Centre for Public Policy Research

FRIEDRICH NAUMANN FOUNDATION For Freedom.
South Asia

SECURITY AND PROSPERITY IN THE BAY OF BENGAL

Edited by : M P Muralidharan & Neelima A

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Abbreviations

ADB	:	Asian Development Bank
AEC	:	ASEAN Economic Community
AEP	:	Act East Policy
AfCFTA	:	African Continental Free Trade Area
AFTA	:	ASEAN Free Trade Area
AgroNAT	:	Agro National Corporation
AI	:	Artificial Intelligence
ALDFG	:	Discarded Fishing Gear
APEC	:	Asia-Pacific Economic Cooperation
APFIC	:	Asia-Pacific Fishery Commission
API	:	Application Programming interfaces
ASEAN	:	Association of Southeast Asian Nations
ATM	:	Automated Teller Machine
AUKUS	:	Australia, United Kingdom, and United States
BB	:	Bangladesh Bank
BBIN	:	Bangladesh, Bhutan, India, Nepal
BIMSTEC	:	Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation
BNSC	:	BIMSTEC National Security Chiefs Meeting
BOB	:	Bank of Baroda
BoB	:	Bay of Bengal
BOBLME	:	Bay of Bengal Large Marine Ecosystem
BOBP-IGO	:	Bay of Bengal Inter-Governmental Organisation
BRI	:	Belt and Road Initiative
BRICS	:	Brazil, Russia, India, China, and South Africa
BSDF	:	BIMSTEC Security Dialogue Forum
CBM	:	Central Bank of Myanmar
CEPT	:	Common Effective Preferential Tariff
CITES	:	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CLIP	:	Commonwealth Litter Programme
CLMV	:	Cambodia, Laos, Myanmar, and Vietnam
CO_2	:	Carbon Dioxide
COP	:	Conference of the Parties

CORI	:	Coalition for Disaster Resilient Infrastructure
CSO	:	Central Statistics Office
DPR	:	Detailed Project Report
DWT	:	Deadweight tonnage
EEC	:	Eastern Economic Corridor
ERIA	:	Economic Research Institute for ASEAN and East Asia
EU	:	European Union
EZ	:	Exclusion Zone
FAO	:	Food and Agricultural Organisation
FATA	:	Financial Action Task Force
FDI	:	Foreign Direct investment
FinTech	:	Financial technology
FNF	:	Friedrich Naumann Foundation for Freedom
FTA	:	Free Trade Agreement
G20	:	Group of Twenty
GCC	:	Gulf Cooperation Council
GDP	:	Gross Domestic Product
GEF	:	Global Environment Facility
GGI	:	Green Grids Initiative
GMS	:	Greater Mekong Sub-Region
GoI	:	Government of India
GW	:	Giga-Watt
HADR	:	Humanitarian Assistance and Disaster Relief
HKTDC	:	Hong Kong Trade Development Council
IEM	:	Industrial Entrepreneur Memorandum
IFC	:	International Finance Corporation
IMF	:	International Monetary Fund
IMT-GT	:	Indonesia-Malaysia-Thailand Growth Triangle
IOM	:	International Organization for Migration
IONS	:	Indian Ocean Naval Symposium
IORA	:	Indian Ocean Rim Association
IOR	:	Indian Ocean Region
IPCC	:	Intergovernmental Panel on Climate Change
IPOI	:	Indo-Pacific Oceans Initiative

IPR	:	Indo-Pacific Region
IPS	:	Indo-Pacific Strategy
IRENA	:	International Renewable Energy Agency's
ISA	:	International Solar Alliance
IUU	:	Illegal, Unreported, and Unregulated
Lao PDR	:	Lao People's Democratic Republic
LCOE	:	Levelized Cost of Electricity
LDC	:	Least Developed Countries
LGBTIQ+	:	Lesbian, gay, bisexual, transgender, intersex, or questioning
LIMO	:	Low-Intensity Maritime Operations
LME	:	Large Marine Ecosystem
LMIC	:	Low- or Middle-Income Country
MARPOL	:	International Convention for the Prevention of Pollution from Ships
MDA	:	Maritime Domain Awareness
MELAG	:	Mangrove Ecosystem and Livelihood Action Group
MFS	:	Mobile Financial Services
MMT	:	Million Metric ton
MOA	:	Memorandum of Association
MOU	:	Memorandum of understanding
MSMEs	:	Micro, Small, and Medium Enterprises
MW	:	Megawatt
NBSAP	:	National Biodiversity Strategic Action Plans
NDCs	:	Nationally Determined Contributions
NER	:	North-eastern Region
NFP	:	Neighbourhood First Policy
NGO	:	Non-Governmental Organisation
NLD	:	National Long Distance Connectivity
NOAA	:	National Oceanic and Atmospheric Administration
NO	:	Nitrous Oxide
NTS	:	Non-Traditional Security Threats
OECD	:	The Organisation for Economic Cooperation and Development
OSOWOG	:	One Sun One World One Grid
OTEC	:	Ocean Thermal Energy Conversion
PLAN	:	People's Liberation Army Navy

PV	:	Photovoltaic System
QUAD	:	Quadrilateral Security Dialogue
R&D	:	Research and Development
SAARC	:	South Asian Association for Regional Cooperation
SAC	:	State Administrative Council
SACEP	:	South Asia Co-operative Environment Programme
SAFTA	:	South Asian Free Trade Area
SAGAR	:	Security and Growth for All in the Region
SASEC	:	South Asia Subregional Economic Cooperation
SCS	:	South China Sea
SDG	:	Sustainable Development Goals
SDMC	:	SAARC Disaster Management Centre
SEZ	:	Special Economic Zone
SIDCA	:	Swedish International Development Cooperation Agency
SIDS	:	Small Island Developing States
SLOC	:	Sea Lanes of Communications
SMEs	:	Small and Medium-Sized Enterprises
SOP	:	Standard Operating Procedure
STEOM	:	Senior Trade and Economic Officials Meeting
TEMM	:	Trade and Economic Ministerial Meeting
TNC	:	Trade Negotiation Committee
UK	:	United Kingdom
UN	:	United Nations
UNCTAD	:	United Nations Conference on Trade and Development
UNEA	:	United Nations Environment Assembly
UNEP	:	United Nations Environmental Programme
UNESCAP	:	United Nations Economic and Social Commission for Asia and Pacific
UNFCCC	:	United Nations Framework Convention on Climate Change
UNODC	:	United Nations Office on Drugs and Crime
US	:	United States
USD	:	United States Dollar
WDI	:	World Development Indicators
WETO	:	Wind Energy Technologies Office
WTO	:	World Trade Organisation
WWII	:	World War II

Foreword

I am thrilled to introduce this compilation, which stands as a testament to the incredible journey embarked upon during the 'Security and Prosperity in the Bay of Bengal' conference held in the vibrant city of Kochi in 2022. In a time when the Bay of Bengal (BoB) has been gaining attention for its strategic and economic significance, the Centre for Public Policy Research (CPPR) accomplished a remarkable feat by bringing scholars, policymakers, practitioners, and regulatory institutions from India and beyond together to discuss the security of this vital region.

The participants and contributors shared a collective enthusiasm for exploring the diverse cultural, economic, and environmental facets of the BoB's legacy, while also addressing the present-day geopolitical challenges facing the region. The Friedrich Naumann Foundation (FNF) takes great pride in collaborating with CPPR for this significant event. As advocates of economic freedom and trade, FNF aims to foster discussions on security to create a conducive environment for regional trade and economic interactions. Such conferences also promote collaboration among various stakeholders in the region, strengthening cooperation on security and trade within the BoB area. Facilitating discussions on regional cooperation and conflict prevention aligns with FNF's commitment to upholding a liberal democratic environment.

The Bay of Bengal, connecting several nations, has played a pivotal role in shaping the histories and destinies of its coastal inhabitants. The conference set out to explore the intricate dimensions of this unique region, delving into its history, maritime trade, cultural exchanges, environmental challenges, and opportunities for cooperation among neighboring nations. The diverse range of topics covered within these pages reflects the wide array of interests and concerns surrounding the Bay of Bengal. From discussions on the Blue economy and renewable energy to regional development and human security, each chapter in this compilation offers a distinctive perspective on this remarkable region.

I extend my heartfelt gratitude to the editors, paper contributors, conference organizers, and participants who collectively contributed to the resounding success of the conference. Your dedication and efforts have ensured that the knowledge and insights generated during this event reach a broader audience through this compilation. May this exceptional collection of articles inspire further research, dialogue, and collaboration among the numerous stakeholders of the region. With deep appreciation for the varied viewpoints presented, I proudly present this compilation to you and invite you to continue this journey of exploration and dialogue.

Thank you!

Dr. Carsten Klein
Head
Friedrich Naumann Foundation for Freedom South Asia

Message from Chairman, CPPR

The Bay of Bengal occupies an area of about 2 million square kilometres, making it the largest Bay in the world. It is situated between vital sea routes and stretches from Sri Lanka up to the coast of eastern India, curving under Bangladesh and Myanmar and heading south along Thailand and Malaysia until it reaches the northern coast of Sumatra in Indonesia. This "Greater Bay of Bengal" region is also immense and diverse in terms of demographics. The Greater Bay of Bengal is surrounded by five countries—India, Sri Lanka, Bangladesh, Myanmar, and Thailand—and has a combined population of 1.7 billion, which constitutes more than one in every five people on earth, with a combined GDP of $3.7 trillion.

The Bay of Bengal (BOB) is emerging as one of the critical theatres for economic and strategic competition in the wider Indian Ocean and Southeast Asian region. On a geo-strategic level, the BOB lies between two huge economic blocs - the South Asian Association for Regional Cooperation (SAARC) and the Association of Southeast Asian Nations (ASEAN) - connecting the Southeast Asian economy to Middle Eastern oil sources. Approximately 100 trillion cubic feet, or approximately 1 percent of the world's total unexploited oil and gas reserves, are located along the coasts of Myanmar, India and Bangladesh.

Historically, the Bay acted as a bridge between East and South Asia and is a part of the wider Indo-Pacific strategy today. The movement of people, goods and ideas across the Bay was extensive and enriched all civilizations along its coast. The trade routes connected East Asia, Southeast Asia, South Asia, Arabia and East Africa. Despite significant challenges, regional actors have made immense progress in improving coastal welfare, developing the blue economy, building capable maritime enforcement entities, and strengthening mechanisms for international and regional maritime cooperation.

In this international conference, we had seven sessions on topics such as Blue Economy, Energy, Technology, Environmental Issues, Human Security, and a plenary on the BOB as a pivot to Southeast Asia. 27 experts from the BOB littoral states presented their views, expertise and arguments regarding the region. They come from academia, government, industry and regulatory institutions. This conference would not have been possible without their presence and participation.

CPPR hosted this conference in collaboration with FNF South Asia. This robust partnership began in 2005. Since then, FNF has played a significant role in training and mentoring CPPR scholars. Early in my career, one of my major responsibilities outside CPPR came about due to my election to the post of Secretary-General of LYSA in 2008. This is a network supported by FNF, and I fondly remember the South Asia Youth Summit that we hosted in Delhi. Later, I also served as the LYF India Founder-President and Trustee. FNF has been supporting CPPR in research areas such as Urban Governance and Training Programmes for some time.

I would like to conclude by quoting Prime Minister Narendra Modi Today, when our region is facing the challenges of health and economic security, solidarity and cooperation between us are the need of the hour. Today is the time to make the Bay of Bengal a bridge of connectivity, prosperity, and security. I call upon all of you to dedicate ourselves again with renewed vigour and energy to achieve the goals for which we had decided to walk together in 1997".

I congratulate Vice Admiral M P Muralidharan and Ms Neelima A for compiling and editing these papers to the delight of the readers. I am sure this compendium of scholarly papers would contribute significantly to the literature and subsequent discussions on the topic.

D. Dhanuraj Ph.D
Chairman
Centre for Public Policy Research

June 28, 2023

Introduction

The Indo-Pacific has emerged as a theatre for economic and strategic competition in the 21st century as maritime trade through the region impacts the economies of all major nations in the world. The Bay of Bengal region will be perceived as being in the centre as it connects the Indian and Pacific oceans. Situated at the crossroads of the international flow of trade due to its proximity to the Straits of Malacca, the region has geostrategic importance. It is home to around 20% of the world's population, has a combined GDP of 2.7 trillion USD, and hosts vast reserves of natural resources that could prove to be a game-changer for the region's political economy. Increasingly, the region is also being subjected to multiple challenges on both conventional and non-conventional security fronts.

As far as India is concerned, the Bay of Bengal serves as the regional gateway in her Act East and Look East policies. In March 2022, during the virtual summit of the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC), Indian PM Narendra Modi emphasised the importance of the region as "a bridge of connectivity, a bridge of prosperity, and a bridge of security". India, being the most powerful country regionally and the largest democracy in the world, has a major role in ensuring security and safety in the BOB.

In order to gain a deeper appreciation of the region, the emerging situation, and the way ahead, an International Conference on Security and Prosperity in the Bay of Bengal was organized by CPPR with the support of the Friedrich Naumann Foundation (FNF), South Asia. It was held from November 29 to December 1, 2022, in Kochi, Kerala. In six sessions, the following thematic areas were discussed

a) Prospects and challenges of the Blue Economy in the Bay of Bengal
b) Towards enhanced energy cooperation in the Bay of Bengal
c) Fostering regional development through trade and investment
d) Harnessing cooperation for environmental sustainability in the Bay of Bengal
e) Addressing human security challenges through institutional mechanisms
f) Emerging technological advancements and innovation in the Bay of Bengal

Session 1, 'Prospects and Challenges of the Blue Economy', focused on identifying the importance of marine governance and highlighted the relevance of the blue economy amongst the regional stakeholders. The tussle between environmental sustainability and growth imperatives is a domain that governments in the region should address through urgent policy initiatives. Marine governance must take cognizance of the rising opportunities and challenges that the Bay waters offer while nurturing government-to-government contact at national and sub-national levels.

The focus of Session 2 was 'Towards enhanced energy cooperation in the Bay of Bengal'. The discussions highlighted how closer and diversified energy cooperation is the key to enhancing economic growth for the countries of the region. With increased exploration and extraction underway in the region, possibilities for enhanced energy cooperation amidst emerging geopolitical realities were discussed. Blessed with an abundance of natural resources in the inland and offshore areas of the Bay, the uninterrupted flow of energy at affordable prices is important for the region's growing energy demands. The need for littoral countries to diversify energy cooperation beyond bilateral trade in electricity and oil was evident. These are currently the dominant components of energy trade in the region.

Session 3 dealt with 'Fostering regional development through trade and investment'. The discussion revolved around the region's economic future and the opportunities that need to be capitalised on. Infrastructure development and the employment of advanced technologies would streamline such opportunities. Efforts to integrate the Bay of Bengal as a commercial hub are underway, with a focus both on bilateral and multilateral arrangements within the region.

Session 4 was on 'Harnessing cooperation for environmental sustainability in the Bay of Bengal'. It focused on the challenges posed by climate change and the consequent rising sea levels to the political economy and security of the Bay of Bengal. Rapid exploitation of resources, unsustainable farming and fishing practices, as well as pollution, are anthropogenic activities that challenge the stability and prosperity of the Bay of Bengal. Climate change adversely threatening the livelihoods and lives of the littoral communities in the region was highlighted.

The discussions in Session 5, 'Addressing human security challenges through institutional mechanisms', revolved around the security architecture in the region and taking cognizance of matters that render communities vulnerable and insecure. Political instability, internal conflicts, socio-economic crises, pandemics, and multidimensional poverty pose threats to sustainable development, peace, and stability in the region. Deepening regional cooperation is a way forward to meet such challenges by fostering government-to-government as well as multilateral-level cooperation.

Session 6 on 'Emerging technological advancements and innovation in the Bay of Bengal' highlighted bilateral and plurilateral cooperation for enhanced partnership in the technology and innovation sectors as the key driver for economic development in the Bay of Bengal. It also underlined the necessity of investments and government-to-government efforts to focus on building capacity, transferring technology, and fostering a technology and innovation-friendly ecosystem.

The presentations and discussions at the Conference were insightful and brought out several valuable suggestions and recommendations for the way ahead. This volume is a compilation of papers presented at the conference. The views expressed are those of the authors.

Vice Admiral MP Muralidharan AVSM & BAR, NM (RETD)
Neelima A

Keynote Address

N Ramachandran IPS

Good evening, Dr Dhanuraj, Honourable Member of Parliament Mr Sujeet Kumar, Mr. Phoneprasert Council General of Thailand, and Mr Hoffmann representing FNF. There are many of my friends from my coaching days here, including the most respected senior, Mr Hormis Tharakan, former DGP, and Mr Behera. I welcome all the distinguished friends, invitees, gentlemen, and ladies present here this evening. First of all, I would like to thank Dr Dhanuraj and CPPR for giving me the honour of participating in this session. I'm immensely happy to be part of this remarkable conference being hosted by CPPR. I'm also happy to see delegates from different parts of the world, including Germany and India's immediate and extended neighbourhood.

I'm sure that the efforts of CPPR in organising this conference will go a long way in deepening our understanding of issues related to both the security and economic development of the Bay of Bengal and the Rim countries around the Bay of Bengal. As Dr Dhanuraj pointed out, this region accounts for almost one-fifth of the world's population. It is a very significant region, despite being a very small one on the globe. On a personal note, during my personal professional experience as a law enforcement officer, I have had the opportunity to look at National Security from a Development perspective and also Development efforts from a National Security perspective. I've also had the opportunity to watch and learn how security imperatives, if not planned properly or holistically, could have an adverse impact on the bottom line of business operations and the profitability of enterprises. There is also a feeling that security may be bad for business. This is not true. In fact, Security, Business, and Development are not mutually exclusive. They are complementary and reinforce each other. It is very well known that a breach of security and peace in any part of the world constitutes a serious threat to security in every part of the world. That's what Mr. Hoffmann mentioned about the situation in Ukraine, and we can feel the tremors of what's happening in another part of the world while sitting in South India, both in terms of the destruction that is being caused and the economic impact. In this globalised world, it is very important to understand these nuances. I believe that there are Adverse or Vicious Cycles. The challenge is to reduce the effect of Vicious Cycles by producing and expanding the scope of "Virtual Cycles". This means that opportunities for creating peace, economic activity, and development in any part of the world offer a very good opportunity for building "Virtual Cycles" everywhere else in the world. This peace, dialogue, and friendship create positivity and lead to an increase in peace and friendship across the world. That is why it is incumbent upon every one of us to reduce or eliminate the causes of conflict to make our world more secure and also seize every opportunity to foster partnerships for peace, economic growth, development, and prosperity. In other words, the challenge lies in shrinking the vicious cycles of crime and conflict and nurturing and expanding the virtual cycles of peace and prosperity. We are all aware that the Bay of Bengal has turned out to be a theatre of very keen economic and strategic competition. While the Bay of Bengal region itself has been constantly gaining in economic and geopolitical significance, we are witnessing a relentless increase in geopolitical competitions and power rivalries in the region. Politics, competition and rivalries are all part of reality. They are a part of the geopolitical dynamics of today's world. Some of these competitions may even be beneficial. At the same time, we should be careful to see that such competition and rivalries do not

escalate into conflicts and hostilities. The topics for discussion in today's conference have been very carefully chosen. Apart from security, prospects for the blue economy in the Bay of Bengal, trade, commerce, energy, cooperation, technology, environmental sustainability, etc., will be discussed. The overriding theme is one of sustainable use of ocean resources, based on the idea that a healthy ocean supports economic development.

There cannot be a better theme for such a conference. Now, being a policeman, I will try to explain what it means to be a policeman and say a few words about security. The conference itself has listed human security in the Bay of Bengal as the first topic of discussion. Regional and maritime security are subsets of this larger human security discourse. Everyone agrees that security is an essential precondition to economic growth and development in the national and international context. The region presents many complexities as far as security is concerned. In my personal professional journey, having worked in the Northeast and in various capacities in the Government of India, I have had the occasion to interact with my counterparts in almost all the countries around the Bay of Bengal. Overall, I am familiar with the challenges in terms of both security and how other aspects of development interplay with security in these countries. I have personally come across and dealt with many instances of international crime, like smuggling in arms and ammunition, explosives, narcotics, human trafficking, money laundering, etc. I have also come to understand the movement of terrorists between countries. In fact, India has been a victim of terror. It is not that the terrorists directly come from one country to another. They follow a circuitous route that complicates the process of tracing their point of origin and makes it complex to track their travel documents. I am aware of some of the nefarious possibilities and have an idea about the sheer magnitude and enormity of the problem. It is mind-boggling, to say the least. At the same time, there is also an issue with security planning because of the tendency to think from a land perspective. Most of the security conversations and the discourse itself are from a land perspective. We look at threats from the sea as threats to our land. This has been acknowledged as a major problem by many maritime security experts from across the world. In fact, we are all aware that in the case of the Mumbai 26/11 attack, terrorists from Pakistan were able to hijack a boat, kill all the crew members, bring that boat all the way to Mumbai, and then get into the city relatively easily and attack it. There are similarities to what happened in the earlier Mumbai attacks. So in all these cases, vulnerabilities exist on that front even today. This is true not only for India but for other littoral countries in the region as well. So it is important to remain alert to that possibility. On a lighter note, criminals, terrorists, smugglers, and traffickers all cooperate with each other to conduct criminal activities. They provide logistical support and cooperate in their own way with each other. But the same cannot be said for international cooperation, as every country is suspicious of the other and worried about their activities. There is always mutual suspicion and inhibition in international relations. We need to take note of this. The magnitude of the problem has been mentioned by Dr Dhanuraj. The Bay of Bengal has very large coastlines, and the countries have very large EZs encompassing huge swathes of the ocean. Even landlocked countries like Nepal and Bhutan are impacted by the security vulnerabilities that the oceans in the region present. India itself has more than 7,500 kilometres of coastline. We have been facing several challenges in terms of border security and border management, thanks to the porosity of the coastline and the vagaries of the ocean, especially during the monsoon season. In fact, one of the major worries of the Indian government has been the large number of uninhabited islands in the Andamans and Lakshadweep.

These islands are very often used by criminals, smugglers, and traffickers. There is also a worry that some of these uninhabited islands could be used as launchpads by terrorists to carry out attacks on India or on Indian assets in the ocean. So one of the major concerns of the littoral countries in the region has been the frequent incidents of armed robberies and piracy attacks in the Sundarbans region, Bangladesh, India, and also in the deeper seas of the Bay region. Historically, this persistent problem has been periodically controlled whenever the law enforcement agencies in these countries have come together, but cessation of vigilance again leads to the deterioration of the situation. There is a roller-coaster trend that is often seen in the piracy problem, and there are times when these issues become hazardous for the seagoing people from India, Bangladesh, and other countries in the neighbourhood. Another issue is large-scale illegal migration and human trafficking. These have become important since the Rohingya crisis. Trafficking of stateless persons is a very complicated issue. It leads to other international crimes, like hijacking, smuggling of drugs, arms, ammunition, explosives, etc. These crimes form an ecosystem that helps sustain the constituent activities. In recent times, there have been several instances of the recovery of drugs in huge quantities from ports or ships at high seas. This is becoming a huge menace. Recently, there was a huge haul of drugs that emanated from Afghanistan and came to the Adani port in Mundra. The Coast Guard is aware of many instances when drugs were intercepted on the high seas. The security complexities of the Bay of Bengal are truly multidimensional. Every littoral state in the region has a fundamental stake in the security of the region as well as the concept of ocean governance. Organised international criminals, work only for their own financial gain and seriously undermine the national security of the affected countries. In fact, in the Northeast, we have seen many occasions where boatloads of arms and ammunition explosives are smuggled into Bangladesh first and then find their way into India through multiple routes in multiple countries, like Myanmar. This is a major source of arms supply to the extremist organisations in the country. Organisations like BIMSTEC, for example, are doing a great job, and by virtue of being a leading regional maritime power, India has achieved substantial progress in developing the security infrastructure of the region. In fact, one of the most significant areas has been maintaining maritime domain awareness, which has helped provide leadership for security and related issues in this part of the world. I will conclude by saying that security is a shared responsibility, and it is important that all member nations of the Bay of Bengal community come together, share their resources, and partner with each other in this enterprise to build our own future. That is the theme of this conference. It offers an opportunity to think critically and generate collective wisdom about the threats and opportunities that the Bay of Bengal presents. I am sure that the discussions will generate a better understanding of the concerns from the point of view of scholars as well as practitioners of the region. I wish this event every success and hope that you have an intellectually stimulating discussion. Thank you.

Chapter 1

From 30 By 30 to Blue Carbon Economy: Is the Bay of Bengal the Answer to Hidden Prosperity of Indian Ocean Rim Countries?

Dr Sevvandi Jayakody

The Indian Ocean is vital to the health of the rim countries, including all species that inhabit it. The Bay of Bengal region of the Indian Ocean has been providing food, livelihood, and recreation for people whilst also contributing to the global oxygen supply, carbon and nitrogen cycling, and regulating climate. However, the Bay of Bengal and its influential zone have also undergone severe, if not catastrophic, alterations to their marine realm, resulting in reduced catches, erosion, sea level rise, hypoxic zones, and organic and inorganic pollutants incurring social, economic, and ecological costs. Nonetheless, extensive research, advocacy, and regional and global cooperation have set the momentum for a revival of the region in recent years. The Global Biodiversity Outlook 5 (2020), Global Wetland Outlook (2021), Intergovernmental Panel on Climate Change (IPPC) 6th Assessment Report: The Physical Science Basis (2021), and Report on Impacts, Adaptation, and Vulnerability (2022) have provided glimpses of the actual impacts of humans on the ocean, its natural capital, and its plight as never before. At the same time, the blue carbon economy and its potential to support coastal communities, debt restructuring, and green finance through carbon trade, as highlighted by recent reports and publications, have shed light on investing in the ocean for prosperity. Thus, natural climate solutions arising from the ocean have sparked a new need to protect the ocean. Therefore, the 2019–2022 period has been very significant for the ocean affairs of the world as well as the Indian Ocean.

