan 2022 and implementation, preparation of the IORA framework for which the biggest summit of IORA was also conducted. The panel expressed its gratitude for the update and also valuable information taken from the work of Ms Mautusi Islam on IORA and Blue Economy for preparation of the seminar research paper.

**Colonel Saqib Ali, NDC 2024** mentioned that IORA is a forum for economic development and trade and all nations in the Indian Ocean Rim should be part of it irrespective of bilateral security conflicts, keeping the complex security issues out of the purview. The panel responded that IORA is a consensus based organization and focuses on the softer elements of trade, commerce and resource sharing and issues related to bilateral security conflicts are not the focus.

**Air Commodore Vajira Senadheera, NDC 2024** sought comments of the panel on the action being taken by Bangladesh to avoid double handling of marine cargo from small ships to mother vessels in Colombo and Singapore due to non-availability of deep-sea port in Bangladesh. The panel responded that the problem will be overcome with the commissioning of the deep-sea port at Matarbari.

**Commodore Mohammad Minarul Haq, Bangabandhu Sheikh Mujibur Rahman Maritime University**, while mentioning about the recent newspaper report on Bangladesh being the world's second largest fish producing country of cultured fish, sought comments of the panel on action being taken by IORA on fishing activities in the marine protected areas and during the two ban periods and steps taken by Bangladesh to harness marine fishing. The panel agreed that only 15 percent of available marine fishing being harnessed by Bangladesh and steps needed to be taken to build capacity to enhance the same including infusion of satellite technology to spot concentration of marine fish in deep sea as available with the neighbouring country. The panel also mentioned about the action being taken by IORA to harmonize the policy issues on the ban period with the neighboring countries. On the aspect of the ban period, Commodore Faruk, NDC 2024 updated that this issue has been discussed between the Coast Guard of Bangladesh and India and both the countries are working on it to arrive at a mutually beneficial solution.

## Moderator of the Seminar



**Air Commodore  
M Neyamul Kabir**  
BUP, hdmc, psc, GD (N)

## Seminar Group Members



**Brigadier General  
G H M Selim Hassan**  
BGBM, psc, G+



**Brigadier General  
Md Khairuzzaman Mollah**  
SUP, hdmc, afwc, psc



**Brigadier General  
Raju Ahmed**  
SGP, afwc, psc, M Phil



**Brigadier General  
A S M Badiul Alam**  
afwc, psc, G+



**Commodore  
Abu Hasnat Md Mahfuzer Rahman**  
(L), NPP, psc, BN



**Commodore  
Mohammad Shafiu Bari**  
(ND), psc, BN



**Joint Secretary  
Mohammad Aatur Rahman**



**Joint Secretary  
Dilsad Begum**



**Joint Secretary  
Dr. Syeda Farhana Noor Chowdhury**



**Brigadier  
Alok Dash**



**Air Commodore  
Suresh Kumar Tiwari**



**Senior Colonel  
Xiao Chong**

## NDC Participants (Faculty and Staff)

Ser	Rank and Name	Appointment
1	Lieutenant General Md Saiful Alam, SBP, OSP, SUP, awc, psc, PhD	Commandant
2	Air Vice Marshal A S M Fakhru Islam, OSP, GUP, ndc, afwc, psc, GD(P)	Senior Directing Staff (Air)
3	Major General S M Kamrul Hassan, BSP, ndc, hdmc, psc, PhD	Senior Directing Staff (Army)
4	Major General Md Mostagousur Rahman Khan, BSP, SGP, ndc, afwc, psc, M Phil	Senior Directing Staff (Army)
5	Rear Admiral Md Ziaul Hoque, OSP, ndc, afwc, psc	Senior Directing Staff (Navy)
6	Major General Md Rashed Amin, OSP, rcds, ndc, psc (Retd)	Senior Directing Staff (Adjunct)
7	Brigadier General Mamun-Ur-Rashid, ndc, afwc, psc	Chief Instructor
8	Brigadier General Syed Mohammad Shahed Rahman, nswc, afwc, psc	Directing Staff (Army)
9	Brigadier General J M Emdadul Islam, ndc, afwc, psc, M Phil	College Secretary
10	Brigadier General A K M Sazedul Islam, ndc, afwc, psc, G, M phil	Directing Staff (Army)
11	Brigadier General Md Hakimuzzaman, SGP, ndc, afwc, psc	Directing Staff (Army)
12	Brigadier General SK Marufur Rahman, SGP, SUP, ndc, afwc, psc	Directing Staff (Army)
13	Brigadier General Muhammad Azharul Islam, afwc, psc	Directing Staff (Army)
14	Brigadier General Golam Mohiuddin Haider, afwc, psc	Directing Staff (Army)
15	Colonel S M Imranuzzaman, BSP	Colonel Administration
16	Colonel Sufi Mohammad Moinuddin, SUP, afwc, psc	Directing Staff (Army)
17	Colonel Omar Bin Masud, afwc, psc, G+	Directing Staff (Army)

Ser	Rank and Name	Appointment
18	Colonel Muhammad Nurul Amin, BSP, afwc, psc	Director, Research & Academic
19	Commodore Ziaur Rahman, (TAS), NGP, ndc, afwc, psc, BN	Directing Staff (Navy)
20	Captain Mohammad Manzur-Ul-Karim Chowdhury, (H2), BSP, BCGM, psc, BN	Colonel General Staff
21	Captain Mohammad Farhad Hossain, (ND), afwc, psc, BN	Directing Staff (Navy)
22	Air Commodore Md Abdullah-Al-Mamun, BSP, ndc, afwc, psc, GD(P)	Directing Staff (Air)
23	Group Captain B M Hasan Mahmud, afwc, psc, GD(P)	Directing Staff (Air)
24	Lieutenant Colonel Hasan Mohammad Tanvir Imtiaz, Inf	General Staff Officer-1 (Administration)
25	Lieutenant Colonel SK Mahamudul Hasan, afwc, psc, Engrs	Senior Research Fellow-1
26	Lieutenant Colonel Md Sahariar Morshed, afwc, psc, Inf	General Staff Officer-1 (AFWC)
27	Lieutenant Colonel GM Mamunur Rashid, psc, G+, Arty	Senior Research Fellow-2
28	Lieutenant Colonel Md Istiaque Rashid, SUP, psc, Inf	General Staff Officer-1
29	Lieutenant Colonel Khandaker Mehedi Al-Mahmud, afwc, psc, Inf	General Staff Officer-1 (Training)
30	Major Md Javed Miah, Inf	Quarter Master
31	Major Bin Yeamin Hasan Bhuiyan, Inf	Company Commander
32	Major Mohammad Saiful Islam, Sigs	General Staff Officer-2 (Network Administrator)
33	Major A K M Hasibul Hossain Nabi, ASC	Messing Officer
34	Major Muhammad Shahjada Omar Habib, psc, Inf	General Staff Officer-2 (Planning & Coordination)

Ser	Rank and Name	Appointment
35	Major Md Hasib Bin Nuruddin, ASC	Mechanical Transport Officer
36	Major Dewan Mohammad Muktadir, SPP, psc, Inf	General Staff Officer-2 (Army), AFWC
37	Major Md Sumon Reza, Inf	General Staff Officer-2 (Administration)
38	Major Md Nurul Kamal, Engrs	General Staff Officer-2 (Accounts)
39	Major M. K. Habib, Inf	Coordinator (SDS Army-2)
40	Major Faysal Mahmud Anik, psc, Inf	General Staff Officer-2 (Coordinator)
41	Major Sowmik Ahmed, SPP, Inf	General Staff Officer-2 (Staff Duties)
42	Major Mahfuzur Rahman Tomal, Inf	Coordinator (SDS Army-1)
43	Lieutenant Commander Shanjida Hossain, (Edn)(C), psc, BN	General Staff Officer-2 (Training Support)
44	Lieutenant Commander Mustafa Sharif Khan, (Edn)(G), BN	General Staff Officer-2 (Navy), AFWC
45	Squadron Leader Mokarram Hossain, Edn	General Staff Officer-2 (Protocol)
46	Squadron Leader Md Arifur Rahman, BAF	Coordinator (SDS Air)
47	Squadron Leader Md Muttakin Rahman	General Staff Officer-2 (Air), AFWC
48	Captain Mahmud Emtiaj Rasel, AC	Staff Captain
49	Lieutenant Raihanul Kabir, (S), BN	ADC to Commandant
50	Lieutenant Md. Ashfaq Saif, (S), BN	Coordinator (SDS Navy)
51	Senior Assistant Secretary Nusrat Ara Khanam	Research Coordinator
52	Assistant Professor (English) Nishat Sultana	Research Fellow
53	Assistant Director Md Nazrul Islam	Assistant Director (Library)
54	Asst Programmer Md Azad Rahaman Munna	Assistant Programmer