Plans for Revival of the Ocean

To ensure conservation, sustainable and wise use, financial commitment, and cooperation, world forums have produced a significant number of pledges and texts in the form of resolutions and treaties. They essentially cover areas necessary for prosperity in the Bay of Bengal, such as emerging sustainable ocean economy sectors, transparency, fishing subsidies and support mechanisms, ocean economy markets, and non-tariff reforms. They also cover the social sustainability of fisheries and aquaculture value chains, sustainable and resilient maritime supply chains, trade-related aspects of marine litter and plastic pollution, known and novel pollutants, marine ecosystems, and spatial

planning. As policies and frameworks to protect natural capital are the pivotal factors of all actions, this note hereafter highlights some initiatives that have to be studied by all the countries of the Bay of Bengal region and adopted with regional initiatives.

Notably, nations in the Bay of Bengal have shown their appreciation for the goal of the 30X30 Ocean Alliance, proposed to be adopted under the Convention on Biological Diversity as a commitment to protect or conserve at least 30 percent of Earth's land and ocean through area-based conservation measures that demonstrate comparable benefits for biodiversity. Strategic marine spatial planning in the respective Exclusive Economic Zones in the Bay of Bengal within the next seven years can pave the path to achieving this target. The National Biodiversity Strategic Action Plans (NBSAPs) of the nations of the Bay of Bengal, as well as other nations, have failed to achieve the aim of protecting 10 percent of the ocean by 2020. Evidence has also shown that 10 percent would not deliver the environmental benefits necessary to meet the objectives set out in the UN Sustainable Development Goals as well as Aichi Target 14: Sustaining "ecosystems that provide essential services contributing to health, livelihoods and wellbeing". The 30X30 target, therefore, follows the recommendations of O'Leary (2016), where scientific evidence indicates that adequate protection of at least 30 percent of the global ocean will help to deliver both Aichi and SDG targets linked to the ocean.

The bathymetry of the Bay of Bengal is relatively unexplored, yet the fluxes from major rivers and sediment characteristics of the abyssal plain require policy directives that will be shaped by current negotiations related to an agreement under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity in areas beyond national jurisdiction. In order to ensure that the nations around the Bay of Bengal optimise the benefits of this large marine ecosystem, which is rich in biodiversity, strategic alliances and partnerships should be formed concurrently. The agreement will determine access *ex-situ* to marine genetic resources in areas beyond national jurisdiction, implying access to samples, data, and information, including digital sequence information. Most importantly, any use will require environmental impact assessments that will be subjected to the approval of transboundary nations and the possible establishment of regional economic integration organisations; any pre-emptive actions by the rim nations can ensure concurrent preparedness for this agreement. Hence, arms like the Bay of Bengal Programme-Inter Governmental Organisation (BOBP-IGO) and the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) should be brought to the fore for planning.

Prosperity also depends on the health of natural capital, and in recent years, the Indian Ocean has seen an increase in hypoxic zones. Therefore, the sustainable nitrogen management initiative known as the Colombo Declaration, with the ambition to halve nitrogen waste by 2030, is also important for the Bay of Bengal. In March 2022, at the 5th United Nations Environment Assembly (UNEA 5.2), UN Member States made a historic commitment in Nairobi by adopting the resolution championed by the Government of Sri Lanka regarding the same. Actions to achieve this target require the cooperation of all nations in the region and would lead to ecological and economic prosperity.

Area-specific port waste audits and surveys conducted by the Commonwealth Litter Programme (CLIP) and reports from the Indian Ocean Rim Association (IORA) indicate that derelict fishing

gear, also known as Abandoned, Lost, and otherwise Discarded Fishing Gear (ALDFG), needs urgent attention, and port waste reception facilities need to be upgraded and maintained to comply with scheduled waste management under the International Convention for the Prevention of Pollution from Ships (MARPOL). A critical review of the adoption and enforcement of international conventions, treaties, and agreements in relation to marine waste is timely for all nations in the Bay of Bengal. This is further highlighted by the complexities that arise at the time of ship disasters in assessing, valuing the damage, and seeking due compensation. The Bay of Bengal should unite to call for tighter measures for packaging regulations for materials like plastic nurdles. The M/V Xpress Pearl ship disaster in 2021 is a prime example of this.

Similarly, ports are the critical point of entry for fish into the land-based supply chain and provide the opportunity for 100% monitoring of all fin fish and other organisms landed or transhipped from the Bay of Bengal. Future prosperity requires digital literacy initiatives and the adoption of transparent measures to combat illegal, unregulated, and unreported fishing and marine wildlife trafficking. In the recent and forthcoming Conference of the Parties of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), a rise in the scheduling of marine organisms is seen. Certain species of sharks, rays, and sea horses are examples that can be quoted, and the region requires greater preparedness to adopt and compliance whilst minimising the economic damages and changes to the lifestyles of fishers.

Conclusion

Nations of the Bay of Bengal have been instrumental in ecosystem conservation and creating awareness to draw global attention to blue carbon ecosystems. In 2022, the UN declared 1st March as Global Seagrass Day, which was championed by Sri Lanka. Sri Lanka also serves as the Champion of the Mangrove Ecosystem and Livelihood Action Group (MELAG) of the Blue Charter of the Commonwealth. Never before in history have nations in the Bay of Bengal been active in marine ecosystem conservation at the global level, as witnessed now. Hence, if properly planned, the pathways and opportunities have already been considered as initiatives for prosperity. Seagrass, mangroves, and salt and reed marshes as blue carbon ecosystems can change the way green financing is used in the region. The global popularity of carbon finance has, in turn, created a set of expectations. However, there are specific rules about how abatement is calculated in international policy and climate finance. A barrier for stakeholders who want to leverage the potential of natural climate solutions from blue carbon ecosystems is also tied to complex frameworks and terminologies. The discrepancies between realised and anticipated benefits can be challenging for the Bay of Bengal. However, collaborative efforts by groupings like BOBP-IGO and BIMSTEC can explore how both voluntary carbon markets and those linked to national greenhouse gas inventories can be utilised whilst achieving the commitments made under the Nationally Determined Contributions (NDCs) of each nation. In turn, this would enable the prosperity of the Bay of Bengal region.

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Chapter 2

Shared Blue Economy Resources: Challenges and Opportunities

Dr P Krishnan

Oceans cover 72 percent of the surface of our blue planet and provide significant benefits to society, viz., food and nutritional security and economic and social development, by providing various ecosystem services. Marine ecosystem services have substantial economic value, and the estimated figures for the ocean economy are between US$ 3 and US$ 6 trillion. The concept of the blue economy is a long-term strategy that seeks to promote economic growth, improve livelihoods, and ensure environmental sustainability. Sustainable development in the blue economy implies that it should be both inclusive and environmentally sound, which means that it needs to balance all the dimensions of economic, social, and environmental aspects. It is also a strategy for sustainable economic growth and job creation, which are necessary to reduce poverty in the face of worsening resource constraints and the climate crisis. The Blue Growth concept has also become important in the oceanic and freshwater development strategies of international organisations such as UNEP, the World Bank, the OECD, the European Union, and many developed and developing nations. The Blue Economy is determined to initiate appropriate programmes for the sustainable harnessing of ocean resources, research and development, and human resource development.

The Blue Economy in Indian Ocean Region

The littoral regions of the Indian Ocean Region (IOR) are vast, densely populated, and comprise some of the world's fastest-growing economic countries. In recent times, it has been rebranded as the "Ocean of the Centre" and "Ocean of the Future" a far cry from its earlier reference as the "Ocean of the South". The focus has shifted from the Pacific and Atlantic Oceans to the Indian Ocean. The Indian Ocean has gained tremendous importance over the years and has become an area where both global economic activity and political interest are intense. In the IOR, the Blue economy has emerged as a prominent aspect among the 23 member states of the Indian Ocean Rim Association (IORA). Realising the importance of the Blue Economy in IOR, member states of the IORA have adopted the Mauritius Declaration on the Blue Economy (2015) and the Jakarta Declaration on the Blue Economy (2017) to develop and apply blue economy approaches to

sustainable development and enhance socio-economic benefits. Member countries recognise the multi-sectoral nature of the Blue economy, which includes:

- Fisheries and aquaculture to ensure food security and contribute to poverty alleviation and sustainable livelihoods;
- Renewable ocean energy to reduce the cost of energy and mitigate and adapt to the impact of climate change;
- Seaports and shipping to promote trade, investment, and maritime connectivity in the IOR; and
- Offshore hydrocarbons and seabed minerals to foster new business opportunities and attract investment in the Indian Ocean.

Prospects of Blue Economy in the Bay of Bengal

The littoral states of the Bay of Bengal have a combined GDP of nearly $2.7 trillion and almost 22% of the world's population. Almost 200 million people in the Bay region live in coastal areas, with a substantial proportion either partially or wholly dependent on fisheries. Rich in natural resources, including energy and minerals, the Bay is a source of livelihood and a valuable resource for foreign exchange. The maritime domain of the Bay of Bengal is expected to contribute immensely to the growth and prosperity of the South Asian littoral states. Fishing and aquaculture employ 7% of people engaged in blue economy sectors globally and account for about 15.7% of the global consumption of animal protein. The Bay of Bengal is a large marine ecosystem with an area of 35 lakh km^2 and supports a wide range of habitats, including mangroves, coral reefs, seagrass, and seaweed beds.

Further, the ecosystem harbours a large number of fish biodiversity with endangered and vulnerable species. Countries bordering the Bay of Bengal are among the top fish-producing nations globally, in terms of both aquaculture and fisheries. Total marine fish production from the Bay of Bengal's Large Marine Ecosystem (LME) is around 6.4 million metric tonnes (Sea Around Us, 2022), with a value of US$9–10 billion at current prices. Three major issues pertaining to the LME are overexploitation of fish stocks, habitat degradation, and pollution, which pose a serious threat to long-term sustainable fish production. The artisanal fisheries sector also shares a significant portion of fish landings, leading to microfood security and creating local wealth and employment. Women are actively engaged in the industry in Bay of Bengal rim countries. Further, they contribute significantly to household income and food security, and their economic contributions are often the mainstay of family and community sustenance. The Bay of Bengal was largely ignored by international oil and gas companies until the turn of the decade. But recent exploratory studies show huge deposits of hydrocarbons. Also, the seafloor is scattered with various minerals waiting to be explored. Meanwhile, offshore renewable energy and marine biotechnology have also emerged as important growth sectors.

Need for a Regional Cooperation Framework

Regional cooperation brings several long-term advantages and focuses mainly on the region's priorities. There are several organisations working on political and multi-sectoral aspects (IORA, Bay of Bengal Initiative on Multi-Sectoral Technical and Economic Cooperation - BIMSTEC, South Asian Association for Regional Cooperation - SAARC); fisheries aspects (Bay of Bengal

Programme Inter-governmental Organisation - BOBP-IGO, Indian Ocean Tuna Commission - IOTC and Asia-Pacific Fishery Commission - APFIC) and environmental aspects (South Asia Co-operative Environment Programme - SACEP). However, country-to-country collaboration is often limited. For example, India and Bangladesh are leading producers of fish from freshwater aquaculture, but collaboration between them is insignificant. Hence, regional cooperation between different countries and organisations needs to be strengthened.

Need for Techno-Institutional Regime

The fisheries sector has a strong potential for creating a positive impact on the socio-economic conditions of the coastal population and also on the economy of the country. Only recently, have the governments shifted their focus towards fisheries and aquaculture, as they form the core components of the blue economy. There are issues like overfishing, conflicts between different sectors (artisanal-mechanized sector; fishing-aquaculture sector), threats to the livelihood of small and marginal fishermen, gender inequality, climate change, etc. In order to curtail and curb these issues, the Blue Economy signifies the importance of a new techno-institutional regime, and this approach primarily concentrates on:

Development of methodological and policy frameworks

- Data-driven fisheries resource management
- Governance of deep-sea living resources
- Regional plan on IUU Fishing
- Evidence-based conservation planning

Capacity building

- Ecosystem approach to fisheries
- Data stock assessment
- Climate change adaptation planning

Technology diffusion

- Seaweed farming
- Mariculture and sea ranching
- Deep sea fishes

Citizen Science Approach for Real-time Data Collection

Information and data are the lifelines of the Blue Economy. The Citizen Science approach has been used worldwide in various fields. Citizen Science is the practice of public participation and collaboration in scientific research to increase scientific knowledge. If this approach is carefully designed and implemented, it could be an important collaborative approach towards filling key data gaps for the needs of a sustainable Blue Economy, which further results in evidence-based decisions. For example, fishermen can be used to collect real-time environmental parameters in the ocean by equipping fishing vessels with certain sensors.

Conclusion

Fisheries are viewed as a livelihood sector, while new blue ventures have a large commercial focus. This will increase the opportunity cost of areas where fisheries are concentrated. There is a huge data gap on the economic value of the contribution of fisheries to food and nutritional security, employment, etc.,

which reduces the focus on policymaking in this sector. Further, in order to better manage the sectors in the ocean, interactions among different sectors and their impact on the ocean need to be studied. Coastal and marine spatial planning at the national/regional scale would aid in balancing sectoral needs.

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Chapter 3

Prospects and Challenges of Blue Economy in the Bay of Bengal

Dr Abdul Hannan Waheed

Introduction

The first grouping of the Bay of Bengal can be traced back to June 1997, when the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) was established to expand cooperation amongst the countries of the region through the Bangkok Declaration for connecting countries from SAARC and ASEAN. The first Bay of Bengal grouping included seven countries, namely India, Bangladesh, Thailand, Sri Lanka, Myanmar, Nepal, and Bhutan. Some authors, such as Aiyer (2018), propose nine countries by adding Indonesia and Vietnam. While Bhutan, Nepal, and Vietnam do not touch the Bay of Bengal, they have similar demographic/ development profiles to India and have friendly ties with India.

Figure 1.1: Bay of Bengal Group

Source: www. wikipedia.com

Two countries that border the Bay of Bengal but are not included in the group BIMSTEC are Singapore and Malaysia. It is worth noting that while Vietnam, which is not in the Bay of Bengal, has been included in the grouping of the Bay of Bengal, some other countries, such as the Maldives, that are in closer proximity to India and Sri Lanka, are not counted in the group.

In terms of size, the Bay of Bengal is the largest Bay in the world, and the region comprises 2.2 million square kilometres and 3 million square kilometres if the Andaman Sea and the Strait of Malacca are added. Including Singapore and Malaysia and excluding Vietnam, Nepal, and Bhutan, Sing reckons a total land area of 7 million square kilometres, a population of 1650 million, and a combined gross domestic product (GDP) above US$ 1,500 billion. It is important to note that these figures pertaining to the population and GDP must have increased significantly since that time.

In today's fast-changing world, there is talk of the Bay of Bengal as a group comparable to other groups such as BRICS and ASEAN. Though some, like Moazzem and Radia 2020, claim that BIMSTEC has been underperforming, like SAARC among other Asian regional organisations, the Bay of Bengal has long been regarded as a critical maritime region in the world. It is a passageway that provides connections to China in the East and Persia, Arabia, and Europe in the West. More significantly, the influence and strength of the Bay of Bengal group have been increasing with a rise in exploration activities for more energy and mineral resources and subsequent economic development. The Bay of Bengal is in Asia, and with the growth of fast-emerging economies in Asia, energy consumption and demand are projected to be higher than in North America.

Attri and Bohler-Muller (2018), stress that the Blue Economy is "an evolutionary concept that provides a solution to what is articulated as limits to growth". They also point out that "the Blue Economy (also known as Blue Growth) is seen as an alternative model of development to ensure inclusive growth and prosperity in the world." The Blue Economy is also defined as "the sustainable development of the oceans and coastlines surrounding a region". Hence, it can be argued that the most crucial feature of the Blue Economy is to have an integrated approach to economic development and environmental sustainability based on the resources of oceans and coastal areas.

The following sections present a discussion of the economic potential of the Bay of Bengal as well as challenges to the sustainability of the Blue Economy faced by the countries in the region.

Economic Potential of Bay of Bengal

The Blue Economy is regarded as being very important for most of the nations in the Bay of Bengal group and neighbouring countries such as the Maldives. These countries are either Developing, Least Developed Countries (LDCs), or Small Island Developing States (SIDS). The Blue Economy is not only a way forward for a sustainable green environment but also for economic development through development and business opportunities.

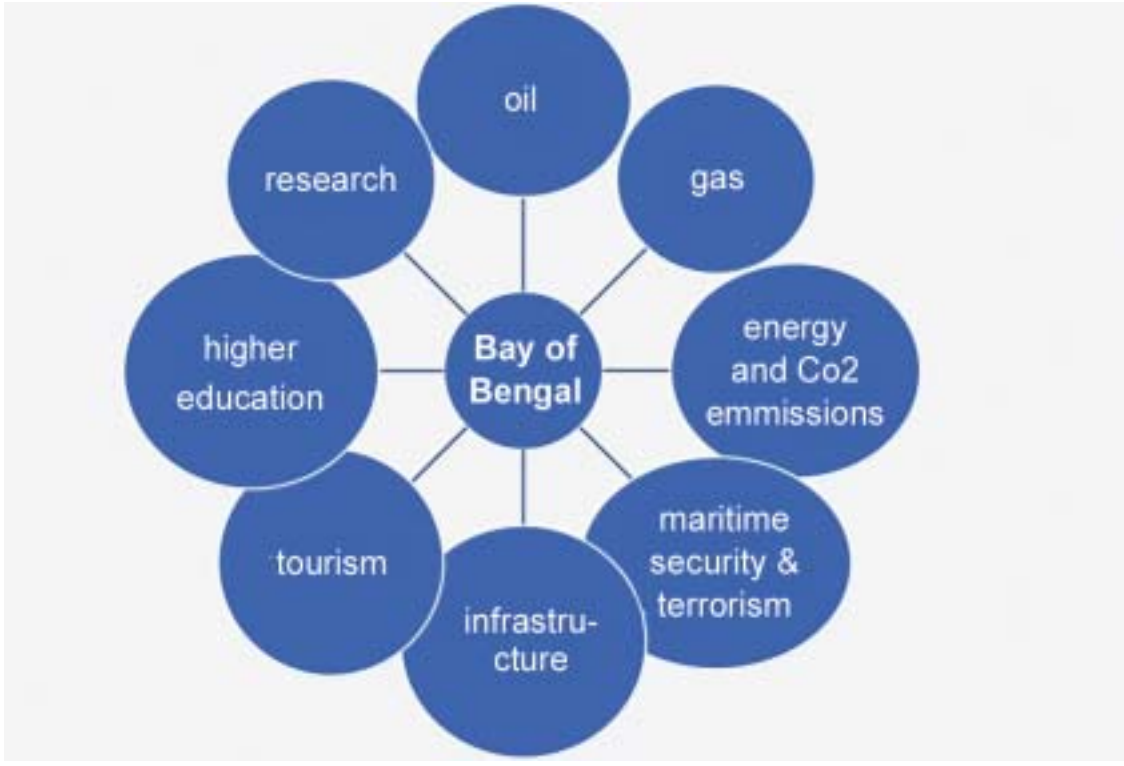
The Bay of Bengal region has not been known as a significant oil and gas-producing region. However, some authors, such as Devare (2008), argue that with recent discoveries of natural gas in the offshore areas of Myanmar, Bangladesh, and India, the energy equation of the region has changed. That is supported by the fact that, in 2002, 7 trillion cubic feet (tcf) of gas were discovered off Visakhapatnam on the Andhra Pradesh coast of India. The Bay of Bengal region produced 3 million barrels of oil per day in 2006. It is worth noting that oil consumption at that time doubled to 6 million barrels per day.

The potential of the Bay of Bengal is also due to its location with connections to the Malacca Straits and the South China Sea, where the major oil and gas-producing countries of Malaysia and Indonesia are located. Also, Singapore is in the vicinity, which is an international hub for oil storage and refining. The Bay of Bengal thus dominates maritime development and ocean governance. It is worth noting that oceans cover approximately 72% of the earth's surface (Seo 2021). In that sense, Iqbal (2019) argues that the oceans are regarded as the main component of global economic growth because of their potential for food, minerals, and energy.

There are comparisons between the Bay of Bengal group and the BRICS, which is becoming a major global economic powerhouse, and India is a member nation in both groups. For instance, the Bay of Bengal group's economic size is expected to grow to the same level as the BRICS did in 2006. Also, the average per capita of this group is already higher than that of the BRICS in 2001.

There are eight different areas of cooperation among the countries of the Bay of Bengal, which are oil, gas, energy and CO_2 emissions, maritime security and terrorism, infrastructure, tourism, higher education, and research, particularly in cutting-edge technological fields like biotech.

Figure 1.2: Areas of cooperation among the countries of the Bay of Bengal



Source: A New Energy Frontier: The Bay of Bengal Region

The idea of sustainability is crucial for a Blue Economy. For the sustenance of the planet, five factors are to be observed viz population growth, agriculture, renewable resource depletion, industrial output and pollution. While the region has one of the fastest population growths in the world, a careful balance is needed between population and production to safeguard the global systems of nature, as argued by Owusu - Sekyere.

Renewable Energy Resources in the Bay of Bengal

The Blue Economy is more relevant to today's world in the sense that our world is now in dire need of environmentally responsible populations engaging in sustainable activities. In fact, central to the Blue Economy concept is "the need to ensure socio-economic development that avoids environmental degradation". Oceans provide significant economic and social benefits with a wide range of resources and services. These include fisheries, minerals, oil and gas, rare earth metals, renewable energy, climate regulation, cancer-curing medicines, genetic resources, carbon storage, cultural value, sustainable livelihoods, and other living and non-living resources.

It is inconceivable to have a blue economy without green or renewable energy. There are talks underway about exploiting renewable energy sources when it comes to the discussion of the energy potential of the Bay of Bengal region, primarily because of the environmental concerns associated with the present reliance on fossil fuels. Harnessing tides as the source of electric power along the Bay of Bengal has been explored through studies but not yet implemented practically (op cit).

Challenges for Sustainability of Blue Economy in the Bay of Bengal

A Highway to Climate Hell

Clean energy and low-carbon technology are central to the idea of renewable energy to reduce greenhouse emissions and save the world from "fast approaching tipping points that will make climate chaos irreversible", as warned by UN Secretary General António Guterres in his inaugural speech at the COP27 UN climate summit in Egypt. He gave a stark warning that "We are on a highway to climate hell with our foot on the accelerator". This is a reference to carbon emissions that contribute to global warming, which in turn causes climate change. The Bay of Bengal region is not an exception when it comes to the need to be environmentally responsible by adopting renewable energy to reduce carbon emissions. Gradually getting away from fossil fuels could be a challenge for big economies such as India.

The effects of climate change pose problems for the region. It is particularly vulnerable to extreme climate events such as storms, cyclones, and heavy rainfall. Tropical cyclones, which are the most destructive among extreme weather events, cause severe damage to livelihoods and property in the region. In fact, 20 out of the 23 top global tropical cyclones with the highest fatalities in the last 300 years occurred in this region. Six of the deadliest cyclones globally occurred in the Bay of Bengal region.

The rise in sea levels is also a significant concern for countries like the Maldives (not a member of BIMSTEC) and Bangladesh. Between 1901 and 2010, the global sea level increased at a rate of 1.7 mm per year. More alarmingly, the rate of increase in sea level has doubled since 1993, with an increase of 10 mm since January 2020 due to increasing ice melt. Some models predict a catastrophic sea level rise of as much as 5 metres or even higher by the end of the century.

Challenges for Blue Economy

The Bay of Bengal region faces many challenges in pushing for a sustainable, environmentally friendly Blue Economy. Energy security has become the world's top priority since the turn of the century (Bongars 2008). It is expected to meet half of the projected global energy demand by 2030,

as per the energy report by Exxonmobil. Challenges to the Blue Economy include increasing degradation, overexploitation and depletion of ocean resources, habitat destruction, marine pollution, rising population, and climate change effects. In addition to these, the region also faces problems from land due to heavy reliance on agriculture. The heavily populated coastline and large coastal areas increase its vulnerability with least capacity to respond, even though it will be hit the hardest.

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Chapter 4

India's Cooperation for Renewable Energy in the Bay of Bengal

Dr Madhu P Pillai and Austin Paul

Need for Renewable Energy

The economic meltdown around the world caused by the Russia - Ukraine Crisis has led countries to rethink their energy policies. There is a growing consensus among nations on achieving energy security and ensuring long-term sustainable growth through the use of renewables. In the context of the Bay of Bengal, India is a major strategic force in the region and has been promoting the use of renewable energy through domestic policies as well as bilateral and multilateral cooperation.

The importance of reducing pollution and achieving energy security has made India conscious of the efforts to be put into developing renewables. Under the guidelines of the Ministry of New and Renewable Energy, various initiatives are being undertaken to reduce India's carbon footprint. India has also started engaging in bilateral and multilateral level interactions to enhance energy security through renewables. In the Global South, there is an increased level of energy cooperation between India and countries in the Bay of Bengal Region, as a part of which India is supporting many countries in the region in the areas of feasibility studies, technology transfer, and project execution.

Energy Cooperation in the Bay of Bengal Region

Since 1961, India has been assisting Bhutan in the development of various hydropower projects. Bhutan and Nepal are two major hydropower giants in the Bay of Bengal region. Through inter-grid connections, countries such as India and Bangladesh have been importing energy from these countries. With the help of developed economies and the inclusion of private players, India can develop infrastructure for renewable sources of energy while ensuring lower transmission losses. The use of inter-grid connections to transport renewable energy to different countries in the region according to their energy needs can help build capacity to counter climate change.

The US$2 billion, 1125 MW Dorjilung hydropower project will involve Bangladesh, Bhutan, and India and integrate the interests of all three nations in the region by enabling hydropower electricity to be exported from Thimphu to Dhaka via India. The idea for this initiative was shaped during the discussions among the three nations as a South Asian Association for Regional Cooperation (SAARC) sub-grouping on the topic of water and energy in 2014. The long-awaited Dorjilung hydropower project received a mention during the parliamentary session in Bhutan during November 2021, when Prime Minister Dr Lotay Tshering of Bhutan stated that a second Detailed Project Report (DPR) would be ready in six months. He further highlighted the scope of cooperation between India - Bangladesh - Bhutan in the development of hydropower projects. Bangladesh has a strategic foothold in terms of connecting India with other countries surrounding the Bay. Both countries are situated in the prominent Bangladesh, Bhutan, India, and Nepal (BBIN) regions and are members of multilateral groupings such as SAARC and the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC).

SAARC, as a regional organisation, has mostly failed due to conflict among the member countries, and with the failure of SAARC, cooperation within BIMSTEC has been on the rise. The MOU on grid interconnection signed by the member states of BIMSTEC during the 4th BIMSTEC summit aims to promote ideal power transmission in the BIMSTEC area. The grid interconnection among the countries of the region can help shape a prosperous Bay of Bengal. However, there are major challenges in terms of implementation.

Indian Initiatives for Energy Cooperation

Within the framework of BIMSTEC, India has been involved in various grid integration projects. The 3,000 km long BIMSTEC power network connecting Myanmar, Thailand, and India under construction is an example. However, there have been challenges even within BIMSTEC. For instance, on January 22, 2011, the member states of BIMSTEC signed the Memorandum of Association (MoA) for establishing the energy centre of BIMSTEC in Bengaluru. The centre, however, is yet to be functional as the member states are still formulating the rules and functions of the energy centre. There is also a lack of focus on enhancing cooperation in the field of renewable resources.

India, unlike other developed countries, has a rising demand for energy, and the use of traditional sources of energy such as coal, oil, and gas is high. Despite this, India has been striving to reduce its dependency on non-renewables. The position of India regarding its usage of energy was well defined in Paris at COP 21, where India stated that solar and wind were its first commitments under renewable energy.

India has received major attention on the world stage for the initiatives taken under the International Solar Alliance (ISA), formed as an outcome of COP 21 in Paris. Several nations surrounding the Bay, such as Bangladesh, Myanmar, Sri Lanka, and Bhutan, have signed the ISA framework. During COP 26, Indian Prime Minister Narendra Modi and UK PM Boris Johnson released the 'One Sun One World One Grid' (OSOWOG) declaration under the ISA. This initiative aims to transfer clean energy to any place at any time of the day through a global grid. Later, as part of the UK-India Virtual Summit, they resolved to combine the UK's Green Grids Initiative (GGI) and the ISA's

OSOWOG into GGI-OSOWOG. This Initiative can help enhance grid connectivity between India and its neighbouring countries while ensuring reduced energy costs and carbon footprints.

India faces a major diplomatic challenge in energy cooperation with countries in the region because of a lack of technological know-how and financial capabilities. This has facilitated the entry of China and other major players into the energy sector. For instance, China was initially given the opportunity to develop wind farms in Sri Lanka, a neighbour of India. However, given the security risk and other interests, India negotiated and won the rights to develop three wind farms. India is the fourth largest wind energy producer in the world and is currently moving towards an offshore wind energy policy, and has acquired the necessary technological and implementation strengths in this sector.

For better coordination and cooperation, conflicts among the three countries should be resolved. Bangladesh and Myanmar act as links connecting South Asia with Southeast Asia. The two countries are also a major strategic pivot for India's Act East and Neighbourhood First Policies. Despite conflicts and ideological differences, so far, countries cooperate for mutual growth.

It is inevitable that India, politically and economically the most stable state in the region, should take a 'cautiously optimistic' approach while engaging in future energy cooperation. The global outcry against the use of fossil fuels has reduced the scope for cooperation in non-renewable energy.

Conclusion

There is cooperation in the region for the development of a wide array of projects, including hydropower plants, wind farms, solar panels, and transmission of power output at lower cost and higher efficiency. Mutual cooperation in renewable sources of energy can help in establishing a regional order as well as make the region a powerhouse for energy security while lowering their dependency on other countries or blocs. In conclusion, cooperation in the renewable energy sector can offer great potential for energy security, economic security, political cooperation, and enhanced diplomacy, which together can be a visibly important catalyst for sustainable growth in the Bay of Bengal region.

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Chapter 5

Energy Insights in the Bay of Bengal: Towards Shared Prosperity

Gauri Singh and Swetha Hariharan

In the past few years alone, multiple compounding crises have underscored the pressing need to accelerate the global energy transition. Economies and societies alike have felt the rising cost and vulnerability of a centralised energy system highly dependent on fossil fuels. With renewable-based energy systems providing remarkable resilience amidst these challenges, the global energy discourse, underpinned by the climate and development imperatives of the Paris Agreement and Sustainable Development Goals, is witnessing a long-awaited and much-needed shift. There is a widespread understanding that if the world wants a fighting chance at limiting global warming to 1.5°C by 2050 and averting future shocks, the energy sector must undergo a rapid transition, placing renewable energy at the heart of commitment and action.

While the global energy transition presents a monumental challenge by confronting some of the most pressing issues of our times, it remains the most practical option across countries and regions alike. Around 80 percent of the global population lives in net energy-importing countries Unlike fossil fuels, every country possesses some form of renewable energy potential that remains largely untapped. Harnessing this potential would foster greater energy access, security, and independence, diversify supply options, and protect economies from energy price shocks. It would also build local capacity, strengthen industrial competitiveness, create jobs, and reduce poverty, ultimately advancing just, inclusive, resilient, and prosperous societies and economies worldwide.

According to the International Renewable Energy Agency's latest World Energy Transitions Outlook, the 1.5°C-aligned energy transition will require annual investments of US$ 5.7 trillion until 2030, with US$ 0.7 trillion in annual fossil fuel investments to be redirected towards renewable energy technologies. While the private sector is expected to contribute most of this additional capital, governments and public institutions also have a crucial role in facilitating the required change in funding structures. In the years to come, a doubling of public financing will be required to catalyse private finance and create the necessary enabling environment that would allow countries to reap the benefits that the 1.5°C Pathway presents. This narrative is no different in the context of the Bay of Bengal.

Energy Outlook and Progress in the Bay of Bengal

In recent years, countries across the Bay of Bengal have aligned their climate and energy commitments towards the net-zero target. India's Long-Term Low Carbon Development Strategy envisions the achievement of net zero emissions by 2070, with a near-term target of achieving 500 GW of renewable capacity by 2030.

With an ambition of net zero by 2050, Sri Lanka's preliminary Climate Prosperity Plan envisages a 70 percent share of renewable energy in electricity generation by 2030. Thailand's Long-Term Low Greenhouse Gas Emission Development Strategy sets out the path for net zero emissions by 2065, with renewables slated to account for at least 50 percent of new power generation capacity by 2050

In line with global consensus, a unifying factor in the plans across these and other countries in the Bay is the recognition that the transformation of the energy sector is the catalyst for achieving climate targets. Accordingly, countries are charting the path for accelerating the deployment of renewable energy, tapping into indigenous sources, including solar, wind, and hydropower technologies, and incorporating the development of green hydrogen technology and infrastructure to decarbonize hard-to-abate sectors.

Today, renewables are the default option for capacity additions in the power sector in almost all countries, dominating current investments. Between 2010 and 2020, the cost of electricity from utility-scale solar facilities fell by 85 percent, with corresponding cost reductions for onshore and offshore wind at 56 percent and 48 percent, respectively.

New solar and wind projects are increasingly cost competitive, with even the cheapest and least sustainable of existing coal-fired power plants proving to be more expensive in socio-economic and environmental aspects. In real terms, the International Renewable Energy Agency's (IRENA) Renewable Power Generation Costs show that the global weighted average levelized cost of electricity (LCOE) of hydropower, utility-scale solar, and onshore wind for projects commissioned in 2021 are increasingly below US$ 0.05/kWh for hydropower and utility-scale solar PV projects. This is 11 percent lower than the fossil fuel-based power generation option, which is witnessing increased investment costs in line with stricter environmental standards and geopolitical developments.

The economic and business case for the energy transition has never been more compelling. Nevertheless, the sheer size of investments needed to accelerate the deployment of renewables in line with the 1.5°C pathway. According to IRENA's latest Renewable Energy Outlook for ASEAN, over US$5 trillion, or two-thirds of total energy investment over the period to 2050, must be channelled towards renewable power capacity, power grids, infrastructure, and associated enabling technologies.

While progress has been encouraging, more must be done to pursue the 1.5°C pathway. Ambitious national plans across the Bay must now be translated into concrete action, with the need to ensure that short- and medium-term activities are aligned with long-term vision.

This is especially critical due to the possibility of sudden pressure threatening to derail transition efforts in favour of short-term response measures. In order to maintain consistent growth in renewable energy capacity, policy interventions remain critical.

The Challenge of Energy Security

The energy transition in the Bay of Bengal is driven not only by climate imperatives but also by the need to strengthen energy security, particularly in responding to the growing demand for energy through sustainable and resilient supply mechanisms. As energy demand continues to expand significantly in this decade, energy supply diversification is a crucial consideration for countries across the Bay. In accelerating the deployment of renewables, countries must leverage their comparative advantages in specific technologies, bring down costs, ensure supply security through regional grid interconnections, and provide supporting infrastructure for variable renewable energy.

In the 1.5°C Scenario, Myanmar is expected to have a peak electricity demand of 17.2 GW by 2050, and a hydropower potential of 40.4 GW. Thailand, with a much larger demand of 116.2 GW, is only expected to have a hydropower potential of 15 GW. By developing hydropower projects with regional interconnections in mind, Myanmar could channel its excess capacity to Thailand, thereby allowing both countries to realise the full potential of the energy transition. Beyond the mechanics of supply, regional grid interconnections also have the added benefits of facilitating the lowest-cost power systems, reducing duplication of efforts, fostering reciprocity, and reinforcing security.

Confronting energy security through regional grid interconnections is not without its challenges. While it does bring a balancing force to energy systems across the Bay, it is also a balancing act that requires cooperation and coordinated action among the countries. An interconnected grid relies on the alignment of regulations, permitting processes, and electricity markets, as well as the political will to overcome the current state of inertia associated with large-scale infrastructure projects. Without a clear, coherent, and integrated approach to planning and operations, this endeavour would also not attract the required levels of private financing, thus undermining ambitious climate targets and socio-economic development. Nevertheless, with every challenge comes an opportunity, and for countries in the Bay, opportunities are aplenty.

Opportunities for Shared Prosperity

Perhaps most unique to the Bay of Bengal is that the technical requirements of the energy transition do not present a challenge. The sub-region has abundant indigenous sources of renewables and has witnessed remarkable cost reductions through accelerated deployment across many countries. Given that the Bay is also home to some of the largest manufacturing countries in the world, the decarbonization of industry presents a significant opportunity in the years to come, with industrial processes set to transition from fossil fuels to electricity, biomass, and green hydrogen, which are increasingly being developed in line with national targets.

Concurrently, advancements in frugal engineering continue to present opportunities for leapfrogging into a new energy future, addressing the imperative of access to affordable, reliable, and sustainable energy (Sustainable Development Goal 7) while facilitating innovation and cost reductions in forward-looking sectors such as electric vehicles, which are slated to account for eighty percent of road activity by 2050 in Southeast Asia alone. Enabling frameworks and initiatives such as India's Atmanirbhar Bharat, which expand domestic capabilities to support local, regional, and international needs in parallel, charts the next frontier in techno-economic development in the Bay of Bengal. For this potential to be fully realized, it is vital to ensure a concerted approach amongst governments

and relevant stakeholders, including development partners, industry leaders, financial institutions, and civil society. A just and inclusive energy transition employs a citizen-centric policy framework and strengthens partnerships that are fit-for-purpose to deliver on this complex yet rewarding process. This entails greater public-private cooperation to encourage investment flows and learning from and leveraging initiatives on the ground, including Farmer Producer Organisations and Women's Self-help Groups in Bangladesh and India. In doing so, the sub-region has the potential to turn its demographics into an opportunity, democratizing the energy transition and ultimately bringing people and the planet closer to shared prosperity.

Conclusion

The Bay of Bengal continues to display encouraging progress in the quest to build inclusive and resilient energy systems based on renewables. Employing a long-term perspective and making tangible progress towards regional grid interconnections remain top priorities as countries continue to scale up their efforts in accordance with the 1.5°C pathway. This opens opportunities for energy diplomacy based on reciprocity, tackling shared challenges, and jointly enhancing energy security throughout the Bay. For a sub-region where climate and energy considerations are deeply embedded in economic, industrial, and societal processes, there exist ample opportunities for transitioning key sectors, including industry and transport, establishing policies that support strengthened value chains, as well as advancing innovation and frugal engineering practices that are well-established in countries across the Bay. In doing so, it is equally important to understand that the energy transition is not just about technology but also about access, energy security, green financing, and economic growth. It is a transition that cultivates unity in diversity, invests in our collective future, and draws on the tenet of *Vasudhaiva Kutumbakam: –* One Earth, One Family, One Future.

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Chapter 6

Towards Enhanced Energy Security and Cooperation in the Bay of Bengal: A Perspective from Sri Lanka

Ambassador Admiral Jayanath Colombage

Introduction to Energy Cooperation and Security in the Bay of Bengal

The attention to and discussion on energy security have occupied center stage in the national security and development of almost all the countries in the world in this century. There is growing demand for energy, especially in developing countries. Although many countries are focusing on renewable energy sources, fossil fuels or hydrocarbons will continue to be the main source of energy for the world in the foreseeable future. Many countries, as parties to the Paris Agreement, have pledged to reduce their carbon emissions through updated Nationally Determined Contributions (NDCs) to the United Nations Framework Convention on Climate Change (UNFCCC). For example, Sri Lanka has committed to achieve 70 per cent renewable energy in electricity generation by 2030, Carbon Neutrality by 2050 in electricity generation, and no capacity addition of coal power plants. However, there are doubts whether these targets could be achieved whilst meeting the increased demand for power and energy. This could be a challenge for most of the countries in the Bay of Bengal. The region is believed to be intrinsically rich in hydrocarbons and seabed minerals due to the deposit of sediments coming from many large rivers for thousands of years. However, it has not yet emerged as a major oil and natural gas-producing region. Therefore, the region will have to depend on energy produced in the Persian Gulf region at least for the immediate future to ensure energy security.

The conflict in Russia- Ukraine, Iranian nuclear activity and unilateral sanctions have resulted in increasing oil and gas prices. Although these sanctions target selected countries, many developing countries in the Bay of Bengal region are suffering from increased costs for sourcing energy. The region also does not have a comprehensive maritime strategy, either to exploit the seabed resources or to protect the vital shipping lanes for the transport of energy. Hence, there is a need for a cooperative and collaborative mechanism to ensure energy security.

When looking at energy security for the region, five areas are critically important: -

a) Security of energy transportation by sea lanes.
b) Security and sustainable exploitation of energy resources in the Bay of Bengal.
c) Economic security to maintain the ability to purchase fuel and gas from producer countries and transportation to required countries.
d) Efforts to use renewable energy resources.
e) Energy Cooperation in the Bay of Bengal.

Security of Energy Transportation by Sea Lanes

The Indian Ocean, together with the Western Pacific Ocean, is fast becoming a key ocean space in the 21st century. There is a huge strategic competition to secure the Sea Lanes of Communication (SLOC) among the major and aspiring powers. This has given rise to strategic convergences among major players such as the US, the UK, France, Australia, Japan and India. There is increased competition for resources, markets, bases and influence in this ocean space. The Bay of Bengal, as the connector between the Indian and Pacific oceans, occupies a critically important location in this strategic game. Although there is no immediate threat of state vs state military confrontation, the possibility of such a conflict cannot be ruled out. With strategic rivalry between the USA and China, and India and China, organizations such as Quad and Australia, the United Kingdom, and the United States (AUKUS), the tension in this region is relatively high. Such a conflicting situation can have a major impact on the freedom and security of energy trade across the Bay of Bengal.

Another area of concern is the developing tension around the choke points at entry and exit from the Indian Ocean. The Bay of Bengal is situated in close proximity to one of the most critical choke points, the Malacca Strait. The Strait of Hormuz is vital for trade with oil and gas-producing countries in the Middle Eastern region.

The world cannot forget how a small group of Somali fishermen turned pirates hijacked the world maritime fleet in the Arabian Sea, in the Horn of Africa, in the 2008-2012 period. No single country in the Indian Ocean could prevent seaborne piracy, and naval task groups and individual naval vessels had to be deployed to escort and protect merchant ships, passenger liners, other pleasure crafts, and fishing vessels, with the International Maritime Organization declaring a large area of the Indian Ocean a high-risk area. Therefore, the presence of non-state actors such as pirates threatens the safety and security of energy transportation across the ocean. There are also many other forms of transnational Non-Traditional security Threats (NTS) such as gunrunning, narcotic trade, human smuggling and irregular migration by sea, and illegal, unregulated, and unreported fishing (IUU) in the region. These activities are supported by criminal networks and can be a major threat to the freedom and safe passage of energy-transporting ships.

Security and Sustainable Exploitation of Energy Resources in the Bay of Bengal

To meet the demands of increasing populations and their development needs, countries in the Bay of Bengal will have to embark on Blue Economic projects to sustain their economies. The Bay of Bengal is believed to be extremely rich in hydrocarbons and minerals. The recent discoveries of natural gas in the offshore areas of Myanmar (in the Gulf of Martaban and off the Rakhine coast), the inland and offshore areas of Bangladesh, and the Cauvery, Godavari, and Krishna basins on the east coast of India have led to the hope that the Bay of Bengal might become Asia's North Sea in the near future.

However, no major seabed explorations are taking place as of now. The countries are still trying to delimit their continental margins. Many countries, except perhaps India, lack the technology and financial ability to explore and exploit seabed resources. The challenge ahead is to exploit these resources in the most sustainable way with minimum disturbance to marine life and ecosystems. Obtaining the necessary blue technology for such exploration is another major task. There is also a need to provide security and safety for such platforms engaged in ocean explorations and exploitations.

Economic Security for Energy Security

Sri Lanka exemplifies a case of how a lack of economic security affects energy security and impacts governance. At the beginning of 2022, Sri Lanka was facing an immediate threat with rapidly dwindling foreign reserves. Credit ratings were going down, and the threat of not servicing its external debt was becoming critical. Soon there were long queues for obtaining fuel and gas. The government did not have sufficient foreign reserves to pay for fuel and gas shipments. International suppliers were unwilling to provide credit facilities and banks were unable to open letters of credit. Soon, blame was levelled against the president and the government for the mismanagement of the economy. This gave rise to protests by the masses. Rapidly, the protests expanded throughout the country and even among the diaspora. India came to assistance. The protests gained momentum, and the prime minister and the cabinet were compelled to resign. The president fled the country and later resigned.

Fuel and gas are considered basic needs in today's society, and people expect the government to make these items available so that their day-to-day lives can go on uninterrupted.

Efforts to use Renewable Energy Resources

Many countries are trying to migrate to renewable energy sources with the aim of preventing further climatic changes, which are threatening the world with global warming, rising sea levels, and extreme weather events. However, the LMIC, including the Bay of Bengal littorals, lacks the financing and technology to harness renewable energy sources. The fossil-fuel- based industrialised countries lack commitment and do not seem to be honouring their commitments to preventing further deterioration of the climate. The Prime Minister of Sri Lanka, addressing the Conference of Parties (COP) 27 summit in Egypt, stated that "Developed nations should be giving leadership to overcome climate challenges rather than abdicating their responsibilities. It is no secret that climate financing has missed the target. It is ironic that the US$100 billion pledged annually has not been available in the coffers to finance climate challenges" (Farzan 2022). Bay of Bengal countries are blessed with an abundance of sunshine, monsoonal rains, and winds that can be harnessed to produce clean energy. The ocean can be used to produce clean and green energy by using tidal waves, currents, Ocean Thermal Energy Conversion (OTEC), salinity differences, and can be combined with wind and solar power generation. All these need financing and technology. The United Nations and the developed world have a responsibility to support developing countries in the Bay of Bengal to achieve their renewable energy targets.

Conclusion: The Way Forward

The Bay of Bengal is a strategically important region for world maritime commerce. It is estimated that nearly 75 percent of world energy is transported through the Indian Ocean, and the majority of it passes

through the Bay of Bengal. Therefore, maintaining the security of seaborne trade routes is of paramount importance. If the energy supply routes across the region are interrupted, it would have severe ramifications for the littorals as well as the world at large. Major seabed explorations are on the way and will increase in the near future, and the potential for finding fuel and natural gas is high. These ocean-based industries need to be protected from weather and security threats likely to be posed due to state-vs.-state rivalry and by transnational criminal syndicates.

States will require financial ability to purchase fuel, natural gas, and other essential items when these are not produced sufficiently domestically. If these are not available to the people, protests are likely, as it is believed that it is the state's responsibility to provide them uninterruptedly. Such protests will not only retard economic progress but also impact governance.

Many countries in the region have pledged to cut down on greenhouse gases, minimise carbon emissions, and embark on renewable energy projects with a view to protecting the environment, but they lack the finances and technology to achieve these objectives. Assistance from industrialised nations and international organisations is necessary to overcome these difficulties.

There is a need for continuous dialogue and the engagement of all stakeholders to maintain peace, stability, and security in the Bay of Bengal. There should be collaboration to maintain maritime security, like the trilateral Maritime Domain Awareness (MDA) arrangement between India, the Maldives and Sri Lanka. There is a need to develop this concept to cover the entire region. There should be enhanced cooperation and collaboration between navies, coast guards, law enforcement agencies, scientists, maritime professionals and agents of blue economy industries to develop mutual trust and enhance capabilities to maintain energy security in the Bay of Bengal.

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Chapter 7

Collaborating on Climate

Narasimhan Santhanam

Introduction

Every nation strategizes to go low-carbon and, even more ambitiously, to Net Zero. However, doing this is not easy because most of our current industry practices and lifestyle habits are built around processes and technologies that emit considerable amounts of CO_2. Going low on carbon will thus require a comprehensive overhaul of our energy and resource ecosystems. Many avenues are being tried out in our journey toward low-carbon economies. Can oceans play a role in this context? Moreover, is it possible for platforms such as BIMSTEC to act as drivers in this effort?

Decarbonization Sectors

Decarbonization, the process of going low-carbon, involves two broad sectors.

- Energy
- Resources

A third sector, which could also be thought of as belonging to both of the above sectors in some form, is Carbon capture, use, and sequestration.

The low-carbon energy ecosystem comprises the following action domains:

- Renewable energy
- Energy efficiency
- Energy storage
- Low-carbon transport

Low-carbon actions are attempted in the following resource domains:

- Agriculture and food
- Materials
- Water and waste

Decarbonization and a move towards a low-carbon economy require working on all the above ecosystems and domains. Where do oceans come into this picture?

Oceans and Carbon

Oceans present an exciting and hitherto relatively unexplored ecosystem when it comes to sustainability and low carbon. Going forward, they could play a far more critical role. Data on the amount of CO_2 stored in the oceans should make anyone interested in CO_2 emissions sit up and take note. Our atmosphere contains about 850 billion tons of CO_2, of which about 550 billion tons are stored in plants, about 2500 billion tons are stored in soil, and 1500 billion tons of that are in permafrost alone. Our oceans store about 38,000 billion tons of CO_2.

Oceans store almost ten times as much carbon as all the other ecosystems combined! Oceans are thus the most prominent regulators of greenhouse gases; by absorbing significant amounts of CO_2, they act as a massive carbon sink. Oceans can also play an important role in other domains of climate action. This in turn calls for a review of the two main decarbonization ecosystems, viz., energy and resources, in order to analyse the role oceans can play in these.

Oceans and Low-Carbon Energy

The energy sector is the most significant contributor to greenhouse gas emissions worldwide. There are three primary forms in which energy is used today: power, heating and cooling, and energy used for transport. For these applications, the prominent fossil fuels used today are coal, natural gas, and oil. The renewable fuels used are biomass, solar, wind power, hydropower, and, in select geographies, geothermal energy. Within the energy sector, oceans and coastal regions could present potential in the context of the following low-carbon avenues:

- Renewable energy
- Offshore wind energy
- Wave energy
- Natural gas

Renewable Energy: Offshore Wind

The contribution from ocean-based renewable and sustainable energy sources to global energy consumption is insignificant, but there are promising leads. The most prominent among these is offshore wind energy.

Offshore wind power offers the potential to generate 40–60 per cent higher yields than terrestrial wind power without the disadvantages of the latter. Offshore wind harnessing is growing fast, though it is still a fraction of the onshore wind capacity. Currently, the global onshore wind farm capacity is about 900 GW, while that for offshore wind is about 60 GW, but this is expected to accelerate significantly in the coming years. There are commercially sizable offshore wind farms in some parts of the world, like North America, Western Europe, and China.