## NDC Participants

### (Course Members of National Defence Course – 2024)

International Course Members			
Ser	Rank	Name	Country
1	Senior Colonel	Xiao Chong	China
2	Brigadier	Amar Kuhite	India
3	Brigadier	Alok Dash	India
4	Commodore	K Shankar	India
5	Air Commodore	Suresh Kumar Tiwari	India
6	Captain	Fajar Tri Rohadi	Indonesia
7	Colonel	Ja'far Hasan Mohammad Alnizami	Jordan
8	Staff Colonel (Pilot)	Obaid Othman Alshahrani	KSA
9	Staff Colonel	Mohammed Saud Alshlowi	KSA
10	Staff Colonel	Ibrahim Saad Al Masad	KSA
11	Staff Commander	Hussain Ali Alzahrani	KSA
12	Staff Colonel	Saeed Othman Al-Darami	KSA
13	Staff Lieutenant Colonel	Mohamad Ebrahim Aloraygan	KSA
14	Staff Colonel	Mulfi Saeed Al Zaher	KSA
15	Colonel	David Rotich Cheruiyot	Kenya
16	Brigadier General	Ahmad Z M S Alenezi	Kuwait
17	Brigadier General	Jasem M A M A Alnamash	Kuwait
18	Major General	Dato' Rashidin Hashimi bin Ab Rashid	Malaysia
19	Colonel	Narulnizam bin Razali RMAF	Malaysia
20	Colonel	Lanseny Doumbia	Mali
21	Colonel	Milan Tulachan	Nepal
22	Group Captain	Adebayo Adekanmi Petinrin	Nigeria
23	Colonel	Ibrahim Bunu Sheriff	Nigeria
24	Captain	Tumi Adebola Ogunkoya	Nigeria
25	Colonel	Said Khalfan Al Harthy	Oman
26	Captain	Marhoon Bin Mubarak Al Owaisi	Oman
27	Colonel	Saqib Ali	Pakistan
28	Staff Colonel (Pilot)	Hamad Mubarak Badah Al-Hajri	Qatar

29	Brigadier	M P K L Amarasinghe, WWV, RWP, RSP	Sri Lanka
30	Air Commodore	SPVK Senadheera	Sri Lanka
31	Colonel	Andrew Monyluk M. Riak	South Sudan
32	Colonel	Shija Sahani Lupi	Tanzania
33	Colonel	Getrude Mbewe	Zambia