There are no offshore wind farms in the Bay of Bengal region. Countries like India have completed feasibility studies and data collection and appear to be on the verge of the first commercialization stage for offshore wind. However, the western coast of India (the Arabian Sea) is said to offer higher potential than the Bay of Bengal due to several factors. All the same, fast-advancing wind turbine

technology and the ability to locate wind farms deeper into the oceans could make some regions in the Bay of Bengal promising zones for large-scale wind farms. Cooperation between the countries in the region could facilitate collaborative offshore wind farm development.

Renewable Energy: Wave Energy

Wave energy is in its initial stages of development. There are no large-scale wave energy-based power plants in the world. The lack of adequate and affordable technology is the key challenge in the development of wave energy-based power plants. Unlike offshore wind power, which has been proven on a large scale in some parts of the world, wave power technology is yet unproven. Only a few research and survey efforts have been undertaken for wave energy potential in the Bay of Bengal region, and there are no validated results yet. However, the inherent potential for wave energy makes it an attractive avenue for the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) countries to take the lead in collaborative R&D.

Natural Gas

While the world could be powered by zero-carbon sources in the future, it is still some time away. In the coming decades, natural gas will be an optimal low-carbon fuel for heating and power generation. Natural gas power stations emit only about half the CO_2 that coal-based thermal power stations do. Natural gas vehicles emit 15-20 per cent less CO_2 than petrol or diesel vehicles.

While natural gas is extracted from offshore wells in many regions (including the Bay of Bengal), what makes the Bay more exciting is the presence of gas hydrates, highly concentrated forms of methane trapped within frozen water molecules. Earlier this year, Bangladesh reported the presence of gas hydrates in the region to be about 100 trillion cubic feet. The real number could be much higher than this, making the BIMSTEC collaboration a promising endeavour.

Oceans and Low-Carbon Resources

Apart from energy, resource ecosystems contribute significantly to greenhouse gases. In this context, this ecosystem predominantly comprises food, water, and other materials.

While energy (and its concomitant emissions) are also a part of this ecosystem, CO_2 and other greenhouse gases are emitted from non-energy sources as well; examples of this are methane and nitrous oxide (NO) emissions from agriculture and enteric fermentation in livestock.

Several avenues have been explored to cut emissions from the resource sector. Oceans and coastal regions could play a prominent role in

- Food
- Fish-based proteins
- Seaweed for animal feed
- Food ingredients
- Materials
- Seaweed for bio-materials
- Water
- Low-carbon desalination

Food and Materials

Oceans have served as an essential source of food from time immemorial, and their importance could further increase with the emphasis on low-carbon food. Seafood has a much lower environmental impact in terms of space and freshwater than land-based food. Fish have a carbon footprint (kg CO_2/kg of protein) that is only about a fifth of meat and comparable to poultry. It might be difficult, if not impossible, to completely wean away non-vegetarians from meat and convert them to vegetarianism. However, could it be easier for them to substitute part of their meat with fish?

The relevance of oceans for low-carbon food goes beyond fish. As mentioned earlier, livestock significantly contribute to methane emissions owing to their enteric fermentation. Recently, it has been discovered that having seaweed as part of the livestock diet significantly reduces methane emissions by as high as 70 per cent. This discovery has led to worldwide efforts to cultivate seaweed on a large scale. Could the Bay of Bengal countries, with guidance from BIMSTEC, benefit from this exciting opportunity for seaweed cultivation?

Beyond directly contributing to human and animal food, some seaweeds are already being used to make food ingredients such as hydrocolloids. A few companies in India have been quite successful in these efforts. Some startups have also been reasonably successful in using some seaweeds to make materials like specialty chemicals, plastic, and packaging alternatives. Ocean-based biota could form a significant portion of the future low-carbon food and material ecosystems.

Given the diversity of seaweeds and environments in the region, collaborative research to identify useful species of seaweeds and possible regions for their growth could result in an attractive business opportunity and enable a more sustainable and low-carbon world.

Water

With climate change expected to have a significant negative impact on water security, there has been an increasing interest in technologies such as desalination to scale freshwater production. Current desalination technologies face challenges on the financial side, the energy footprint, and waste disposal. Given that all BIMSTEC countries could directly benefit from more sustainable desalination processes, collaborative R&D for green and sustainable technology could be a valuable avenue for exploration.

Oceans for CO_2 Storage

For the world to return to 1.5 degrees Celsius of pre-industrial times by 2100 as a global effort to address global warming, Intergovernmental Panel on Climate Change (IPCC) estimates that massive amounts of CO_2 needs to be captured from source points and atmosphere; estimates put it at 100–1000 billion tons of CO_2.

Though this is a huge challenge, more challenging is the question of what is to be done with such huge storage of CO_2. While the possibility of using it to make chemicals, plastics, fuels, and sequestration in the form of minerals is being explored, it is critical to store large portions of the captured CO2 somewhere. Both terrestrial and ocean-based sequestration are currently being researched. As mentioned earlier, the oceans are the earth's most significant carbon sink. So, it is natural that many researchers have their eyes on the oceans, which store a good portion of the captured CO_2. These are early days for ocean-based CO2 storage, but it could be another critical decarbonization avenue for BIMSTEC to take cognizance of and undertake preliminary research for its potential for the Bay of Bengal region.

Conclusion

Decarbonization and climate action are perhaps the most critical domains worldwide. Oceans and coastal regions offer specific avenues and opportunities for such climate action and decarbonization. While many of these are nascent, they hold exceptional potential for climate mitigation and business opportunities.

Platforms such as BIMSTEC could play a vital role in creating awareness, undertaking research, and exploring collaboration on these avenues and opportunities for the benefit of all the relevant countries. As the first step in this direction, it is recommended that BIMSTEC initially gain a better understanding of each opportunity avenue. Based on this learning, pre-feasibility studies for select avenues to evaluate technical and economic viability are recommended.

Chapter 8

Bay of Bengal Security Dialogue: Fostering Regional Development through Trade and Investment

Dr R P Pradhan

Introduction

The Bay of Bengal is like a private sea in the larger sea space of the Indian Ocean. While the Indo-Pacific Region (IPR) has become a point of geopolitical contestation and an international flashpoint of confrontation, the Bay of Bengal offers a unique maritime geography of connectivity and integration. It also provides scope for meeting people, countries, and economies, which is a tremendous maritime geography-led prospect for collaboration, integration, and economic growth.

An institutional cooperation framework is established to connect and collaborate with five littoral countries—Bangladesh, India, Myanmar, Sri Lanka, and Thailand—as well as neighbouring landlocked countries like Nepal and Bhutan within the Bay of Bengal region. The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) is a politico-economic instrument for regional development and cooperation. The seven countries of BIMSTEC bring together 1.7 billion people (nearly 21% of the world population) and a combined GDP of over US$ 4.4 trillion to present a great possibility of development and cooperation in the region.

Referred to as 'Mini SAARC (South Asian Association for Regional Cooperation), BIMSTEC celebrated its silver jubilee on the 06th of June 2022, called the BIMSTEC Day. The Secretariat of the BIMSTEC in Dhaka celebrated the occasion in a high-profile function to highlight the prospect of mutual cooperation among the member countries.

While the Silver Jubilee is a milestone to celebrate the success of the institution and its achievements, it is also an occasion to review the work done and the challenges ahead. It is also a time to formulate new ideas, policies, and guidelines and give a concrete road map for a stable, reliable, and feasible framework for regional cooperation.

BIMSTEC Trade and Investment: Opportunities and Lessons

Given the Bay of Bengal's maritime connectivity and geographic contiguity, BIMSTEC conceptually and ideally offers excellent scope for regional trade, investment, and economic development for the member countries. India being the largest country in the region, the Act East Policy' is an added advantage for regional trade and investment. The 4th BIMSTEC summit in Kathmandu in August 2018 officially projected BIMSTEC as a regional organization geared "towards a peaceful, prosperous, and sustainable Bay of Bengal". Thus, the Bay of Bengal and the region's maritime profile are essential features of BIMSTEC regional cooperation.

Trade and Free Trade have been great instruments for regional cooperation, delivering economic welfare gains to the trading nations. The Bimstec Free Trade Area (FTA) has been a long-cherished idea among the regional leaders. Since 2004, the BIMSTEC FTA has been under negotiation, but even after 18 years, it is yet to see the light of day.

Table 1.1: FTA's in BIMSTEC Region

Table.1 FATS in the BIMSTEC Region

Countries	Total FTAs under Consultation/ negotiations	Signed but not in Effect	Operational FTAs	Total
Bangladesh	08	02	04	14
Bhutan	01	00	03	04
India	28	00	16	44
Nepal	02	00	02	05
Myanmar	07	01	08	16
Thailand	22	01	15	38
Sri Lanka	09	01	05	15
Total	77	05	53	136

Source: By Country/Economic – Free Trade Agreements (adb.org)

The member countries of the region are negotiating and/or executing around 136 Free Trade Agreements (FTAs) with several other countries and groups around the world. Fifty-three are already in force, and the remaining 83 are at various stages of negotiations. Given the member countries' individual FTA experiences, taking BIMSTEC FTA negotiations forward would be the next logical step. Director of BIMSTEC, Mr. Md. Mosharaf Hossain, as a panelist in the session, echoed this vision and perception. Unfortunately, the

BIMSTEC FTA is taking a very long time to materialize, though we have learned valuable lessons from case examples of FTAs and higher levels of economic integration.

The European Union (EU) is an excellent example of such institutional integration, and the results are visible. The EU is the finest case study of politico-economic integration in our times. In the neighborhood of South Asia, the Association of South East Asian Nations (ASEAN) became a great example of politico-economic cooperation that delivered vibrant economic prosperity to the member countries. Given the success of ASEAN integration, larger and more economically powerful countries in the neighbourhood, like China, South Korea, and Japan, advocated the idea of ASEAN plus three. Looking further, ASEAN plus six ideas were mooted to integrate China, Japan, Korea, India, Australia, and New Zealand. Good and successful models attract attention and provide scope for integration expansion.

Major road and other infrastructural developments are taking place in the Mekong region. A good example of successful cooperation is the China-led Greater Mekong Sub-Region (GMS), which has accomplished commendable work in developing physical infrastructure in the Mekong region. The region houses over a thousand SEZs, and frameworks like Mekong-Australia, Mekong-US, Mekong-Korea, Mekong-Japan, et al. for economic cooperation are in force. Japan is a critical funding partner for the region.

Several regional cooperation and trade-investment models are already available, and BIMSTEC FTA negotiations must learn lessons from them. Rail, road, and other modes of physical connectivity must be given priority, as in the Mekong region, which can create and deliver better linkages for the movement of regional goods and services. According to the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) report of 2018 on "Unlocking the Potential of Regional Economic Cooperation and Integration in South Asia: Potential, Challenges, and Way Forward", infrastructure-wise, South Asia is the least connected region in the world, limiting the region's intra-trade scope.

BIMSTEC's Blue Economy Vision

The Bay of Bengal is a natural circular maritime geography that offers critical connectivity to people in the region. There are 110 seaports in the region (Fig. 2.1), which can lead in endowment and infrastructure for port-led regional economic development[1]. The regional geopolitical situation acts as a limiting factor when it comes to the seaports of the region being integrated as a customs Union to bolster regional export-import prospects as well as the trade and investment climate.

[1] *Based on www.marinetraffic.com portal and as depicted in Fig. 2.1, there are 110 Seaports in the Bay of Bengal region. They are depicted in colour code. Colour code represents the size of the port. Given the geography, Bay of Bengal colour coded Seaports appear in circularity, which can be leveraged towards an integrated Seaport-led economic development mode. BIMSTEC Secretariat and the member countries are indeed aware of the prospect of a regional 'Customs Union' to propel port-led economic activities. However, regional insurgency movements and security volatility halts the member countries to explore the full economic prospect of this geographic contiguity.*

Figure 2.1: Bay of Bengal Circular Geography and Seaports

The BIMSTEC Coastal Shipping Agreement, December 2017, and the BIMSTEC Port Conclave 2019 are positive steps towards port-led maritime trade and investment opportunities[2]. As ideas of the Blue Economy, Smart Port, Green Shipping, and Net Zero are emerging as future directions in the international maritime sector, BIMSTEC member countries may have to incorporate and expand their maritime connectivity and cooperation for mutual business prospect. At the BIMSTEC Goa Retreat in October 2016, the Blue Economy became a prominent point of discussion among the leaders. The Retreat document, for the first time, officially agreed to explore and work on Blue Economy cooperation prospects, particularly in the areas of aquaculture (both inland and coastal), hydrography, seabed mineral exploration, coastal shipping, eco-tourism, and renewable ocean energy, to promote holistic and sustainable development of the region. The document stressed the importance of cooperation for the sustainable development of fisheries for food security, as "the Bay of Bengal region is home to over thirty percent of the world's fishermen".

Despite awareness of the Blue Economy potential among almost all member countries, BIMSTEC has hardly achieved any tangible cooperation on the Blue Economy framework. An intergovernmental Expert

[2] *The first ever BIMSTEC Conclave of Ports, was being held at Vishakhapatnam on 7-8 November, 2019. Three Memorandums of Understanding (MoUs) were signed between Ranong Port (Port Authority of Thailand) and the Port Trusts of Chennai, Vishakhapatnam, and Kolkata during the Conclave. These MoUs are expected to contribute to BIMSTEC's objectives of strengthening connectivity and are part of India's Act East Policy. These MoUs will enhance connectivity between ports on Thailand's West Coast and Ports on India's East Coast, i.e., Chennai, Vishakhapatnam, and Kolkata. These MoUs will enhance economic partnership by cutting down the sea travel time between India and Thailand from 10–15 days to 7 days*

Group for an action plan on the Blue Economy is needed. The group should be multi-disciplinary, with an understanding of the development status and unique needs of all member states, and should be able to present a roadmap for future actions.

Challenges and Suggestions

There is no shortage of ideas for regional integration. In the context of South Asia's real-time political and geopolitical realities, BIMSTEC negotiations are indeed commendable. While the Mekong region's infrastructure development profile seems impressive, there is significant anxiety over China's dominant and often predatory investments and leadership. China's economic and industrial productivity is far too superior to that of the rest of the members in the region.

Regional integration and better trade and investment cooperation need a climate of politico-economic similarity and a sense of trust and mutual confidence among member countries. The BIMSTEC region nearly overlaps the ASEAN region. Very often, overlapping issues are involved. Many experts advocate expanding BIMSTEC to the ASEAN region because of geographic contiguity, but it is also rejected by many. In the context of BIMSTEC, the Bay of Bengal is the defining geography. There are several regional and intra-regional platforms like ASEAN, G-20, et al., so expanding BIMSTEC membership may not serve any additional purpose.

What is needed, therefore, is not structural expansion but building trust among regional leadership. The role and influence of extra-regional powers in BIMSTEC geopolitics are equally important. Huge Chinese investment and geopolitical influence in the region are a direct barrier to BIMSTEC regional cooperation.

Despite these limitations, cooperation in 14 broadly defined areas within BIMSTEC is a great achievement. While SAARC lost its direction under the weight of political disagreement, BIMSTEC has shown great maturity, and continued cooperation is a matter of great satisfaction. Commensurate with the geopolitical climate, BIMSTEC may also consolidate its agenda, opening up better trade and investment flows in the region.

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Chapter 9

Fostering Regional Development through Trade and Investment

Md Mosharaf Hossain

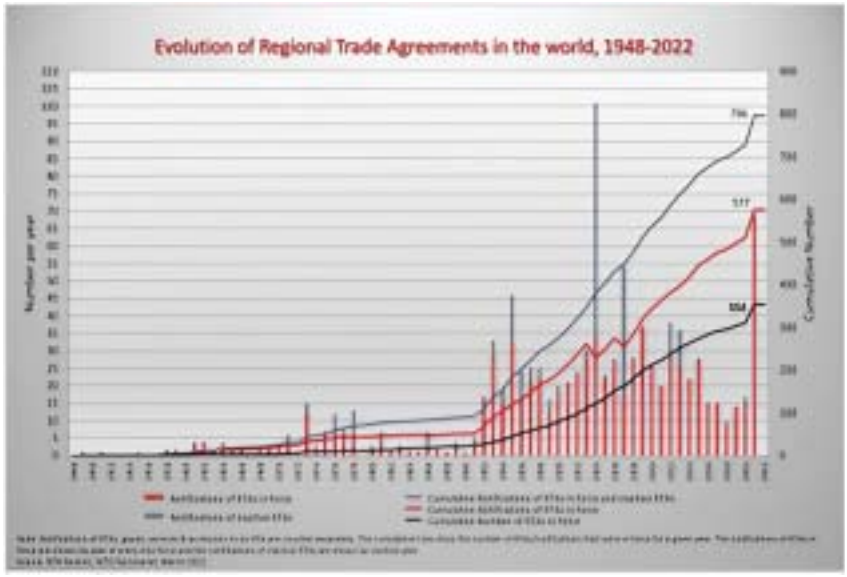
Introduction

Trade and investment in any region play a pivotal role in the advancement of the economic development of that region. The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) is a unique regional organization that acts as a bridge between five South Asian Countries (i.e., Bangladesh, Bhutan, India, Nepal, and Sri Lanka) and two Southeast Asian countries (i.e., Myanmar and Thailand) and gives hope for the economic development of the region. Over the last 25 years, BIMSTEC has emerged primarily as a regional organisation to strengthen economic and physical connectivity through incremental trade, investment, travel, and exchanges by leveraging geographical advantage and available resources. BIMSTEC member states have enormous potential in terms of population, resources, and market growth. This article underscores the importance of trade and investment in fostering regional development in the context of the Bay of Bengal region. It highlights the endeavours of BIMSTEC with a focus on trade and investment that can create an impact on the future economic development of this region.

Regional Development and Trade, Investment

The status of the economy is an important measure of development at the local or regional level. In order to boost economic development and expand the market, various countries enter into bilateral or multilateral trade agreements. A free trade agreement helps its member states overcome various tariff and non-tariff barriers and create opportunities for new and promising markets. It alleviates trade barriers and strengthens the trade facilitation process. Since 1990, there has been a sharp increase in the number of regional trade agreements globally. This increase in the number of regional trade agreements suggests that countries are benefiting more from regional arrangements than multilateral trade.

Figure 3.1: Evolution of Regional Trade Agreements in the World, 1948–2022.



Source: RTA Section, WTO Secretariat, March 2022

While the notion of free trade agreements was most popular in the context of north vs. south or developed vs. developing countries, the recent trend of using regional integration as the focal point is significantly gaining momentum. As a result, we have witnessed many regional free trade agreements, i.e., the ASEAN Free Trade Area (AFTA), the South Asian Free Trade Area (SAFTA), and the African Continental Free Trade Area (AfCFTA), either being signed or in the pipeline.

Regional FTAs, or regional investment agreements, have the power to boost trade flows, increase diverse export markets, and reduce external import liabilities within the region. It also enables countries to participate in larger trade negotiations with other regional organizations. A recent example is the FTA between the European Free Trade Association and the Gulf Cooperation Council (GCC), wherein two free trade regions have come together to broaden their trade and investment.

Geographical Importance of the BIMSTEC Region

While addressing this issue, it would be useful to quickly review BIMSTEC's evolution during the last 25 years. BIMSTEC started its journey in 1997 with the adoption of the Bangkok Declaration, with the objective "to create an enabling environment for rapid economic development through the identification and implementation of specific cooperation projects in the sectors of trade, investment, and industry; technology; human resource development; tourism; agriculture; energy; infrastructure; and transportation." The organization not only derives its name from the Bay of Bengal, but many of its activities related to trade, transport connectivity, tourism, fisheries, the environment, climate change, and disaster management are directly linked to it. All BIMSTEC members are either littoral or adjacent to the Bay of Bengal.

The BIMSTEC region is considered to be one of the least integrated regions of the world, both in terms of physical and economic connectivity, despite having huge potential. Intra-regional trade volume within the BIMSTEC region in 2019 was only 7.2%, well below the intra-regional trade within the ASEAN region, which stood at 25 percent.[1]

Nevertheless, the BIMSTEC, with 22 percent of the world population, covers countries with large numbers of skilled youth and promising market economies. Their combined gross domestic product (GDP) is around US$2.7 trillion as of 2018.[2] The consumer market is increasing with an increase in per capita income. BIMSTEC member states vary in size, population, density of population, and other resource-based factors; therefore, GDP may not be a strong indicator of their achievement as an economic grouping. However, in 2013–2018, when the major economies of the world were facing economic crises, the BIMSTEC member states recorded around a 6 percent annual growth rate during the same period.

The Bay of Bengal is one of the Large Marine Ecosystems (LME) in the world, covering about 6 million square km. Over 400 million people in the area are dependent on coastal and marine resources for their food, livelihood, and security. The region is geographically interconnected. Growing maritime trade has provided geographical significance to BIMSTEC. As such, BIMSTEC can explore opportunities to efficiently exploit the blue economy surrounding the Bay of Bengal.

BIMSTEC's Endeavor to Promote Regional Trade and Investment

Historically, the Bay of Bengal was a center of global trade and commerce and a hub of economic and cultural exchange. The founding leaders of BIMSTEC envisioned the promotion of free trade and increased cross-border investment, making trade and investment a key sector of cooperation in its foundation. Bangladesh is the lead country for the Trade, Invest and Development Sector of the Reconstituted Sectors and Sub-Sectors of Cooperation adopted by the recently concluded 5th BIMSTEC Summit held on 30th March 2022, in Colombo. The initial vision for BIMSTEC economic cooperation had three major pillars, namely

- Close public-private partnerships to promote economic cooperation;
- Identification of sectors, sub-sectors, and projects for economic cooperation
- Elimination of non-tariff and tariff barriers through government-to-government negotiations

While the initial idea of promoting project-based cooperation has, to a large extent, shifted towards creating specific institutional mechanisms, the trade and investment sector of BIMSTEC received more attention, leading to the formation of various working groups for the creation of the BIMSTEC Free Trade Area. Subsequently, FTA negotiations at the governmental level to eliminate tariff and non-tariff barriers went on satisfactorily in the initial years.

The active engagement of member states resulted in the signing of the Framework Agreement of the BIMSTEC Free Trade Area in 2004. Article 2 of the Framework Agreement outlines the following areas to be covered by the "Comprehensive Free Trade Area (FTA)":

- Progressive elimination of tariff and non-tariff barriers substantially in all trade in goods;
- Progressive liberalization of trade in services with substantial sectoral coverage;
- Establishing an open and competitive investment regime that facilitates and promotes investment within the BIMSTEC FTA;
- Establishing effective trade and investment facilitating measures, including, but not limited to, simplification of customs procedures and development of mutual recognition arrangements;

[1] *World Bank Group, "Data Catalogue", Washington DC: The World Bank, 2018.*

[2] *Ibid.,*

- Establishing appropriate mechanisms for implementation of the Agreement.

Pursuant to the Framework Agreement, several constituent agreements forming part of the FTA have been developed, including:

- Agreement on Trade in Goods;
- Agreement on Cooperation on Mutual Assistance in Customs Matters; Agreement on Rules of Origin and Operational and Certification Procedures;
- Agreement on Dispute Settlement Procedures and Mechanism;
- Trade Facilitation Agreement;
- Agreement on Trade in Services;
- Agreement on Investment.

On a positive note, the BIMSTEC Trade and Investment Sector has a strong organizational structure. At the top is the Trade and Economic Ministerial Meeting (TEMM), followed by the Senior Trade and Economic Official's Meeting (STEOM), which reports to the TEMM. The function of the Trade Negotiation Committee (TNC) is crucial to finalizing the Agreement of the BIMSTEC Free Trade Area and its constituent agreements, which reports to the STEOM. Currently, there are six working groups working on matters related to trade in goods, trade in services, investment, rules of origin, customs cooperation, legal experts, and trade facilitation. Besides, there are the BIMSTEC Economic Forum and the BIMSTEC Business Forum, which reports to STEOM.

The TNC has so far held 21 rounds of negotiations, and significant progress has been made to finalize the Agreement on Trade in Goods of the Framework Agreement of the BIMSTEC Free Trade Area and its annexure. Regrettably, FTA negotiations regarding the Agreement on Trade in Services and the Agreement on Investment are still at an initial stage despite 08 rounds of negotiations. Negotiations on the Agreement on Trade Facilitation have also made considerable progress for early finalization. The BIMSTEC Secretariat, with the technical assistance of the Asian Development Bank (ADB), has successfully prepared a report titled "BIMSTEC Trade Facilitation Strategic Framework 2030", which is an important endeavour to advance trade facilitation among the member states. It highlights the existing challenges of free trade and identifies strategies to combat them to achieve specified goals. This strategic framework suggests a structured pathway approach to enhancing the regional trade facilitation environment over the coming decade.

Challenges and Opportunities

With sheer pessimism, it may be argued that BIMSTEC, in its long twenty-five-year journey, has achieved little of what was expected. But we need to keep the context in mind while comparing this unique regional grouping that tries to reunite South Asia with Southeast Asia. While the negotiations are taking longer, the path of unity is expanding.

During the last 25 years, the membership of BIMSTEC increased from four to seven countries and the organization broadened the scope of cooperation from purely technical and economic to include areas like counter-terrorism and transnational crime, environment and disaster management, health, blue economy, etc. The grouping, which started as a sub-regional cooperation unit and was seen primarily as a bridge between South and Southeast Asia, has now shifted towards becoming a distinct regional identity with a strong geographical reference to the Bay of Bengal. The group, which was meant to enhance cooperation based on development projects, has now shifted its focus to developing a legal and institutional framework

for long-term regional cooperation based on the rule of law by signing the BIMSTEC Charter on the 25th Anniversary year during the 5th BIMSTEC Summit. In 2014, the organization got its permanent secretariat in Dhaka, Bangladesh, which significantly improved the organization's capacity to follow up on BIMSTEC leaders' directives and record keeping.

Now that our political leaders have expressed their renewed commitment to the BIMSTEC process during the 5th Summit (Colombo, 30 March 2022), we can build further on the cooperation structure and legacy that have been created in the past 25 years. In order to do so, the political commitment needs to be sustained. Attention should be given to accomplishing the unfinished undertakings. Priority one should be the completion of the FTA. Though it is not a panacea for all problems, it is a crucial first step to shaping BIMSTEC as a distinct Bay of Bengal Community. BIMSTEC FTA will be the first embodiment of that vision, having great practical and symbolic value.

Conclusion

It is evident that the BIMSTEC Free Trade Area will cover various important aspects of regional trade and investment, which will certainly accelerate regional economic growth. However, the negotiation process is taking too long to reap the benefits of the free trade area. Due to the COVID-19 pandemic, many borders were shut down, resulting in disruption of the global supply chain. Countries in the BIMSTEC region also faced a similar situation. The COVID-19 pandemic was a reminder to emphasize more on regional trade than at any time before. The disruption of the global supply chain due to the pandemic has also created an opportunity for better intra-regional trade in the region. However, the question is whether the countries in the Bay of Bengal are ready to seize this opportunity. For this, they need to agree on some trade facilitation measures along with an early conclusion to the BIMSTEC Free Trade Area. Secondly, regional trade facilitation measures need to be accompanied by efficient transport connectivity to ensure the easy movement of goods and people in the region. A robust trade and investment regime among the member states coupled with a resilient regional transport connectivity system capable of withstanding future disruptions would certainly help this region to further its post-COVID economic recovery and pave the way for a larger economic integration in the coming years.

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Chapter 10

Fostering Regional Development Through Trade and Investment Between ASEAN and India

Madhurjya Kumar Dutta

Introduction

In order to facilitate regional economic integration, the ASEAN Economic Community (AEC) was officially launched on December 31, 2015, to create a single market in ASEAN, enabling effortless movement of goods, services, investment, capital, and people across the region. The AEC Blueprint 2025 provides broad directions for the economic development of the AEC from 2016 to 2025, outlining strategic measures in five areas, namely:

a) A highly integrated and cohesive economy,

b) A competitive, innovative, and dynamic ASEAN,

c) Enhanced connectivity and sectoral cooperation,

d) A resilient, inclusive, people-oriented, and people-centered ASEAN

The ten member states of ASEAN collectively have a population of 649 million people, accounting for over 8% of the world's population, a GDP of US$2.76 trillion, growing at a rate of 4.7 percent, and a per capita GDP of US$4,308.

ASEAN and Regional Frameworks

The ten member countries have formed the ASEAN Free Trade Area to support local trade and manufacturing in the ASEAN countries while facilitating economic integration with regional and international allies. ASEAN's digital economy is growing rapidly, with expanding digital networks and growing numbers of mobile phone and internet users; the eCommerce market forecast is expected to be US$88 billion by 2025. ASEAN has significantly reduced trade barriers across ASEAN and ASEAN + 6 (Australia, China, India, Japan, New Zealand, and The Republic of Korea), easing the cost and complexities of trading across the region.

Thailand, a member state, has developed the Eastern Economic Corridor, a special economic zone covering three provinces with an investment of 43 billion USD. It is a crucial component of "Thailand

4.0", with ten key industries identified as potential growth engines. In terms of industry readiness scores, Singapore, Malaysia, Thailand, Brunei, the Philippines, Vietnam, and Indonesia are ranked high as production drivers. All ASEAN countries have adopted national initiatives on broadband, e-government ICT, and specific initiatives on AI, robotics, and advanced manufacturing, and Thailand, Malaysia, and Singapore are leading the initiatives.

ASEAN Trade with India

India has a huge trade deficit with ASEAN. India's imports from the combined ASEAN countries are more than US$68.08 billion, while its exports are US$31.49 billion, with a trade deficit of US$28.51 billion. The gap is more apparent in India's trade with China: India imported US$87.54 billion of goods and services while exporting US$23.01 billion, leaving a trade deficit of US$64.53 billion.

Table 2.1: India's Trade with ASEAN countries

India's trade	Export in 2021 (US$Bn)	Import in 2021 (US$Bn)	Trade Deficit (US$Bn)
ASEAN combined	31.49	68.08	28.51
China	23.01	87.54	64.53
Australia	6.92	15.1	8.18
New Zealand	0.70	0.37	0.4
South Korea	7.1	17.08	9.98
Japan	6.8	14.4	7.6

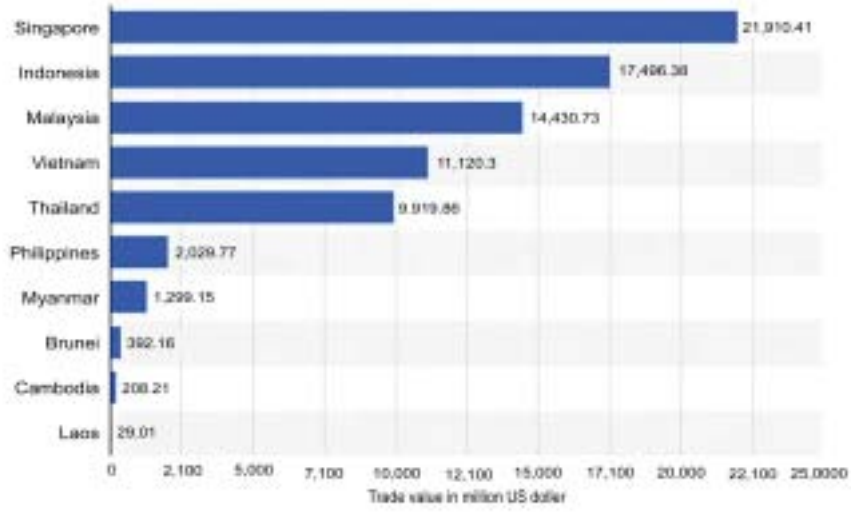
Source: Author calculation, Ministry of Commerce and Industry, Government of India (GoI)

Graph 1.1: Trade Deficit

Source: Author calculation, https://commerce.gov.in › foreign-trade-territorial-division

ASEAN has lowered intra-regional tariffs through the Common Effective Preferential Tariff (CEPT) Scheme on exports under the FTA, which implies that Indian goods and raw material exporters to ASEAN are more competitive. India needs to rectify its widening trade deficit with ASEAN as part of the Government of India's (GoI) Act East Policy.

Graph 1.2: Value of Indian trade with ASEAN countries in 2021 (in million US dollars)



Source: https://www.statista.com/statistics/650795/trade-value-ASEAN-countries-with-india/

Table 2.2: Share of ASEAN in India's Global Trade in Percentage

Year	India's Export to ASEAN	India's Import from ASEAN	India's Total Trade with ASEAN
2009-2010	10.13	8.95	9.40
2010-2011	10.26	8.28	9.08
2011-2012	12.01	8.62	9.92
2012-2013	10.99	8.74	9.59
2013-2014	10.54	9.17	9.73
2014-2015	10.25	9.98	10.09
2015-2016	9.58	10.47	10.11
2016-2017	11.22	10.57	10.84
2017-2018	11.27	10.12	10.58
2018-2019	11.35	11.54	11.47
2019-2020	10.07	11.66	11.03
2020-2021	10..79	12.02	11.50

Source: Author Calculation based on Export-Import Databank, Department of Commerce, India

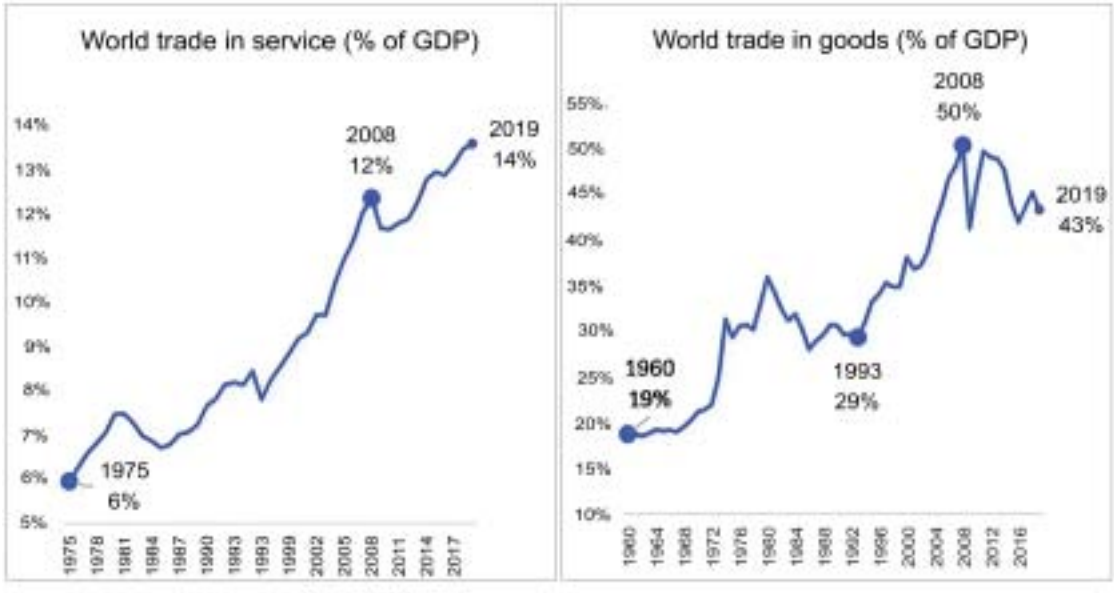
As observed in Table 2.2, India's trade with ASEAN contributes only about 11.5 per cent of India's global trade. This shows high trade potential between ASEAN and India.

Unlocking Potentials

The following section looks at the possibilities of Indian firms becoming significant players in goods and services markets in ASEAN and beyond in terms of trade in goods. The Indian economy

has a fair way to go before reaching its export potential. Some drivers for increasing exports to ASEAN are explored below.

Graph 1.3 Trade in Goods has stagnated for a decade and a half, and Trade in Services has not



Source: Baldwin, 2022, based on WTO (trade data) calculations and WDI Database (GDP data, current US$).

Although aggregate trade in goods is declining, this trend does not apply to all countries. India has a cost of labour advantage over China. While labour costs in China now run at an average of $3.52 per hour, in India, the same labour cost is $0.92 per hour. International trade in agriculture will benefit India. India is now among the leading producers of milk, cereals, pulses, vegetables, fruits, cotton, sugarcane, fish, poultry, and livestock. By exposing the Indian agricultural sector to international trade, India can benefit from the spillover effects that accrue to exporters, including rapid technological know-how, private and public capital formation in the farming sector, and labour upskilling.[1]

Modes of Entry are also Important

- Supply Chain Integration: ASEAN is one of the major players in the supply chains that drive the global economy. So, closer integration with ASEAN economies can help Indian firms link up with global value chains.
- Policies to encourage small and medium-sized enterprises (SMEs): SMEs are the backbone of Indian and ASEAN economies. Indian SMEs are more likely to enter the smaller ASEAN markets than larger firms.

[1]Essential Commodities Act, Farmer's Produce Trade and Commerce Promotion and Facilitation Ordinance, 2020; Farmers (Empowerment and Protection) Agreement on Price Assurance and Farm Services Ordinance, 2020.

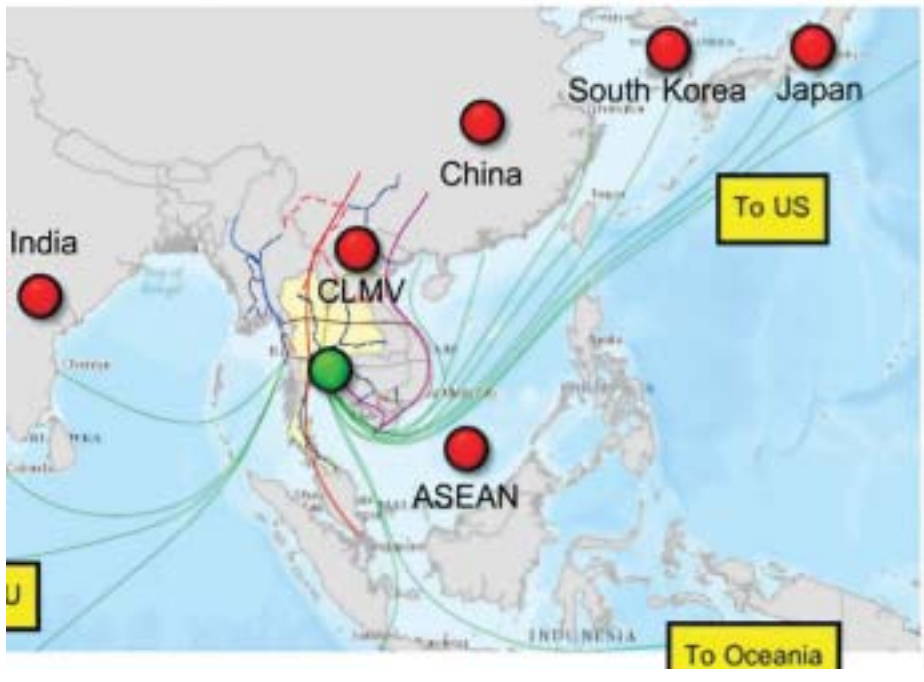
- Value chain participation in key product sectors: ASEAN countries offer many opportunities for Indian SMEs, particularly in sectors more integrated with global markets, such as auto components, garments, and pharmaceuticals.
- Geographical connectivity and infrastructure linkages: The ongoing Kaladan Multi-Modal Transit is in its final stages. These projects must stay on course and be fast-tracked to capitalize on the proximity between northeast India and Southeast Asia to facilitate market access.
- Digital landscape: Online services provide an entry point for Indian investors. Sectors such as telemedicine, e-commerce, online education, and telecommuting are examples of such scalable digital opportunities. India's proficiency in English gives it a unique advantage in providing many back-end services or intermediate commercial services, a rapidly growing component of international service trade.

Economic Corridors for Regional Development

The ASEAN region has some successful economic corridors, namely the GMS Economic Corridors, the Indonesia-Malaysia-Thailand Growth Triangle (IMT-GT), and cross-regional frameworks such as the Belt and Road Initiative (BRI). The IMT-GT aims to increase the economic transformation of the member nations (Indonesia, Malaysia, and Thailand). Trade between member provinces and states has steadily risen over the past two decades.

By 2030, the BRI will boost global trade by 5%, and BRI countries will benefit the most. Also, BRI is expected to contribute a 25 per cent reduction in road transport margins and a 5 per cent in sea transport margins, as well as a significant decrease in time to import (Maliszewska & Van Der Mensbrugghe, World Bank, 2019).

Figure 4.1: Economic Corridors



Source:https://thaiembdc.org/2017/11/01/eastern-economic-corridor/

Thailand's Eastern Economic Corridor (EEC) is an ambitious connectivity project in mainland Southeast Asia. It potentially connects the Asia-Pacific region with the Indian Ocean Rim and beyond. The EEC is positioned as a gateway to the Asian market and as the future economic and logistics hub of Asia. The EEC is an innovation zone for high-tech industries, research, and development.

Why ASEAN is Important for India

ASEAN is the most potent instrument to accomplish the purpose of the Act East Policy. Focusing on trade in services, ASEAN allows India to use its competitive strength to become the region's Services Export Hub. One of the crucial projects under the Act East Policy is the India-Myanmar-Thailand Trilateral Highway. Once completed, it will be a game changer for North East India by connecting Moreh-via Tamu- Mandalay- Yangon- Maesot in Thailand, and Bangkok.

India has also proposed to extend the India-Myanmar Trilate Highway to Cambodia, Laos, and Vietnam. The proposed 3200 km route from India to Vietnam is known as the East-West Economic Corridor, and the river ports being developed at Kalay (also called Kalaymyo) and Monywa on the Chindwin River in Myanmar. The route to Laos, Cambodia, and Vietnam will generate an estimated US$70 billion annually in incremental GDP and 20 million in total aggregate employment by 2025. India has offered a US$1 billion line-of-credit for the India-ASEAN connectivity projects.

Key Suggestions

ASEAN and India should cooperate in designing appropriate and accommodative policies. India proposes and implements more sophisticated policies than most of its ASEAN peers. Matchmaking between GoI and ASEAN countries is called for. The focus should be on attracting anchor (lead) investors and providing matchmaking services to connect SMEs in India with those in the AEC. Firms in India complain about their lack of knowledge about market conditions and poor access to export-related information. The GoI should also set up trade portals that would provide, in multiple languages, a description of requirements for traders from India. The incubation of small businesses has been linked to export success. India can follow the model of UNDP, IFC, and other donors in establishing SME accelerators. The GoI can create clusters to exploit synergies between potential exporters and facilitate the growth of product clusters that will increase the momentum of Indian exports to ASEAN countries. A recurring theme of ASEAN's export success has been the rise of Regional Value Chains. These cluster arrangements can be leveraged to assist Indian firms in successfully integrating into AEC value chains. The digital revolution has made it obligatory for firms to establish and maintain an online presence. In summary, business and economic cooperation between India and ASEAN in areas of mutual interest such as financial technology (FinTech), connectivity, start-ups, innovation, empowerment of youth and women, and the development of micro, small, and medium enterprises (MSMEs) will deepen AEC integration. India's Act East policy can be exploited by Indian investors, capitalizing on their comparative advantages. The extent to which Indian firms can achieve this depends on the GoI's ability to convert policy discussions into the proactive implementation of measures to facilitate trade.

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Chapter 11

Harnessing Cooperation for Sustainable Development in the Bay of Bengal

Ibrahim Naeem

The Bay of Bengal could be viewed as "Eight countries, connected by one ecosystem, working together to secure its future." It is home to many marine species, an ecosystem that millions rely on and requires to be protected.

Close cooperation and regular interaction between countries around the world are called for to protect the common resources they share. In other words, the sustainability of common resources is something to be ensured by nations. If resources in the oceans are used in a sustainable manner, they will regenerate, be more productive, and help support more and more societies that need such resources. As Joyce Msuya, Deputy Executive Director of the United Nations Environment Programme, said, "Nature makes human development possible, but our relentless demand for the earth's resources is accelerating extinction rates and devastating the ecosystems of the world." Therefore, it becomes the duty of the countries in the Bay of Bengal region to work together to protect these resources.

Areas Needing Special Focus

One of the biggest problems faced by countries in the Bay of Bengal Large Marine Ecosystem is the overexploitation of resources. Fishing is one such resource. A large part of the coastal population across the world relies on fishing as a means of survival and livelihood. The Bay of Bengal region is no exception. However, some fishermen exploit the resources in an unsustainable manner, making it difficult for nature to replenish itself. When the catch increases beyond a certain level, it becomes difficult to replenish the source. In addition to the overexploitation of resources, pollution is another threat to the environmental sustainability of the Bay. Sewage discharge, agricultural runoff, and oil spills are pollution threats commonly found in the Bay. Sewage gets discharged into the sea without proper treatment, which affects marine life due to the pollutants and excess nutrients found in the raw sewage. Agricultural runoff containing pesticides, herbicides, and fungicides also enters the water bodies either via major rivers or as a result of seasonal flooding. All these pollutants have the potential to become very toxic to marine species.

Need for Cooperation

It is obvious that preventive measures must be initiated before the marine environment reaches a level where it cannot be reverted to normal. The best way this can be achieved is by harnessing cooperation between countries in the Bay of Bengal. There are several ways, like coordinated policies, to enhance this cooperation. The policies must be clearly identified. The representatives of the countries in the region should work together to tackle any challenges, as we want to protect the Bay as a whole.

Another key action could be knowledge coordination. Knowledge is an important driving force for devising preventive actions. The extent of the problem needs to be probed into to get an idea of mitigation measures to be taken. A diverse pool of talented people with appropriate knowledge regarding different aspects of sustainable development is required. Researchers capable of filling the knowledge gap should be included from all the countries in the Bay. Plans should be put in place to fill any knowledge gaps; each country should research the area of the Bay alongside their country, and aid should be provided to countries that do not have the technological or human capacity to carry out these kinds of research. Collaborative and integrated efforts are important factors in maintaining sustainable development in the Bay.

Flora and fauna transcend international boundaries, like tuna, billfish, herrings, anchovies, and many more diverse species of marine animals. Shared resources and coordination help overcome national-level plans, which are inadequate.

Conclusion

Having a goal that everyone works towards, can help harness, and strengthen cooperation. A goal where we envision the Bay of Bengal is sustainably developed and the ecosystem is rich and diverse. A future where everyone's livelihood is better. In order to do so all countries in the region need to plan and jointly execute projects to achieve this common goal.

Chapter 12

Securing India's Energy Security Through Energy Diplomacy: Opportunities in the Bay of Bengal Region

Dr C Joshua Thomas and Dr Haans J Freddy

Introduction

Nations across the world are concerned about energy supply, which is the most essential resource for a nation to develop and sustain its growth and economy. From the viewpoint of politics and international relations, Mason Willrich argues that energy security has become the most important and crucial element for industrialized and developing nations. This is because of inequalities in allocation, technology deficits, and the capitalization of energy resources in nations across the world. In another report, Bo Heineback stated that oil is the most important resource that has the potential to sustain the military and economy of any nation across the globe.

Energy security has thus been an important concept in the debates on security. Four important dimensions called the four 'A's are pertinent for a nation's energy needs and security concerns: availability, accessibility, affordability, and acceptability. In this context, it is pertinent to ask questions that were discussed by prominent scholars in the field of security. These questions are:

a) security for whom?
b) security for which values?
c) security from what threats?

To these three questions, we could add 'How'? Answers to the first three questions have been addressed by Baldwin and Buzan, who emphasise that security cannot be examined from the perspective of 'security for whom, as it makes little sense. Buzan also stresses asking 'for whom' points to the referent object of analysis, the state. The second question, 'for which values' does not refer to human values but those linked to political, economic, social, and other priorities. These values can be applied to energy security, and failure to address this policy question makes it important to know: which energy security systems to protect?

The third question focuses on threats to energy security. It addresses concerns that are largely shaped by disruptions to energy flows and risk perceptions. Such narratives can lead to examinations of how to respond to present and future risks – resilience.

Energy security, as mentioned earlier, has received immense attention, and it is interesting to note the statements made by Prime Minister Modi at the G20 summit in Bali in 2022, where there was an emphasis on geopolitical tensions that have had consequences for nations' economies, food and energy prices. It is against this background that this paper seeks to examine energy diplomacy in the Bay of Bengal (BoB) region.

Energy Diplomacy

In recent times, efforts to link energy security with foreign policy have been an important subject of enquiry in the broader discipline of international relations. This can be otherwise called energy diplomacy by states in a world that has been remarkably changing ever since globalisation. Globalization has brought with it greater levels of dependence and interdependence. Although there is no accepted definition for the concept of energy diplomacy, an agreement that it pertains to a government's efforts to secure its energy requirements appears in bilateral and multilateral initiatives, agreements, or cooperation. Energy diplomacy is a complex field of analysis because it involves the interlinking of foreign policy and national security. Foreign policy in general is primarily focused on national security, and energy is a tool of foreign policy. Energy diplomacy could therefore mean diplomatic efforts by states to enhance access to energy resources and markets. Energy diplomacy can influence the policies of the states through diplomatic dialogue, negotiation, lobby advocacy, the conduct of states and other peaceful means. The relationship between foreign policy and energy diplomacy can be conceptualized in terms of principal and agent. While foreign policy sets the overall goals and political strategy, energy diplomacy, on the other hand, is the mechanism to achieve those goals. Energy diplomacy channelizes trade and economic relations between states, thereby enabling states to safeguard their energy security through availability, reliability, and affordability. Why is it so important for nations to consider energy as an important component of their foreign policies? The answer lies in history, in times when oil was a strategic asset. There is always the possibility that there could be conflicts due to resources that may arise due to the rising demand and diminishing supply of energy. In recent times there has been increased competition for access to resources that will supply energy to the great powers, and this has the capacity to transform itself into a confrontation between those competing states. In this regard, nations across the world see energy as a significant aspect of their foreign policies in order to secure their energy requirements. One way to resolve this is through energy diplomacy. In this article, we examine how India can secure its energy security through energy diplomacy in the Bay of Bengal Region. What makes the Bay of Bengal Region important for India? How can the Bay of Bengal Region contribute to India's energy security?