<b>Bangladesh Army</b>		
<b>Ser</b>	<b>Rank</b>	<b>Name</b>
1	Brigadier General	Md Rosaidul Mawla, psc
2	Brigadier General	Md Ehsanul Kabir, afwc, psc, M Phil
3	Brigadier General	Md Azadur Rahman, psc
4	Brigadier General	A K M Majharul Haque, afwc, psc, M Phil
5	Brigadier General	Md Zahid Hossain, psc
6	Brigadier General	Md Shamsul Alam, psc
7	Brigadier General	Mohammad Solmon Ibne A Rouf, psc
8	Brigadier General	Mohammad Ariful Bari, SPP, psc
9	Brigadier General	S M Zahid Hassan, afwc, psc
10	Brigadier General	M M Moazzem Hossain, SUP(BAR), afwc, psc
11	Brigadier General	Md Saiful Alam Bhuiyan, psc
12	Brigadier General	Molla Mohammad Kamruzzaman, psc
13	Brigadier General	Nishadul Islam Khan, psc
14	Brigadier General	K M Azad, BGBM, BPM(SEBA), PPM(SEBA), psc
15	Brigadier General	A M M Khairul Kabir, BGBM, BGBMS, BGOM, psc
16	Brigadier General	Md Aminul Hoque, SUP, afwc, psc
17	Brigadier General	S M Ashraful Islam, psc
18	Brigadier General	A N M Foyezur Rahman, psc
19	Brigadier General	Abdullah Tafhimul Islam, SUP, afwc, psc
20	Brigadier General	Mozammel Hossain, afwc, psc, G
21	Brigadier General	Raju Ahmed, SGP, afwc, psc, M Phil
22	Brigadier General	Md Shazzad Hossain, BSP, afwc, psc, M Phil
23	Brigadier General	Mohammad Monir Hossain Patwary, psc
24	Brigadier General	Mahmud Mawla Don, afwc, psc
25	Brigadier General	Mohammed Moinuddeen Shamim, psc

26	Brigadier General	Sahidur Rahman Osmani, OSP, psc
27	Brigadier General	G H M Selim Hassan, BGBM, psc, G+
28	Brigadier General	Md Khairuzzaman Mollah, SUP, hdmc, afwc, psc
29	Brigadier General	Syed Fazle Gaus, afwc, psc
30	Brigadier General	Sarder Istiak Ahmed, afwc, psc, G
31	Brigadier General	Md Abul Kalam Sumsuddin Rana, PBGM, afwc, psc, G
32	Brigadier General	Md Khurshid Alam, afwc, psc, G
33	Brigadier General	A S M Badiul Alam, afwc, psc, G+
34	Brigadier General	Syed Mohammad Nurus Saleheen Yousuf, PPMS, afwc, psc
<b>Bangladesh Navy</b>		
35	Commodore	Mustaque Ahmed, (G), NPP, psc, BN
36	Commodore	Mohammad Shafiul Bari, (ND), psc, BN
37	Commodore	Mohammad Shafiqur Rahman, (S), NUP, hdmc, psc, BN
38	Commodore	Mohammad Abdul Wadud Tarafder, (C), NPP, psc, BN
39	Commodore	Abu Hasnat Md Mahfuzer Rahman, (L), NPP, psc, BN
40	Commodore	Md Shahidullah Al Faruq, (E), NPP, BCGMS, psc, BN
<b>Bangladesh Air Force</b>		
41	Air Commodore	M Neyamul Kabir, BUP, hdmc, psc, GD (N)
42	Air Commodore	Md Shariful Islam, BSP, BPP, afwc, psc, GD(P)
43	Air Commodore	Mahmud Mehedi Hussian, psc, GD(P)
44	Air Commodore	Kazi Iqbal Karim, GUP, fawc, psc, GD(P)
45	Air Commodore	Md Abdullah-Al-Mahbub, psc, GD(P)
46	Air Commodore	Md Enamul Karim, awc, psc, GD(P)
<b>Bangladesh Civil Service</b>		
47	Joint Secretary	A S M Ashraful Islam
48	Joint Secretary	Mohammad Ataur Rahman
49	Joint Secretary	Dr. Md. Abdullah Al Mamun
50	Joint Secretary	Md Rafiqul Islam
51	Joint Secretary	Dr. Syeda Farhana Noor Chowdhury
52	Joint Secretary	Md. Aktar Hossain Azad
53	Joint Secretary	Dr. Md. Moksed Ali
54	Joint Secretary	Mirajul Islam Ukil
55	Joint Secretary	Mohammad Rafiqul Karim
56	Joint Secretary	Md. Kamrul Hasan, BPAA