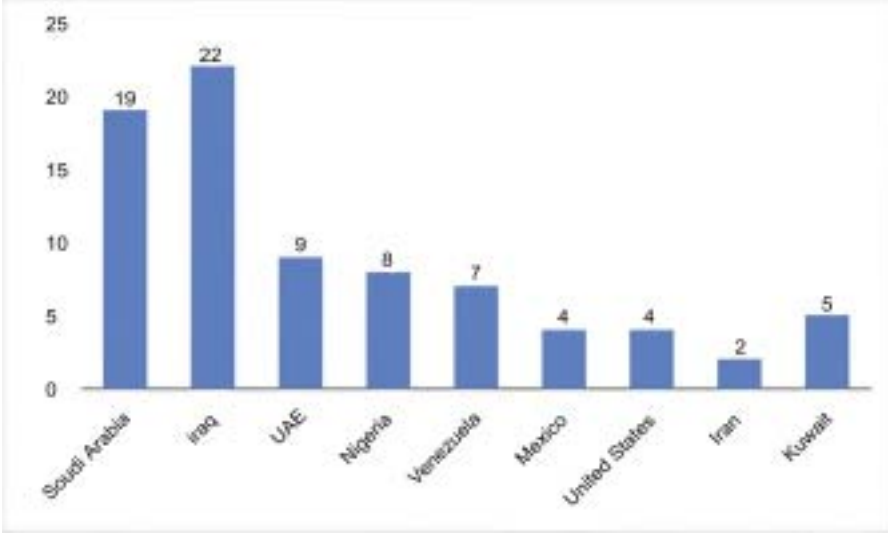
India and Energy Diplomacy in the Bay of Bengal Region

The Bay of Bengal has a surface area of 2.2 million Sq. Km and connects India with Sri Lanka, Bangladesh, Myanmar, Indonesia, Malaysia, and Thailand. In addition to these littoral states, the Bay of Bengal Region also has landlocked countries such as Nepal and Bhutan. In terms of resources, the region has not been explored. However, ever since the global rise in oil prices in the year 2008 which saw the cost of one barrel of crude oil at US$135 per barrel, many economies were shaken, particularly those in non-oil-producing countries. In the BOB region, only Malaysia and Brunei are oil-exporting

countries, while others are dependent on imports. According to the Ministry of Petroleum and Natural Gas, India's Consumption of crude oil is 204.23 MMT, of which production stood at 29.69MMT and imports stood at 211.98 MMT, showing an increase in terms of imports by 7.9 percent and a decline in terms of production by 2.6 percent in the years 2021–2022.

In the year 2019, India's major imports of crude oil were from Middle Eastern countries. The graph below indicates the amount of imports (in percentage) from the top ten countries that export oil to India. However, with the Russia-Ukraine War, Russia has become the largest exporter of crude oil to India with over 22 percent, while Saudi Arabia's and Iraq's exports came down to 16 and 20.5 percent in the year 2022, respectively.

Graph 2.1: Crude Oil Imported to India in Percentage



These figures indicate that India needs to secure its energy demands while its energy requirements increase every year. In this regard, can the BOB Region serve as an alternative to supplement India's energy needs? What are the resources available in the region? The region was generally not known for its energy resources until recently, when Reliance Group of Companies discovered about 7 trillion cubic feet of gas near the Vishakhapatnam Coast. In addition, the Bay of Bengal can also be considered a hub for oil and natural gas for countries in the South and Southeast Asian regions. Resources in the region include Malaysia, which is a major oil and gas producing country; Singapore, which serves as one of the leading international oil storage and refineries; the Arun gas field in Aceh, Indonesia; and the Riau Province in Indonesia, which has large supplies of oil and gas; and supplies in the Rakhine Coast of Myanmar. Further, the eastern Indian Ocean has a considerable amount of deposits of hydrocarbons and minerals, which are a result of sedimentary deposits from the Ganges, Cauvery, Godavari, Mahanadi, and Irrawaddy rivers, which empty into the Bay of Bengal. Out of the twenty-six sedimentary basins in the Bay of Bengal, only six have been explored for energy resources. What must also be noted is the fact that there are a multitude of overlapping claims in terms of maritime boundaries and exclusive economic zones by countries in the Bay of Bengal region.

The Bay of Bengal region has strategic importance for India in terms of its national security and energy supplies. India and the South and Southeast Asian states can enhance their existing bilateral relations with

one another through energy trade. In this regard, it is important for countries to assess the availability of resources and capabilities that would enable them to make an informed decision about exploration. Additionally, these countries must assess the possible role of nuclear energy and how it could supplement the energy requirements in the region. Nuclear power generation is practically absent in all of Southeast Asia, and a shift towards nuclear power generation reduces dependence on fossil fuels and other fuels that cause environmental hazards. On the other hand, India is the only country in the region that has nuclear energy, accounting for just 1.1 per cent of the primary energy in India, 1.6 per cent of generation capacity, and 2.8 percent of power generation in 2021. However, India is expected to increase its nuclear power production by 10 per cent by the end of 2022. In this regard, India and the United States have engaged in creating a civilian nuclear cooperation agreement. There are no nuclear power generation plants in Southeast Asian countries such as Bangladesh, Nepal, Bhutan, and Sri Lanka. This has indeed created an edge for India over other countries in the region.

Conclusion

Energy security in the world has become an important factor for countries' economies and their survival. While energy demands have increased across the world, concerns over its supply have reached their zenith. This increase in demand and limited supply chains have resulted in competition over resources. However, what is interesting to note is the fact that there are large unexplored areas where energy resources could be available in abundance. The Bay of Bengal is one such region where resources may be available. In order to secure its national security and energy security,India must engage in exploring this bay, which is within its purview. In addition, it must engage in diplomatic efforts to build bilateral agreements and cooperative mechanisms with countries in its neighbourhood. With its experience in developing nuclear power generation plants, India could invest in knowledge transfers to countries in the South Asian region.

Another aspect is that China is India's biggest challenge in the region. Its recent inroads in South Asian countries such as Nepal, Sri Lanka, and Bangladesh have posed serious challenges to New Delhi and its influence in the region. For example, the leasing of the Chinese-built port in Hambantota and the recent docking of a Chinese research vessel in the port are seen by New Delhi as a serious concerns in terms of its security. However, India must engage in positive efforts to build its relationships with its neighbours, particularly in the energy sector, to help these countries become self-reliant.

As the world comes out of the crown-headed pandemic, many states have witnessed economic collapses in their respective economies. The economic situation in Sri Lanka and Pakistan has been exacerbated by the Pandemic. India did help Sri Lanka, as these problems may have spillover effects for India. They also present an opportunity for India to extend its support and thereby grow its influence over these countries. By securing its own energy requirements, India will be able to take up the role of a benevolent leader in the region. This year is India's Presidency of the G20, and it presents an opportune moment to engage in bilateral agreements that seek to establish dependable energy supplies from the Bay of Bengal. India must utilize this opportunity to establish multilateral energy initiatives that seek to fulfill not only its own energy requirements but also those of its neighbouring countries. While focusing on energy security as a core national interest, India must seek energy diplomacy that will have mutual benefits whilst securing its own national security. In conclusion, energy diplomacy could be the factor that could establish strong bilateral and multilateral relationships with countries in the region and thereby thwart challenges that have been appearing from an ever-growing, aggressive China that seeks to establish itself as the regional hegemon.

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Chapter 13

Ongoing Forced Migration: Myanmar and Need to Address Human Security Concerns

Sanjay Gathia[1*]

UN's Human Security Framework

Myanmar's recent developments are vast and complex. The paper presents some key developments unilaterally carried out by 'Myanmar's military junta.[2]

Figure 5.1: UN's Human Security Framework

[1*] This paper is a humble attempt to share observations of the events that reflect the growing insecurity of the people of Burma/Myanmar ever since Myanmar's military junta took power. The chaos unleashed by the military via violence and destruction around the country, and its impact on Indian borders, especially in the northeast, are yet to be understood. As the situation continues to unfold across the international borders in Myanmar, India needs robust engagements with diverse stakeholders to understand and address these challenges.

[2] They are presented using the framework in the **Human Security Handbook 2016**, developed by the UN Trust Fund for Human Security (UNTFHS) as a basis of understanding the vast diversity and complexity to be considered by the regional leaders of the Bay of Bengal region and the impact that it unfolds.

Political Insecurity

In a post-coup development, the junta (Sit-tat in common parlance) detained President Win Myint, State Counsellor Aung San Suu Kyi, other ministers, their deputies, and members of parliament. Forming the State Administrative Council (SAC), the junta immediately suspended Article 420 of the now-abolished 2008 Constitution.

The military imposed three martial laws[3] to tighten its grip, starting in Yangon and then nationwide via regional military commanders. These unlimited powers allow its kangaroo courts to conduct trials[4] for any reason deemed fit.

Personal and Community Insecurity

As per the United Nations Human Rights Council, the continued displacement within Myanmar has internally displaced 1,443,000 people near the Bangladeshi, Indian, Chinese, and Thai borders. India hosts more than 50,000 displaced Burmese.

As the civil disobedience movement intensified, the military increased its volatile actions/ activities against ethnic and religious minorities nationwide, killing more than 1,000 people, and targeting the LGBTIQ+ community.

The government can seize the belongings and private property of coup opponents and their family members, reintroduce laws giving ward administrators all information about overnight non-ward guests, and suspend sections 5, 7 and 8 of the 2017 law protecting the Privacy and Security of citizens, thus wielding absolute power to violate citizens' lives unaccountably.

Cyber Security Law 2022 gives regulatory powers over freedom of expression, and unfettered military access to end-'users' private data, enforcing extra-territorial reach on people and companies, including imposing and placing obligations on digital service providers, and furthering control of digital space and communications as the junta's Ministry of Defence deems fit.

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[3] ***Martial Law Order 1/2021 (14-March-2021)****: Transfer executive and judicial power to the Commander of Yangon to provide security, rule of Law and community peace. Depending on the changing situation, the commander shall exercise the Martial Law by himself or transfer the power to the regional military commanders.* ***Martial Law Order 2/2021 (15-March-2021)****: Expanded the areas covered under Martial Law to various parts of Yangon.* ***Martial Law Order 3/2021 (15-March-2021)*** *: Military commanders were given powers over: (A) Administration: (a) security issues, (2) social issues, (3) trade issues, (4) transportation issues; (B) Judiciary: (1) Formation of courts, (2) Deciding cases at Military Tribunal, (3) Punishments; 4) Decisions and sentences handed down by Military Tribunal shall be final, death sentence shall be approved only with the approval of the State Administration ' 'Council's Chairman, (5) No appeal for decisions or convictions handed down by Military Tribunal.*

[4] *High Treason (Section 122 of the Criminal Procedure Code); Attempt to excite disaffection towards the Government (Section 124-A of the Myanmar Penal Code 1861); Sabotage or hinder the performance of the Defence Services of the Union or law enforcement organizations (Section 124-C of the Myanmar Penal Code 1861); Disrupts or hinders Defence Services and Government employees (Section 124-D of the Myanmar Penal Code 1861); Section 505 of the Myanmar Penal Code 1861; Cause fear, spread false news, agitate directly or indirectly criminal offence against a Government employee (Section 505-A of the Myanmar Penal Code 1861); Cases against Unlawful Associations Act, Cases against weaponry act, Corruption cases; Cases against press and media law, Cases against Myanmar Immigration (provisional) act (1947); Cases against electronic communications law, Cases against ward or village-tract administration law; Cases against anti-terrorism Law.*

Economic Insecurity

The military has arrested Myanmar's leading financial experts, suspended more than 200 Central Bank of Myanmar (CBM) personnel, stopped depositors from accessing money, and threatened arrest to force cash deposits into banks. Power and internet outages have hampered digital banking: coupled with the military's actions and sanctions, it impedes cash flows and interbank transfers. Myanmar's banking systems are under watch as the US, EU, and Canada impose sanctions on designated current and former military officers and affiliated institutions. IEM Myanmar's Banking Crisis report details the regime's catastrophic mismanagement, and full-scale banking crisis, including how it impacts remittances and payments across all sectors, including international transactions. In a series of CBM notifications, there were limitations put on cash withdrawals from banks and ATMs. This forced people to withdraw most of their money without making deposits, fearing cash crunches—a reminder of previous coups and the Kyat's demonetization. The Financial Action Task Force (FATA) added Myanmar to its list of high-risk jurisdictions in October 2022, citing significant deficiencies in the country's financial system to counter money laundering, financing terrorism and proliferation. This significantly challenged national and international banking systems and ordinary people, and many investors fled, causing a negative impact on the job market, employability, and economic security.

Food Insecurity

Restricted cash withdrawals, lack of proper transport and logistics, ongoing violence, economic crisis, and disruptions in agricultural production are creating a growing food crisis for Myanmar's over 13-million citizens. A recent article on "Myanmar food security threatens regional stability" points to a mix of factors like nationalism, self-determination struggle, lack of power-sharing by Myanmar's military and its scorched earth policy, a centralised political administration, and a fractured opposition leading to an overall decline in food production. All border trades with neighbouring countries are affected, impacting essential food deliveries to India[5] and food price hikes, especially in border areas, and particularly for displaced populations.

Health Insecurity

The coup followed the Covid-19 pandemic's impact (Myanmar faced one of the worst regional outbreaks), worsened by poor healthcare infrastructure and lockdowns across the country. The government withheld medical and oxygen supplies, forcing residents to defy night-time curfew in desperate search of oxygen cylinders for family members. The military went to the extent of preventing people from seeking oxygen supplies from producers, accusing them of price-gouging, prohibiting charities from giving oxygen cylinders to needy people, and hoarding essential medical supplies for loyal troops. The collapse of an already fragile healthcare system deepened mistrust against Myanmar's military,who accused protesters of deliberately spreading Covid19 thus increasing

[5] *Myanmar being a major exporter of rice and dried leguminous vegetables to China and India also is impacted with the ongoing violence, including the impact on India-Myanmar border trade, majorly carried out from northeast Indian states, has almost come to a halt and in some cases reduced to smuggling activities in the borderlands. As the fighting intensifies across the borders in Sagaing, Chin and Arakan, trade routes with India will further suffer immensely and negatively from the lack of essential food supplies in India.*

health insecurity among the people. The junta successfully weaponized the pandemic and healthcare needs by arresting doctors and nurses doing their duty of helping affected people, which strengthened people's resolve to form a democratic society and an empathetic military.

Environmental Insecurity

Myanmar's military junta has over-exploited the country for resources, leading to degradation of the environment, human rights abuses, and a localised impact of climate change (e.g., erratic weather, natural disasters). Clashes with people's defence forces and local resistance forces invariably leave the local population in a dire situation of hunger, malnourishment, and lack of support.

The military continues to muzzle CSOs and NGOs that could have mobilised and provided support to the affected displaced people. Getting aid from other countries is challenging because of the country's security concerns. International organisations, donors, and civil society groups have also suspended much-needed climate adaptation and mitigation work since the coup. Although a party to the climate change convention, Myanmar was absent during COP27. Environmentalists are concerned that the military may use the lucrative natural wealth by over-exploiting natural resources, including uncontrolled deforestation and mining of minerals and gems, and derail the deposed NLD government's initiatives on renewable energy, climate resilience, and aid programs. Pre-coup research revealed threats to aquatic wildlife, and the rise of industrial pollution and invasive species.

Impact on Human Security of Displaced Burmese Communities and Increased Regional Vulnerability

There are many interconnected issues related to the displaced Burmese community's security and increased regional vulnerability. They lack official documentation in their own country and neighbouring host countries. This puts them at risk of being arrested, detained, and deported in violation of the conventions of international humanitarian law, increasing the state of uncertainty.

Lack of documentation also results in many being denied healthcare and educational services, which further victimises them, along with facing other challenges such as domestic violence or sexual and gender-based violence that go unresolved. Facing increased racism, many also lack mobility, thereby facing long-term healthcare concerns, including mental health challenges. Young adults are vulnerable, and easily become targeted by organised crime groups, smuggled or trafficked into sexual slavery.

Resultant Impact on India and the Bay of Bengal Region

While a deeper reflection and analysis may be necessary to understand the overall concerns, Myanmar's downward spiralling situation impacts India's and the Bay of Bengal's security in the following ways:

- **India's Neighbourhood First Policy (NFP):** Initiatives in Myanmar on economic, connectivity, and defence security are in semi-limbo, with India being criticised, internationally and by the pro-democracy movement, for providing support and recognition to the military junta, and not the deposed elected representatives.

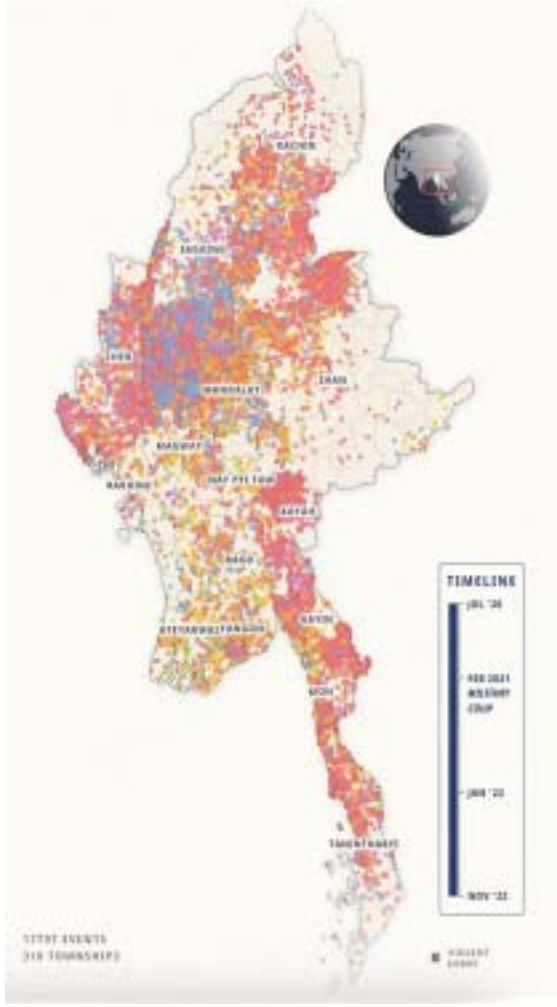
- **India's Act East Policy (AEP)**: connected with its long-term vision of developing India's North-eastern Region (NER), the Act East Policy (AEP) and the possibility of having land connectivity with Myanmar are now a challenged preposition. Northeast India's ASEAN connectivity remains doubtful due to violence and conflict at India-Myanmar borders. Asian Highways 1 and 2 and all international border trade points located in Arunachal Pradesh, Nagaland, Manipur, and Mizoram continue to face the uncertainty of an open trade route.
- **Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC):** India and BIMSTEC initiatives to have land transport and re-connectivity of old land trade routes must now consider the active and ongoing conflict in Myanmar. The ever-increasing cost of implementing such initiatives makes many projects untenable. The ever-growing international pressure to disengage with Myanmar's junta rule is equally daunting.
- **Indo-Pacific Strategy (IPS):** Myanmar's military belligerent behaviour towards its own citizens and ethnic groups in the border areas is creating a spilling effect in the neighbouring countries. The situation is creating border instability and chaos, and volatile situations continue to impact all and any future initiatives geared towards an open, connected, prosperous, resilient, and secure Indo-Pacific region. China has a distinct edge over Myanmar's junta via the China Myanmar Economic Corridor, other key investments, and strong relations with pro-military ethnic armed organisations , which is detrimental to India's interests in the Indian Ocean Region (IOR), and the overall Indo-Pacific Strategy (IPS).

Conclusion: India's Need for Institutional Response to the Human Insecurity of Displaced People of Myanmar

India is neither a signatory to the refugee convention nor does it have a national refugee policy, and except for Article 21 of the Indian constitution and selected legal judgements, there is no other law in India that explicitly protects the right to life vis-à-vis the need for non-refoulement of asylum seekers and refugees. As a leading democratic country in the South Asian region, India is receiving a constant inflow of displaced communities via land, air, or sea. India has now reached a point in its political history, where it should set up a standard operating procedure (SOP) and a comprehensive national refugee policy. This should be inclusive and sensitive to the diverse nature of violence and gender-based discrimination faced by displaced communities in its border areas. The government should take the lead and initiate engagement with voluntary organisations and civil society groups, including representatives from the border states. There is little doubt that an India-led comprehensive regional solution is needed in the Bay of Bengal region to respond to the growing human insecurity crisis like the one in Myanmar. For this, engagement with Bangladesh, ASEAN, South Korea, and Japan should be a priority. India's approach should focus on constructive domestic multi-stakeholder engagement, ensuring a humanitarian assistance strategy that addresses human security needs.

To ensure a sustainable solution that addresses the needs of diverse ethnic groups in Myanmar, India should facilitate political reforms via empowerment and mainstreaming inclusiveness for women, gender-fluid communities, and ethnic minorities.

Figure 5.2: Ongoing anti-junta armed struggle



Source: https://myanmar.iiss.org/ (November 2022)

The map above depicts the ongoing anti-junta armed struggle, and displays the reality for decision-makers in countries in the Bay of Bengal region. The people of Burma/Myanmar want human dignity and security to be upheld and improved, along with their aspirations for democracy and inclusiveness. Bay of Bengal countries need to respond to the Burmese people's aspirations and ensure their Burma policy and its implementation reflect these aspirations. Prolonged delays will only cause policy paralysis and in-return harm India's security interests as the human security situation keeps unfolding and spiralling downward.

India will have to ensure that it can come up with a strategy for engaging all pro-democracy stakeholders, especially ethnic groups that have cross-border relations. Engaging, developing ties, and strengthening relations with the pro-democracy movement can facilitate India's efforts to improve its relations not just with the National Unity Government, but also with the people of Myanmar and deal with a belligerent military regime. Only then will India be able to ensure human security on its borders with Myanmar and secure its national interests in the Bay of Bengal region.

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Chapter 14

Addressing Human Security Challenges Through Innovation and Institutions in The Maldives

Mohamed Hoodh Ibrahim

Introduction

Human security is a broad-based, multi-sectoral area dealing with insecurities and national security. It entails a broad understanding of threats and their possible causes related to economic, food, health, environment, personal, community, and political security.

From a Maldivian perspective, when examining the idea of addressing Human Security Challenges through institutional mechanisms, it is essential to look at the broader context of the Maldivian political economy. Human security issues are immediately identifiable, including environmental security issues brought on by climate impact, economic and maritime security issues brought on by a complex mix of climate impact, unregulated activity sectors like fisheries, and an ever-present grey cloud of environmental response issues. This, together, creates a uniquely singular experience for the Maldives in addressing human security issues.

The Maldives is a Small Island Developing State; the Maldivian archipelago is a string of almost 1200 islands that first encountered new ideas and practices via trade and travel, benefiting from its unique geographic position in the Indian Ocean. Maldivian society has always emphasized peaceful coexistence. Historically, the legal system of the Maldives clearly exhibits the special consideration given to social harmony rather than deferring to Islamic punishment.

Governance and Institutions

Maldives has existed as a fiefdom and then as an absolute monarchy. Islam was introduced to the archipelago in the 12th century by travelling Arab missionaries; and it consolidated as a sultanate, developing strong commercial and cultural ties with Asia and Africa. From the mid-16th century on, the region came under the increasing influence of colonial powers. The Maldives became a British protectorate in 1887. Independence from the United Kingdom was achieved in 1965, and a

presidential republic was established in 1968 with an elected people's Majlis. The ensuing decades have been characterised by political instability and efforts at democratic reform. Although initially appearing to make a relatively peaceful transition from alleged autocracy to democracy, the Maldives has struggled to maintain the democratic gains achieved during the transition. With signs of backsliding on important democratic values such as freedom of speech, freedom of the press, and human rights.

The consolidation of power in the hands of an elite few has meant that the evolution of government has been slow. Institutional weakness is at the core of the governance system in the Maldives. As evident from the second republic founded on November 11, 1968, the first constitution of the independent state was approved by a constitutional assembly, but again the issue of the aesthetic name change of a president in place of a monarch recurred. This weakness in the institutions shadowed the governance of the Maldives for ages. And this is obvious from the fact that the government was not made accountable to the public. The governance system was not efficient in facing the tide of democratic changes.

When looking for institutional solutions to address human security, it is important to thoroughly understand the existing institutional character and the government's capacity to achieve good governance. Present constitutional rules in the Maldives show how they have been created and shaped by past monarchical political practices that may not be based on basic tenets of good governance.

Despite the development achieved owing to the blossoming tourism industry, the Maldives has faced problems caused by broader governance challenges. This is reflected in trends in key socio-economic sectors like health, education, and community-based economic activities. The government's capacity to manage socio-political and economic activities in the most democratic manner can be analysed from an institutionalist viewpoint; the event highlights the fact that a weak political system is the inevitable cause of this change or turbulence. Despite the growth associated with tourism, it is observed that the overall level of development in other areas has remained disappointing over the decades. This can be seen in the underdeveloped socio-economic infrastructure, as demonstrated by socioeconomic inequality in the Maldives.

The top-down weak institutional character of the Maldives makes institutional strengthening a key area for intervention, especially in consolidating gains made through the democratic movement. Ultimately, it is an incremental, step-by-step journey.

Food Security and Communications Technology

Due to emerging environmental, geopolitical, and public health challenges, there has been an increase in disruptions to food systems worldwide. This is an important moment for all nations, small or large, to look into the continued sustainability of local food production, and consumer consumption habits vis-a-vis national economies, creating and investing in organics as a local alternative to high-cost imported food items. Supply chain disruptions due to Covid-19 and the Russia-Ukraine war have caused Small Island Developing States to rapidly evaluate the food supply systems and work towards national food security and resilience.

There are examples of private businesses working in the organic farming space in the Maldives, such as the Seagull Maldives Maafushi agriculture island, high-end farms that are part of high-end luxury resort hotels, such as Al Fresco Organic Farm Restaurant on Vakkaru Maldives Resort.

While these represent positive steps towards organic farming, especially in the tourism sector, the common man has hardly any access to these. Zuvaan Dhanduveriya makes a compelling, inspiring, case for the common young person through the creative and dynamic use of new media and has taken the Maldives by storm. Through social media platforms such as Twitter and TikTok, new young farmers are finding sources of information popularising farming, and exploring avenues for reaching out to average consumers to change their behaviour through innovative and creative communication. Young farmers are planting sugar cane, selling machine-made pulp-free juice and farming diverse breeds of food such as Noni, traditionally used for colds, flu, diabetes, anxiety, and high blood pressure, as well as depression and anxiety. The whole Noni plant is used for various illnesses in Samoan culture, and as a plant medicine.

Social media platforms allow agricultural institutions to communicate directly with farmers and consumers, informing them about various aspects of agriculture. The government is investing in land and organic farming through the state-owned Agro National Corporation. Agro National Corporation (AgroNAT) has a mandate to assist agricultural sector development. AgroNAT works to achieve objectives like an efficient supply chain for agriculture, technical expertise and training for farmers, expanding the role of women in farming, and facilitating access to quality fertilisers across islands.

While the role of social media in various industries has been broadly studied, it has a role in promoting organics in Small Island Developing States for food security and resilience, particularly driven by young people with a potential for scalability. Social media offers a more broad-based grassroots depiction of farming life and looks at how farmers work with traditional and modern methods, sharing the beauty and reality of rural farming, and revealing the nature of farm work.

Innovative approaches using social technologies can enable farmers to reveal the usually hidden aspects of farm work, share and document practices, and express and reflect their perspectives in communicating to and with farming and non-farming audiences. It also looks into how such communicative practices might serve to reframe their farming identities as relatable and replicable activities, even in urban settings.

Concerns of youth on Climate Impact and Maritime Security

The maritime security domain of the Maldives has many challenges and opportunities. Across the board and in various government departments, there is a consensus that climate change and its impact will spell doom for the Maldives in the coming years and measures need to be taken to prevent it. Climate change impacts uniquely threaten the Maldives, from habitat and living space to the loss of critically important biodiversity.

In the Perth US Asia Centre publication, *Enhancing Australia's Engagement with the Indian Ocean*, Dr. Athaulla Rasheed notes that "As with other island nations, climate change has become the greatest threat to the development, sustainability, and security of the Maldives economy, and the biggest influencer of national development and foreign policy choices. The Maldives has been a leading advocate of international climate policy under the United Nations Framework Convention

on Climate Change. It made strong national commitments supporting climate action, most recently with the adoption of the Climate Emergency Act in 2021".

Against the backdrop of climate risks and environmental hazards in the Maldives, young people, who are key stakeholders in creating solutions, feel left behind. In a climate risk assessment done by the Asian Development Bank, it was observed that young people see climate security challenges through the lens of governance and institutional issues. The focus group discussions and interviews identified that young people felt that youth participation in policy and decision-making is low and even if allowed, is just namesake. They feel helpless in acting on climate change and funding provided by international donors often gets stuck at the bureaucratic level. They feel they were not consulted in policy-making on climate-related policies. Implementation and dedication are issues for the government when attending to the issues of remote island communities. Lack of acknowledgement of young people's point of view during the decision-making process in major sectors and lack of knowledge in natural resource management of remote local communities are dual challenges.

Conclusion

The key to the future of the Maldives lies in strong partnerships with regional friends while being true to its security needs. The Maldives has unique challenges in governance and building lasting institutions, but Maldivians are nothing if not resilient and determined. The country is known as the necklace of pearls in the Indian Ocean; Maldives sits ensconced at the heart of global shipping routes. Hence, Maldivian security is Indian Ocean security, and vice versa. Support in building resilient supply chains, assisting in food security, and partnering with strong institutions in the Maldives is a win-win for all stakeholders in the Bay of Bengal region.

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Chapter 15

Human Security in the Visage of Climate Change Induced Migrations in the Bay of Bengal: A Perspective

Dr W Lawrence S Prabhakar

The spectre of climate change with its threat-multiplier effects has been colossal globally as the vagaries of weather, varying temperatures, melting of ice packs, sea-level rises, unforeseen cyclones, typhoons, extreme searing heat, and freezing cold have ravaged the entire planet with perilous consequences to the human habitats in different parts of the world. It has generated a lethal combination of climate change and social crisis, triggering large-scale human displacement from the imperilled regions to other relatively safer habitats. Migration induced by violent climate change has been gravely affecting states whose populations are displaced along with the erosion of topsoil due to ravaging floods and impacting a variety of factors like food security, health security, and environmental security and the states that are compelled to host the displaced humans with the overburden of refugees with pressure on land, water, soil, food, and habitations. The cumulative impact has necessitated various responses to safeguard Human security, since it is the casualty of unforeseen climate change and human migration. The displacement of populations creates social, economic, cultural, political, and security crises, resulting in the perennial instability of states.

The brief analyses the various vistas of Human security that are increasingly gaining significance, the interrelationship between Human security and climate change, the context of the Bay of Bengal that features a prominent dimension of climate change and the resultant human displacement, the multiple dimensions of the Human Security-Climate Change impacts and the derivatives of this complex interdependence that would address this issue.

Vistas of Human Security and Climate Change

Human Security and climate change are interlinked and have mutually impacted one another, producing cascading effects and impacts. There has been unbalanced economic globalisation that has led to an economic crisis and poverty, resulting in environmental degradation and consequently impacting changing patterns of climate. This has aggravated the perils of human insecurity and ravaged the habitats of various populations already vulnerable to climate change. Thus, Human

security has been imperilled by the impact of climate change and adverse weather, resulting in the destruction of habitats and the consequential rise of urban unrest and violence, leading to a cascading impact of destruction.

Human societies are deeply embedded in natural ecosystems and the momentum of dependency on resources is ever-increasing. They are always dependent on sources of food, potable water, shelter, waste processing, raw materials, and more. Humans are inevitably reliant on these 'ecosystem services' provided by nature and their use is resulting in depletion. What is the linkage between Human Security and Climate Change induced migration and how does it impact societies and countries? are to be explored.

Human Security in the Visage of Climate Change induced Migration

Human displacement because of Climate change is not a new phenomenon and has been recurring in different regions of the world. The link between climate change caused by human interference with the world and environmental vulnerability is well established. The individual or combined effects of climate change are likely to trigger mass human movement both within and across international borders. Thus, the human impact on the environment is creating a new kind of global casualty for the twenty-first century. The International Organization for Migration (IOM) has developed a working definition of 'environmental migrants' as "persons or groups of persons who, for reasons of sudden or progressive changes in the environment that adversely affect their lives or living conditions, are obliged to leave their habitual homes, or choose to do so, either temporarily or permanently, and who move either within their country or abroad".

This definition includes possible situations of forced and voluntary, short, and long-term, and internal and international migration.

Climate change is expected to affect the movement of people in at least four ways:

- The intensification of natural disasters, both sudden and slow-onset leading to increased displacement and migration;
- The adverse consequences of increased warming, climate variability and of other effects of climate change on livelihoods, public health, food security, and water availability;
- Rising sea levels that make coastal areas uninhabitable;
- Competition over scarce natural resources potentially lead to growing tensions and even conflict and, in turn, displacement. The primary sites of displacement have been in the coastal regions and hence, human settlements are displaced due to this event.

The Imminence of Climate Change induced Migration in the Bay of Bengal

The Bay of Bengal is one region where the effects of climate change, both slow and sudden, have caused great damage to life and the environment. In global terms, eight of the ten countries having the greatest number of people living in low-elevation coastal zones are in South and Southeast Asia".

The Bay of Bengal region is thus a most vulnerable zone. The Global Climate Change Vulnerability Index showed that Bangladesh is 'most at risk,' while states like India and Myanmar feature in the 'extreme risk' category.

States like Bangladesh and parts of Myanmar, India, Vietnam, and Indonesia are inherently volatile and prone to natural disasters such as flooding, drought, and cyclones, which severely handicap the primarily agro-based economies. These, combined with socio-political structures, are not well-adapted for providing immediate relief and security, they compel internal and cross-border migration as a survival strategy. These effects are compounded by climate change: both through slow onset processes and due to the increase in the frequency and intensity of natural disasters.

The Bay of Bengal is vulnerable to sudden and immediate shifts in weather, leading to natural disasters such as frequent and devastating cyclonic activity, seasonal storms, depressions, and tsunamis. Climate change-induced migration in the Bay of Bengal region features from multiple factors that include low elevations from the sea and many floodplains—combined with its reliance on resources, and high population density and levels of poverty, which makes it particularly vulnerable to sea-level rise, high temperatures, and extreme floods and cyclones.

- Coastal erosion: The Bay of Bengal features coastal erosion with extensive low-lying areas. These countries face the problem of coastal erosion, worsened by climate-induced cyclones and human activities. India lost about 235 sq km of land in the 1990-2016 period. West Bengal itself suffered 63 percent erosion between 1990 and 2016, losing 99 sq km of land. In Bangladesh's Chittagong belt, several vital installations, like export promotion zones, naval establishments, large industrial estates, and port facilities, are all in high danger of being flooded due to erosion. Sri Lanka has spent a considerable amount on erosion management.

- Mangrove loss: There has been quite an extensive mangrove loss in the Bay of Bengal countries' coastline, resulting in intensified carbon emissions from the region. The coastline lost 74 percent of its mangroves to aquaculture/ agriculture, with most of it in Myanmar. The Indian Sundarbans lost 107 sq. km. of mangrove cover between 1975 and 2013; while coastal erosion affected 60 percent of those mangroves and 23 percent were converted to barren lands. The rest were converted for agriculture, aquaculture, and infrastructure. The Bay of Bengal region is estimated to have emitted 1,567.98 Gg of carbon dioxide at the same time.

- Cyclones and floods: The region has witnessed an increase in the severity of post-monsoon cyclones. The region accounts for 50 percent of the global cyclonic activity, with a huge casualty rate of 80 percent fatalities. Climate change has aggravated the higher incidence of cyclones, which is increasing with changes in seawater temperatures. These factors have led to the displacement of large populations. 3.6 million Indians were displaced annually between 2008-2018, mostly as a result of flooding from monsoon rains.

Climate change in the Bay of Bengal littorals has created large vulnerable populations, frequently exposed to localised disasters, and has increased their overall vulnerability, weakening the disaster protection infrastructure. The imminent impact of drastic climate change is quite evident in all the key sectors of livelihood that are heavily dependent on agriculture, in paddy cultivation, fishing, and livestock that are mainly rain-fed, the erratic monsoon patterns and cyclonic activity have heavily impacted agriculture and the dwindling water supply for irrigation. These have compounded the climate change-induced migration to other regions.

Institutional Mechanisms to Tackle Climate Change Migration in the Bay of Bengal Region

The Bay of Bengal littoral states are contiguous, with the South Asian Association for Regional Corporation (SAARC) on one side and the Association for Southeast Asian Nations (ASEAN) on the other. Given this regional geography convergence, there has been a 'new regionalism' in momentum. It has come by fostering the regional consciousness for cooperation through the creation of the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC). The BIMSTEC has built-in provisions for cooperation in climate change and disaster management, however, no concrete steps have been taken in addressing climate-induced migration.

South Asia's SAARC has a Disaster Management Centre (SDMC) located in New Delhi, but it has not shown any reasonable progress as an effective institution. It has not played any significant role in mitigating or managing the many disasters that have hit the region in recent years.

However, they have focused on international initiatives by a few non-resident institutions that have proven to be more successful. Initiatives to achieve climate change mitigation, food security, and sustainable development in the Bay of Bengal and enable reducing the patterns of migration in the long term. Climate change adaptation is a key long-term measure that could avoid patterns of climate change-induced migration.

A significant institution is the Bay of Bengal Large Marine Ecosystem (BOBLME) project, which focuses on the sustainable use of marine resources for development. This initiative involves various stakeholders, including local communities. The agency is backed by key international organisations such as the Food and Agricultural Organization (FAO); Global Environment Facility (GEF) of Norway, the Swedish International Development Cooperation Agency (SIDCA), as well as participating governments and the National Oceanic and Atmospheric Administration (NOAA).

This initiative includes in its operational scope countries such as Thailand, Malaysia, and Myanmar, apart from India, Bangladesh, and Sri Lanka. This multilateral initiative has been able to register progress and has achieved a great deal of enhanced cooperation at the regional, sub-regional, and national levels. It has been able to leverage resources and achieve considerable food security and sustainable development, empowering a range of stakeholders, including vulnerable coastal communities worst hit by the impacts of climate change.

Yet another key initiative is the South Asia Co-operative Environment Programme (SACEP), funded by the UN Environmental Program, which addresses a range of issues such as adaptation and awareness, and has an environment and natural resources information centre.

The Nansen Conference and Principles, convened by Norway in 2011, have explored possible responses to linkages between climate change and migration/ mobility. It came out with several comprehensive principles, notably a "set of ten overarching principles designed to shape and inform further action on addressing the linkages between climate change and mobility, both normatively and practically".

The Nansen Conference Principles have emphasised the building of local and national capacities, and engaging "local governments and communities, civil society and private sector". The principles have directed the regional states to look for regional and international solutions, pertaining to development and displacement, in the context of limited national capacity.

However, the key and primary step in addressing this issue is a comprehensive dialogue on climate change-induced migration and the contentious terminology of 'climate refugees. These are yet to have their importance recognised in the bilateral and regional Track 1 agenda in the region. The imperative to sensitise all stakeholders on these issues is vital, along with a variety of multilateral international institutions to support these efforts of both regional and local institutional responses backed by multilateral initiatives.

Enhancing Government and Multilateral Plurilateral Consortia to Tackle Climate Refugees

How regional cooperation mechanisms in the Bay of Bengal region could enhance climate security cooperation is a vital issue to analyse. A cooperative regional process on climate security in the Bay of Bengal is possible, given the non-antagonistic relationships between the five countries (India, Bangladesh, Myanmar, Sri Lanka, and Thailand) and the existing synergies of multilateral and multi-sectoral cooperation within BIMSTEC and other formations.

Intergovernmental efforts of cooperation on climate change have been undertaken and are in progress through BIMSTEC since 2009, when Climate Change was added as a sector of cooperation. Climate change cooperation in the Bay of Bengal region has been affected through various bilateral and trilateral partnerships and other organisations such as BOBLME and SACEP.

In the case of National policy frameworks in Bay of Bengal countries, regional cooperation on offsetting climate risks and addressing ensuing common security risks is yet to be prioritised. Climate change continues to be relegated to the least of policy priorities.

The focus on climate change in regional organisations like BIMSTEC and bilateral discussions is merely reactive and event specific. They are not oriented to be mitigation-oriented and resilience-centric. Thus, collaborative frameworks do not account for long-term climate-induced changes that would require large-scale interventions, viz: the 2011 MoU between India and Bangladesh on Conservation of the Sundarbans.

First, there is a need to create a climate security working group among the Bay of Bengal littoral countries, facilitating knowledge building and sharing with the BIMSTEC Centre for Weather and Climate and the BIMSTEC National Security Chiefs Meeting (BNSC), and the need for the Track 1.5 BIMSTEC Security Dialogue Forum (BSDF). This would enable the leveraging of the specific expertise from the Coalition for Disaster Resilient Infrastructure (CORI). Thus, the Bay of Bengal countries could have a comprehensive and multidimensional regional mechanism addressing the effects of climate threats.

Second, the Bay of Bengal countries could develop a framework to acknowledge and address climate-induced distress migration across and within their national and international borders. This would facilitate Bay of Bengal countries creation of common minimum technical standards and norms for their own national policy frameworks, enabling the monitoring and regulation of irregular patterns of migration fuelled by climate threats.

Third, the Bay of Bengal countries could create a multi-agency Humanitarian Assistance and Disaster Relief Taskforce for shared information-gathering and operational capacities dealing with adverse weather events. This multi-agency task force should have representatives from relevant disaster management

ministries/departments and defence forces, and sectoral experts from the countries for the tasks of early warning mechanisms and emergency responses.

Fourth, the Bay of Bengal countries should expand the scope of their national climate policies from short-term response to long-term adaptation. The littoral countries could focus on building community-level resilience against climate threats within at-risk populations. The Bay of Bengal countries should pursue a multi-pronged strategy of sensitising and creating awareness about emerging climate threats, providing support to traditional community-level mitigation strategies, encouraging grassroots-level leadership, redirecting central and state-level finances to work towards new adaptation strategies, and building public-private partnerships to develop innovative mitigation strategies.

Fifth, the Bay of Bengal countries and SAARC should expand the mandate of the SAARC Disaster Management Centre (SDMC). These should aim to monitor at-risk population groups and assets. SDMC could be expanded to provide short-term early warning data and long-term granular data on adverse climate events, regional adaptation and mitigation.

Climate Change induced migration in the Bay of Bengal region thus has a huge cascading impact with regional and trans-regional consequences compounded by the social economic crisis and political security implications. The pace and scope of these changes have been growing over time and have resulted in the dominance of migration issues as a central issue among the countries of the region. Climate security challenges are not state-specific to be dealt with in national or local silos. This is quite true for the Bay of Bengal region, which features socioeconomic fragility and climate threats that cut across countries.

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Chapter 16

The Emergence of Fintech in Combating Climate Change

Kazi Lamiyah Daraksha Karim

The Bay of Bengal region is one of the most climatically sensitive regions of the globe. It is evident that it is one of the critical hubs for addressing climate security issues. The Bay of Bengal spans a huge region, and due to its warmer environment, it exhibits vulnerable signs of climate change. A quarter of the world's population resides along the Bay of Bengal's coastline, which covers an area of 2.173 million square kilometers and represents about 4.7 percent of the world economy. South Asian BIMSTEC members are particularly vulnerable to weather changes brought on by global warming that cause losses to both human life and economic production. The BIMSTEC region's economy has expanded quickly at the same time, by actions that have raised greenhouse gas emissions. It is needless to mention that combating climate change is vital for achieving sustainability on a global scale. The fintech industry has a significant role to play in the sector of emission reduction, achieving net-zero goals, and supporting climate action.

According to Article 2.1(c) of the Paris Agreement, countries are directed to make financing flows commensurate with a roadmap towards low greenhouse gas emissions and climate-resilient development (2015). The World Economic Forum, the Global Commission on the Economy and Climate, the Organisation for Economic Co-operation and Development, Bhattacharya et al., and Bielenberg et al., stated the need for significant new investment to implement the Paris Agreement and achieve the Sustainable Development Goals (SDGs) (2021), (2022), (2017), (2016), (2016). It is projected that Asia needs US$26 trillion in infrastructure investment between 2016 and 2030. In order to combat the global warming calamity, capital must be mobilised for decarbonization.

Role Fintech plays in the Planet's Health when paired with Climate Change

Fintech has proven to be a tremendous mobilizer for enhancing and automating financial services while making them simple to use. It has already been proven that it can disrupt the banking sector on a large scale. Climate fintech is simply the interface of climate, finance, and technology. It is denoted as a digital financial and climate technology that catalyses decarbonization. Climate fintech

solutions can help with decision-making, risk management, building transparency, and efficiency improvements in the fight against climate change. To build a sustainable economy that benefits people and the planet, the financial industry needs to gear up and retool the sector to address the challenges by combining climate, finance, and digital technology. The development of advanced financial products has made use of big data, artificial intelligence, and distributed ledger technologies in a way that accelerates access to capital, data gathering and processing, and cost-effectiveness. As a result, they are important enablers and disruptors of the climate change phenomenon.

Bangladesh has the highest risk of natural disasters. Nearly every year, disasters like cyclones, floods, and earthquakes affect Bangladesh. The significance of researching the various components of complex strategies associated with disasters is obvious given the rising disaster rates. It goes without saying that extreme climate change poses a serious risk to both the environment and public health. The effects of climate and environmental change are worldwide in scope, ranging from changing weather patterns to increasing sea levels.

This paper illustrates two key areas of the climate fintech business model, and their initial impact on combating climate change in the context of Bangladesh.

- **Mobile Payment**

Mobile banking services are becoming increasingly popular in Bangladesh. It has become a centralised one-stop solution for different kinds of transactions. The use of mobile banking systems is not only limited to urban areas but is also prevalent in rural areas. During the past five years, there has been a noticeable rise in Mobile Financial Services (MFS), with 60 percent of users in rural areas.

Through mobile payments, citizens can transact in ecological ways. Online transactions can be completed using an app or a website. The number of annual transactions through the MFS increased by 37.19 percent in 2021, as customers found it convenient to make various types of payments through the MFS in a growing digital financial ecosystem.

- **Banking Sector**

Since 2011, the financial industry in Bangladesh has led the way in terms of green banking practices. The central bank of Bangladesh, known as Bangladesh Bank (BB), gained recognition for being an early mover in green finance for formulating policies and facilitating innovative schemes. Private commercial banks are rapidly adapting to green banking. However, state-owned commercial banks are lagging in this. The banking industry can reduce its influence on the environment by providing green loans, educating clients about the effects of their purchases, and encouraging them to make more environmentally friendly purchases. Technology and finance are combined to make climate-friendly decisions using fintech in banks.

Banks are on the verge of developing eco-friendly lending methods and green bonds by using artificial intelligence. Bank in Bangladesh recruitment, documentation management, leave management, online salary and account statements, personal file update systems, online office orders, electronic passes for visitors, and many other initiatives were introduced through the BB intranet. Even though Bangladesh is well on its way to implementing green banking practices, collaboration, and support from various entities and stakeholders are required for promotion.

A summary of the technologies used in climate fintech

Climate fintech innovation is becoming increasingly recognized in the fields of payment interaction, consumer behaviour, data analysis, risk assessment, decision-making, and investment. The use of big data processing, artificial intelligence, and machine learning techniques can transform several societal and environmental components by promoting accessibility, effectiveness, and transparency. A summary of the technologies used in climate fintech interventions is given below.

Artificial Intelligence. Artificial Intelligence (AI) can analyse a huge number of data points to predict how the climate is changing. The algorithms can analyse vast datasets, derive patterns to predict behaviour and prices, automate decisions, and increase decision-making provisions. AI can support initiatives in the fields of climate research and modelling, climate financing, education, nudging, and behaviour change. AI can power customised applications that calculate carbon footprints or offer suggestions for eco-friendly purchases.

Blockchain. Blockchain technology is a distributed, decentralised ledger that keeps data stored and chained together. It can significantly improve the traceability, transparency, and accountability of greenhouse gas emissions. It can help banks, organisations, and institutions provide accurate, reliable data on carbon emissions. Blockchain technology will alter how traditional financial transactions are carried out, generate revenue, and aid in the fight against climate change. Bangladesh is focusing on sustainable development, and adopting blockchain technology in the financial sector for remittance, credit and payment, trade processing and settlement, cross-border payment, healthcare, music, e-governance, identity, passports, birth certificates, marriage certificates, and death certificates, among other things. It is not yet operational, preventing it from being fully utilised by several industries, including governance, healthcare, agriculture, and others.

Big Data. The rise of big data has made it possible to collect, analyse, and understand risk data effectively and efficiently. Large data sets from edge computing devices, such as sensors and satellites, as well as from more traditional technologies, such as cloud and public databases, have encouraged the creation of new, richer datasets for processing and extrapolation. It can automatically assist in identifying floods, increasing sea levels, deforestation, and drought dangers. The information will support the analytical decision-making process. By identifying harmful emissions and pressure points, big data can aid in problem-solving. It can assist policymakers, governments, stakeholders, researchers, and decision-makers in identifying areas for adjustments that will affect climate targets.

The Fintech sector in Bangladesh has only seen growth on the MFS platform. Now, citizens can use it to streamline their daily transactions. The fintech industry has a huge room for expansion. Even though it had a significant increase in MFS users, the country was ranked 78th out of 83 in the Global Fintech Index 2021, showing a lacklustre ability to leverage technology to automate and digitalize financial transactions. The country needs to promote the use of cutting-edge fintech products that use artificial intelligence, big data, the Internet of Things, and machine learning to help financial institutions geospatially map climate risks. The applied technologies and financial database can aid in developing policies and taking decisions on climate issues. To maintain the pace and scale of the climate fintech model across the nation, collaboration across government, local, public, and private organisations is essential.

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Chapter 17

Securing The Bay of Bengal Through a Regional Technology Stack

Abhijnan Rej

On November 11, 1970, a tropical cyclone in the Bay of Bengal—described by the World Meteorological Organization as the "world's deadliest" struck what was then East Pakistan. It changed South Asian geopolitics forever. The cyclone Bhola left half a million dead. It directly fed into festering Bengali dissatisfaction with Pakistani dictator Yahya Khan's ham-handed ways and became a proximate trigger of a polycrisis that eventually led to the creation of an independent Bangladesh more than a year later.

As the U.S. National Security Advisor Henry Kissinger would write in his 1979 memoir, "Whether the cyclone crystallized opposition to the central Pakistani government and enhanced East Pakistan's sense of grievance and identity, or whether Yahya had misjudged the mood all along, the [nation-wide] elections held on December 7, 1970, turned into a plebiscite on Yahya's handling of the crisis and produced a catastrophe for the military rulers."

What we know from recent research is that the devastation caused by Bhola was not due to a lack of early warning—the United States National Hurricane Center had indeed passed on a warning to Pakistan defining the cyclone as "Red 4", meaning that "catastrophic destruction [was] imminent". Rather, it was the haphazard use of various cyclone-warning scales across East Pakistan that left the public clueless about the enormous destructiveness of what was to come. That the US was not more forceful in communicating to 'Yahya's government about the severity of what was transpiring in the Bay of Bengal is also telling.

As we contemplate what technology can do to make the Bay of Bengal secure and prosperous, Cyclone Bhola's memory carries two significant lessons. First, what we think of as "non-traditional" security threats can have game-changing geopolitical consequences; technology that seeks to mitigate such threats should keep this larger picture in mind. Second, technology sits on top of existing political and geopolitical arrangements alone, and cannot do much without supporting institutional mechanisms and standardisation.