57	Joint Secretary	Dilsad Begum
58	Joint Secretary	Md Anwar Hossain
59	Joint Secretary	Mst. Kamrunnahar
60	Joint Secretary	Md. Masudur Rahman Bhuiyan
61	Deputy Inspector General	Salma Begum, PPM
62	Deputy Inspector General	A K M Ehsanullah

## Outside Participants

Ser	Rank and Name	Organization
1	M. Shameem Ahsan (Former Secretary and Ambassador) Member, Bangladesh Public Service Commission	Bangladesh Public Service Commission
2	Rear Admiral Mohammad Musa, OSP, NPP, rcds, afwc, psc, PhD Vice-Chancellor Bangabandhu Sheikh Mujibur Rahman Maritime University	Bangabandhu Sheikh Mujibur Rahman Maritime University
3	Sheikh Fazle Fahim Chairman, Indian Ocean Rim Business Forum	Indian Ocean Rim Business Forum
4	Colonel Malique Shams Uddin Muhammed Moin, SGP, SPP, afwc, psc Colonel Staff, Training Directorate	Armed Forces Division
5	Lieutenant Colonel Walid Saifullah General Staff Officer-1, Military Training Directorate	Army Headquarters
6	Commodore Mirza Mohammad Mehedi Hassan, (TAS), PGMS, afwc, psc, BN Director, Naval Training Directorate	Naval Headquarters
7	Captain Minhaz, BN	Naval Headquarters

8	Commander Rafiqul Islam	Naval Headquarters
9	Major Genral Md Abu Bakar Siddique Khan, ndc, afwc, psc, G+ Director General, BIISS	Bangladesh Institute of International and Strategic Studies
10	Moutushi Islam Research Fellow	Bangladesh Institute of International and Strategic Studies
11	Brigadier General Jahed Kamal, ndc, afwc, psc	Bangladesh University of Professionals
12	Commodore Sherafullah Deputy Commandant	Defence Services Command & Staff College
13	Major Genral Mohammed Saidul Islam, rcds, ndc, psc Comdt, MIST	Military Institute of Science & Technology
14	Commodore Mohidul Hasan	Military Institute of Science & Technology
15	Commodore Md Minarul Hoque, (H), BCGM, psc, BN Director, Institute of Bay of Bengal and Bangladesh Studies (IBBBS)	Bangabandhu Sheikh Mujibur Rahman Maritime University
16	Dr. Mohammad Nazir Hossain Professor & Chairman, Department of Genetic Engineering and Biotechnology	Bangabandhu Sheikh Mujibur Rahman Maritime University
17	Captain Al Faroque Mahmud Hossain, (N), NU, afwc, psc, BN Director (Operations)	Coast Guard Headquarters
18	Lieutenant Colonel Tonmoy General Staff Officer-1	DGFI Headquarters
19	Captain Mohammad Abdus Samad, (N), psc, BN Blue Economy Cell Energy and Mineral Resources Division	Ministry of Power, Energy and Mineral Resources

20	Md Arafat Rahman Director General, Maritime Affairs Unit	Ministry of Foreign Affairs
21	Mohammad Navid Shafiullal Additional Secretary (FTA)	Ministry of Commerce
22	Md. Hashibul Islam Principal Scientific Officer and Head, Chemical Oceanography Division	Bangladesh Oceanographic Research Institute

## Coordinators

1.	Rear Admiral Md Ziaul Hoque, OSP, ndc, afwc, psc	Senior Directing Staff (Navy)	Seminar Sponsor SDS
2.	Colonel Muhammad Nurul Amin, BSP, afwc, psc	Director, Research and Academic	Coordinator
3.	Lieutenant Colonel SK Mahamudul Hasan, afwc, psc, Engrs	Senior Research Fellow	Associate Coordinator
4.	Assistant Professor Nishat Sultana	Research Fellow	Assistant Coordinator
5.	Md Nazrul Islam	Assistant Director (Library)	Assistant Coordinator



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