Security Trends and Futures

The first task is identifying a set of interlocking technologies that would keep the Bay of Bengal secure—a technology stack, in other words—and critical security threats and political-economic trends that the region must collectively acknowledge. According to the author, there are five of them:

a) Climate change, internal and regional migration, and rapid and often unplanned urbanisation;

b) Thin collective resource-management capabilities, including lack of clarity on transboundary common goods issues such as illegal, unreported, and unregulated (IUU) fishing;

c) The rapid emergence of Indian Ocean Region littorals as illicit drug trans-shipment hubs is primarily due to regional economic challenges following the pandemic, which sits on top of the unfortunately steady role of the "Golden Triangle" region in the global drug trade[1];

d) Persistent "traditional" internal security challenges that have regional spillover effects, including insurgencies and domestic political instability;

e) Chronic inability to fund deep and practical mechanisms to meet regional challenges.

What do these trends mean in terms of possible or feasible futures? (Note that a feasible future is any future that can arise out of boundary conditions set by resource availability and allocation constraints.) Very likely, we will see a persistent gap between future challenges and collective endogenous responses due to capability constraints at the governmental level, which leads to the region lurching from one crisis to the other. This gap is unlikely to be bridged anytime soon, despite incessant talk of multilateral institutions such as BIMSTEC stepping in, which remain seriously underfunded in any event.

However, the region remains too critical —not the least because of geostrategic and commercial reasons— to be left to its own devices, especially as sloganeering around the "Indo-Pacific" slowly but steadily translates to action. What we are most likely to see is that the regional private sector and extra-regional, Western powers, through regional non-governmental organisations (NGOs), would step in to coordinate responses to challenges and crises, driven not by altruism but by political and economic self-interest.

From Futures to (Today's) Tech

There are three main technological directions through which such actors could help shape feasible futures into desirable ones. Such ones keep the Bay of Bengal region secure and prosperous and ensure that China does not deepen its already considerable footprint there. They are biometrics and distributed ledgers to regulate migration, networked imaging solutions and deep learning to address illegal unreported Unregulated (IUU) fishing, and sensor-based solutions to bolster counternarcotics and counterdrug efforts.

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[1] *The "Golden Triangle" region refers to parts of Laos, Myanmar, and Thailand. As two United Nations officials wrote in 2020, "while opium trade [in the region] has declined, the cross-border movement of synthetic drugs, and particularly methamphetamine, has grown substantially"; Gita Sabharwal and Jeremy Douglas*

Migration, Biometrics and Blockchain

Biometric data solutions, including those based on blockchain and other distributed ledger technologies, could help address issues around illegal regional migration, streamline internal migration and balance security and privacy concerns. (Recall that, by definition, a distributed ledger—like blockchain—is an electronic protocol that does not concentrate data centrally in any one location or the hands of a single authority, preventing its misuse and guaranteeing a much greater degree of data privacy.) Biometric data management is poised to be revolutionised using blockchain and distributed ledger tech; specific secure protocols—including those that integrate a range of physiological indicators—have been proposed for this purpose.[2]

A 2021 Industry Report notes—perhaps over-optimistically—that by the end of this decade, single-token digital identity for individuals based on the integration of biometrics and blockchain will become a reality as hackers adopt refined technologies to disrupt and bypass security systems. Multi-modal biometric-powered identity systems are expected to become crucial means to enhance security across industries due to their flexibility and high security. It raises the tantalising possibility of e-passports based on biometric-blockchain integration for border control.

IUU Fishing, Satellite imagery and Deep learning

Deep learning solutions deployed through open-source software and cloud solutions, coupled with commercially-available sensor data—such as satellite imagery—could help mitigate the challenges of IUU fishing. While very high-resolution satellite imagery is commercially available, it remains quite expensive. In order to address this lacuna, the regional private space sector can develop single-purpose dedicated small satellites for wide-area motion imagery and persistent surveillance and deploy them, potentially with the help of India's growing private space launch capability. These satellites could be networked together, and a team of non-governmental regional experts monitor the resulting signal stream. Deep learning for image analysis has also improved significantly over the past few years with the rise of self-supervised machine learning. Analysis of the signal stream could also be partially automated using these techniques.

Counterdrug efforts and portable sensors

As experience in South- and Southeast Asia, not to mention Latin America, shows, drug trafficking is much more than an organised crime problem. It is often a direct contributor and enabler of political violence and instability, including insurgencies and terrorism. Consider, as an example, ethnic violence in Myanmar's Shan State, which is considerably exacerbated through proceeds from the drug trade. Unfortunately, the Bay of Bengal region's approach in combating the illicit drug trade has oscillated between outmoded law-enforcement efforts and heavily-militarised (and therefore, often counterproductive) thrusts. Instead, the region needs "deeptech" solutions to address

[2] *A technical summary of how biometrics and blockchain could be integrated can be found in: Oscar Delgado-Mohatar, Julian Fierrez, Ruben Tolosana and Ruben Vera-Rodriguez, "Blockchain meets Biometrics: Concepts, Application to Template Protection, and Trends," arXiv, March 19, 2020, https://arxiv.org/pdf/2003.09262.pdf. For a non-technical summary of how multiple physiological biometrics and blockchain could be integrated, see: Martin Zizi, "How To Combine Physiological Biometrics And Blockchain For Heightened Security," Forbes, January 16, 2019, https://www.forbes.com/sites/forbestechcouncil/2019/01/16/how-to-combine-physiological-biometrics-and-blockchain-for-heightened-security/?sh=12502f415d5c*

the problem, if only to complement traditional transnational efforts such as those coordinated by the United Nations.

One such solution could be the development and deployment of a distributed network of small sensors in the region to detect the inflow and out-flow of drugs. Much like explosive detection methods that work based on specific chemical trace signatures as well as other techniques such as x-ray and optical scans. Chemical drug detection kits are commercially available, but what is needed in order to stem transborder trafficking is integrated multi-method " sensor packets" that are deployed in a concealed fashion along known trafficking routes and are capable of remotely relaying data to law-enforcement monitoring stations.

Creating the BoB Stack

What has been sketched very briefly so far could be termed components of the Bay of Bengal security technology stack— "BoB Stack", in short. Note that BoB Stack would be considerably different from the more commonly advertised "India Stack", which forms the marquee element of India's growing digital diplomacy (see Table-below).

Table 3.1: Differences between BoB Stack and India Stack[3]

	BoB Stack	**India Stack**
What	Hardware and software: including open application programming interfaces (APIs), digital repositories for code and hardware design, and collaborative hardware efforts	Only software: open APIs and digital public goods
Why	Security-driven	Economics-and development-driven, population-centric inclusion effort
Where	Bay of Bengal	Global South
Who	Private-sector driven	Driven by the Indian government, adopted by the private sector in many cases, such as for digital payment applications
How	A collaborative effort, bottom-up collective tinkering	India-led

What is needed to make BoB Stack a reality? There are four basic steps. First, *creating* ground for business-to-business engagements—especially between regional startups—which would facilitate hardware and software development but primarily help come up with a common "language" to ideate collective solutions. Rely on governments and multilateral mechanisms when needed but remember their limitations. *Second*, leveraging the capabilities of extra-regional actors. Technology

[3] *Some of the descriptors for the India Stack used here are taken from https://indiastack.org/.*

and innovation cost money, and external actors help address the money question. *Third*, developing institutional governmental and non-governmental mechanisms to share code and ideas. For example, can we create an analogue of GitHub for BoB Stack software and design efforts that provide intellectual connectivity through a shared repository of open-source solutions? However, most importantly, cultivating a shared understanding of what is at stake that cross-cuts governments, businesses, and civil society across the region helps "socialise" collective challenges and potential solutions.

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Chapter 18

Bay Of Bengal as a Pivot to Southeast Asia

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For a Mariner, nothing is more exhilarating than to see the world shifting focus toward the maritime arena, as happened at the end of the last century. Situated as we are in the Indian Ocean Region (IOR), the words of Admiral AT Mahan, the US Naval thinker and historian of the 19th century, come flashing by. He had prophetically said, "Whoever controls the Indian Ocean controls Asia. This ocean is the key to the seven seas. In the 21st century, the destiny of the world will be decided on its waters." Of course, a slight change is that the concept is being expanded to that of Indo-Pacific and not merely the IOR. This aspect was very succinctly put across by PM Narendra Modi at the Shangri La Dialogue in 2018 when he said that in the 21st century, the destiny of the world will be deeply influenced by the course of developments in the Indo-Pacific region. He further brought out India's strategic outlook towards the region by stating that "India's own engagement in the Indo-Pacific Region—from the shores of Africa to that of the Americas - will be inclusive, promoting a democratic and rules-based international order. We will work with others to keep our seas, space, and airways free and open; our nation secure from terrorism; and our cyberspace free from disruption and conflict".

Significance of Maritime Arena

The geostrategic significance of the seas would be evident from the fact that 70 percent of the earth is covered by sea. Nearly 2/3rd of the population lives within 100 miles of the coast and 150 out of the 193 member states are coastal states. 80 percent of the cities in the world and nearly all major trade / financial centres are located on the coast. The past few decades have seen global liberalisation, leading to closer cooperation between nations in manufacturing, trade, and capital flows, resulting in enhanced economic interdependence. The development of newer technologies in communications and transportation has also enhanced trade, which would only increase further, as more developing nations try to leverage globalisation. Shipping remains the cheapest form of transportation for cargo. Global maritime trade therefore accounts for 80 percent of world trade by volume and 70

percent by value. Around 54,000 ships (2,116,401,000 DWT) estimated at US $450 billion, ply the ocean routes and generate nearly 14 million jobs. The total trade across the oceans, considering imports and exports, is estimated at US $35,000 billion. Apart from transportation, the oceans are also a major source of food (fish), metals, minerals, and energy resources. As natural resources on land deplete and cheaper technologies emerge for the extraction of resources from the deep sea, the importance of the seas will grow further.

Indian Ocean Region

If we look at the Indian Ocean region, it will be observed that the region has nearly 33 percent of the world's population and accounts for 50 percent of world maritime trade. 50 percent of the container traffic and 70 percent of the global trade in oil and gas ply through the Indian Ocean region. As the Persian Gulf, with 60 percent of world oil and 26 percent of world natural gas reserves, is in this region, major oil arteries of the world flow through the waters of the Indian Ocean. Trade through the Indian Ocean impacts the economies of nearly all major nations of the world, thus encouraging most world powers to have a foothold or at least a regular presence in the region. The same is true if we look at the expanded Indo-Pacific as one region. Indo-Pacific is a multi-cultural and multipolar region, accounting for nearly 60 percent of the world's GDP and 65 percent of the population. Maritime trade and commerce transiting through the region, including energy flows, is equally significant and is close to 60 percent of global maritime trade.

The Bay of Bengal region (BOB) will be seen as being in the heart or in the middle of it. The waters of the Bay of Bengal connect the Indian and Pacific oceans. It also links regional initiatives such as the Association of Southeast Asian Nations (ASEAN), the South Asian Association for Regional Cooperation (SAARC) and of course, the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC). The strategic location of the region has an impact on the security and economy of Sri Lanka, Bangladesh, Myanmar, Thailand, and India, along with the landlocked nations of Nepal and Bhutan.

Strategic Importance of the Bay of Bengal Region

Looking back on history, the Bay of Bengal region was always strategically important due to its trade links. During the colonial era, Great Britain and Holland held sway in the area, but it became virtually a British lake towards the end of the 19th century. Naval battles that took place in the Bay during World Wars I and II highlighted the strategic significance of the area. While post WWII it remained the link between South Asia and Southeast Asia, the region emerged as a singular strategic entity only quite recently, when the littoral nations began to look at the region collectively, realising its criticality to their growth and security.

The geo-strategic value of the area is evident from the number of extra-regional powers looking for bases or having forward-deployed their forces, including nuclear-capable ones, in the region in support of respective national interests, such as the naval forces of the United States, United Kingdom, France, China, and many others with lesser frequency. From China's view, it is the Western adjunct of the South China Sea and an outlet for her Southern landlocked region. China has, therefore, increased its presence and engagement in the region. So, the area has a complex geopolitical and geostrategic environment, which enhances the chances of the development of

traditional and non-traditional security threats with transnational linkages. The role of non-state actors instigating proxy war situations also needs to be kept in view.

Towards the second half of the 20th century, it became evident that there was a shift from traditional Naval confrontation on the high seas, to challenges in the littoral region and more so towards non-conventional maritime security challenges, also called LIMO (Low Intensity Maritime Operations). It includes maritime terrorism, piracy, drug and human trafficking, gun running, poaching, or IUU (Illegal Unregulated and Unreported) fishing and the illegal gathering of sensitive seismic and economic data. Many of these threats could also emerge from non-state entities that could well be funded by states that choose to remain in the background.

The uniqueness of the region is that it lies at the heart of two major blocs, such ae SAARC and BIMSTEC. The SAARC bloc was formed in 1985, while the BIMSTEC is a newer bloc formed only in 1997. In the present geopolitical scenario, BIMSTEC is gaining relevance, hosting 22 percent of the world's population. Even the BIMSTEC charter was adopted recently, in March 2022. The Bay of Bengal also connects the SAARC and BIMSTEC blocs to the ASEAN in Southeast Asia. The ASEAN was set up in 1984 and accelerated the economic growth, social progress, and cultural development in the region through joint endeavours in the spirit of equality and partnership in order to strengthen the foundation for a prosperous and peaceful community of Southeast Asian Nations. The role of the Indo-Pacific as a focus region of growth and diplomacy is on the rise. Vital linkages and strong ties between South and Southeast Asia through regional forums like BIMSTEC, ASEAN, etc. will be a game-changer for guiding the regional equations, especially amid a more powerful China.

With ever-increasing energy demands, the protection of Sea Lines of communications (SLOC) is becoming a priority for Asian countries. Because the Bay of Bengal connects to the Malacca Strait, which connects to the South China Sea (SCS), these routes are critical to the economies of China and Japan. On a geostrategic level, the Bay of Bengal connects the Southeast Asian economy to Middle Eastern oil sources via the SAARC and the ASEAN. The Bay's tremendous economic potential, owing to its untapped natural resources, makes it strategically important for its littoral countries, namely Bangladesh, Myanmar, Malaysia, Thailand, Singapore, Indonesia, Sri Lanka, and India, as well as global powers such as the United States and China. This explains the increasing interest and involvement of non-littoral players in the Bay of Bengal Region. Geographically, the Bay of Bengal provides access between the Indian and Pacific Oceans, most notably through the Malacca Strait, so it is important to recognize the larger landscape's indirect influences.

Powerplay in the Region

There are certain geostrategic and economic factors that have led to increased tension in the region. Firstly, there has been an increase in the energy demands by the developing countries, which has created energy security challenges in the region. Secondly, considering the Geopolitical competition, the three major powers in the Bay of Bengal region are India, China, and the USA. Looking from a security angle, one aspect that emerges is the rise of China and its assertive political and military behaviour in the Western Pacific and expansion into the IOR. Albeit under the guise of safeguarding their vast economic interests in the IOR and assisting in anti-piracy patrols, the People's Liberation Army Navy (PLAN), has been making regular forays into the IOR for over two decades now. The

so-called string of pearls strategy of bases and diplomatic ties from Africa to the Middle East and South Asia are all part of China's strategy to establish herself as a power in the IOR or a potent threat in the years ahead. Over the years, China has mastered the art of 'Salami slicing' or gradually bringing about small changes or making incremental gains, each of which by itself may not raise any alarms, but when taken as a whole, it can bring about major strategic changes in the long run. In the maritime arena, this is being used to enhance her claims over island territories in the seas around her. The PLAN is today assessed to be the largest Navy in terms of numbers and is modernising and upgrading its forces to become a multi-mission capable force. It is evident that China is looking to become a pre-eminent power in the world, or at least in the Indo-Pacific region. Of late, Taiwan is emerging as a potential flash point and if that happens, there will be spillover effects across the Indo-Pacific. In a way, America's focus on the Indo-Pacific and reallocating resources, including in the Bay of Bengal region, could also be attributed to China's rapid expansion in the region.

Tensions in the region can be reduced by increased engagement for cooperation and not a competition between countries. Maritime forces, i.e Navies and Coast guards, have always played a significant role in enhancing connections between maritime nations. Port visits by ships at regular intervals, institutionalised bilateral and multilateral exercises, coordinated patrols along maritime boundaries, anti-piracy operations, assistance for Search and Rescue, Humanitarian Assistance and Disaster Relief (HADR) post major calamities, staff talks, training, and other interactions have all helped increase cooperation and information sharing. Coordinated patrols are one way to keep the Exclusive Economic Zones of nations safe.

Indian Initiatives for Collaborative Development in IOR

Over the years, apart from bilateral exercises with maritime forces of nations in the region, India has taken many multilateral initiatives, such as the Indian Ocean Naval Symposium (IONS) and Exercise MILAN. All these have enhanced cooperation between littorals in IOR. IONS, an initiative led by the Indian Navy, provides a platform for military leaders in the region to discuss regional challenges. In its recent edition in 2022, MILAN, a biennial naval exercise, saw maritime forces from 40 countries across the Indo-Pacific jointly exercising at sea.

A revival of interest in oceanic matters and a collaborative approach to maritime affairs is also evident in the policy of SAGAR (Security and Growth for All in the Region) enunciated by the Government of India. It was further amplified by PM Narendra Modi at the Shangri La Dialogue in June 2018, when he said, "Oceans had an important place in Indian thinking since pre-Vedic times. .....The Indian Ocean has shaped much of India's history. It now holds the key to our future. ..... It is also the lifeline of global commerce." He went on to say that "The Indo-Pacific is a natural region. It is also home to a vast array of global opportunities and challenges. I am increasingly convinced with each passing day that the destinies of those of us who live in the region are linked. We should all have equal access as a right under international law to the use of common spaces on sea and in the air that would require freedom of navigation, unimpeded commerce, and peaceful settlement of disputes in accordance with international law. When we all agree to live by that code, our sea lanes will be pathways to prosperity and corridors of peace. We will also be able to come together to prevent maritime crimes, preserve marine ecology, protect against disasters, and prosper from the blue economy. India's own engagement in the Indo-Pacific Region—from the shores of

Africa to that of the Americas - will be inclusive. We will promote a democratic and rules-based international order, in which all nations, small and large, thrive as equal and sovereign."

In keeping with this vision and concept of working together with other nations in the maritime arena, India proposed at the East Asia Summit in Bangkok on November 4, 2019, an Indo-Pacific Oceans Initiative (IPOI), to manage, conserve, sustain, and secure the maritime domain. Essentially, IPOI seeks to create partnerships with like-minded countries across the expanse from the Eastern shores of Africa to the Western Pacific Ocean, to ensure security and stability in the maritime domain through a non-treaty-based, cooperative, and collaborative approach. IPOI covers a wide spectrum of significant issues through its seven pillars of Maritime Security, Maritime Ecology, Maritime Resources, Capacity Building, and Resource sharing; Disaster Risk Reduction and Management, Science, Technology and Academic Cooperation, and Trade Connectivity and Maritime Transport.

Conclusion

The Indo-Pacific has emerged as a theatre for economic and strategic competition in the 21st century, as maritime trade through it impacts the economies of all major nations of the world. The strategic location of the Bay of Bengal Nations gives them an added stake in the security and stability of waters in the region. Enhancing cooperation among nations in the region, would address mutual concerns and strengthen security and stability in the maritime environment across the Indo-Pacific region, bringing in economic growth and prosperity. India's plans to do so in the maritime sector were once again highlighted by PM Narendra Modi at the inauguration of the Maritime India Summit on March 2, 2021, where he said that a Maritime India Vision 2030 had been launched, which outlines the priorities of the Government. He went on to say, "We want to share our best practices with the world. And, we are open to learning from global best practices. Continuing with our focus on trade and economic linkages with the BIMSTEC and IOR nations, India plans to enhance investment in infrastructure and facilitate mutual agreements by 2026".

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Chapter 19

From Political to Functional Geography: Prospects of Synergies between South and Southeast Asia

Nahian Reza Sabriet

For centuries, the Bay of Bengal has been serving as a strategic avenue for adjacent and remote geographies in terms of commercial, cultural, and people-to-people contacts. Unfortunately, the states around the Bay have failed to utilise their full potential, and thus, the littoral region lacks visible synergies. Perhaps, the statement is even more applicable to the South Asian states. Intraregional trade in South Asia is barely 5 percent compared to 25 percent when it comes to Southeast Asia. However, the twenty-first century poses a series of changes fuelled by the ethos of globalisation. Hence, the re-energized popularity of the Bay of Bengal as well as the Indian Ocean can spawn opportunities for newfangled political, strategic, and economic synergies between the South and Southeast Asian nations.

The article discusses the emerging understanding in the field of International Relations called "functional geography" and investigates its applicability in the synergy between the aforementioned regions. Both in the natural and social sciences, synergism or synergy hypothesis is used as a broader term than "relations" or "cooperation" where the intermingling of the congruent parts leads up to a dynamic output. The "dynamism" here is self-evolutionary. In other words, if the Bay of Bengal and the Southeast Asian states successfully integrate their synergistic features, the relationship can be sustainable and holistic.

Functional Geography in the Bay of Bengal

The transformation of political geography into functional geography primarily depends on the reconceptualization of erstwhile political spaces based on their process of utilisation. It emphasises the synergy or interplay of actors, ecology, and technology. In the context of the connectivity between South Asia and Southeast Asia, therefore, one must conceptualise a combined political space constructed by intermingling of those regions. The interplay will certainly not take place in a vacuum. A particular element that is much needed here is "interactions". These interactions can emanate

from physical constructions (i.e., building roads or bridges), human communications (i.e., diplomacy and people-to-people contacts), institutional developments, and digital consociations. These combined synergies must create a broader sense of identity that the Southeast Asian nations have already achieved in a suitable form. Scholars have repeatedly underscored the security and diplomatic culture of the Association of Southeast Asian Nations (ASEAN) stemming from the traditional practices of consensus (*musyawarah*) and consultation (*mufakat*). These ideas have a notable influence on ASEAN's conflict resolution, decision-making process, and, importantly, on the creation of regional identity.

For the South Asian nations, there is ample scope for revisiting traditional norms and values that have kept the nations together for decades and centuries. These junctures have been knowingly used by the colonisers including the Dutch and British East India companies. Reportedly, the Bay of Bengal helped British presidencies earn one-third of the crown revenues and generated the highest Gross Domestic Product (GDP) compared to the rest of the colonies. Thus, it has been empirically proven that "synergy" can lead to prosperity if it is pragmatically explored. The stumbling block here is the lack of trust among the post-colonial states and the inability to transcend it. However, the elements to overcome this issue are already present within the region itself. One such element is the vast population or human resources around the Bay. Apart from the huge number, this region holds diverse communities with a secular and democratic rubric. The elephant in the room is the inability to transform the tradition of co-existence into institutional forms. Perhaps, this is where the synergy around the Bay can help the most. Since the Southeast Asian nations have already utilised their pre-existing traditional values to build regional institutions, a combined functional geographical space can take up that idea and capitalise it for greater benefit.

Tangible Synergism

Under this umbrella, primarily trade and connectivity issues can be discussed. A notable and oft-referred initiative here is the India–Myanmar–Thailand Trilateral Highway. Apart from being a connectivity platform, it is also a vibrant example of transport diplomacy connecting the Bay of Bengal with Southeast Asia. On the other hand, in 2020, Bangladesh also expressed its desire to be a part of this connectivity belt. Bangladesh's interest to join this venture despite its ongoing issues with the Rohingya influx from Myanmar ushers in a new diplomatic modality. Perhaps the countries in South Asia are now flexible towards enhancing economic cooperation and connectivity while keeping other geopolitical irritants aside, which may contribute positively to the future stage of this synergism.

Another important feature of the new phases of connectivity initiatives is the revamped emphasis on qualitative development of the infrastructure. This indicates that, at the current stage, infrastructure is not only about increasing the numbers and lengths of ports or bridges; rather, enhancing qualities. Constructing new deepwater ports and floating container trans-shipment terminals, and improving road infrastructure are now some of the major initiatives taken by interregional maritime and road-based connectivity projects. In the case of South Asia's internal developments, quality enhancement, and capacity building are now prioritised. Terms like "highway standards" that come along with these plans show the region's shift towards more sustainable and horizontal developments. As the trilateral highway is now seemingly being considered as a pivot towards the CLMV (Cambodia,

Laos, Myanmar, and Vietnam) countries, the concept of functional geography combining South and Southeast Asia assumes relevance.

Nevertheless, one must keep in mind that these synergies are going to benefit both sides. A World Bank report identifies that regional integration schemes, along with liberalisation of tariff and non-tariff barriers and the facilitation of foreign direct investments (FDIs) will boost the GDPs by 0.4 percent to 10.6 percent for South Asia and by 0.1 percent to 0.4 percent for Southeast Asia. With intraregional and third-country (multilateral) integration, the GDP increase would be 17.6 percent for the former and 15.7 percent for the latter. Moreover, theoretically considering a situation without integration will lower South Asia's GDP gains by half and of Southeast Asia by one-third. Thus, the conventional understanding that only South Asia is the gainer in this integration must be debated. If both regions comprehend their mutual gains from the revamped integrations, the synergy will produce solidified outcomes.

Intangible Synergism

Possibly the Bay of Bengal's biggest resource is the people living around it. As mentioned before, it is not only the big numbers, rather the diversity and their functional capability and intrinsic relation with the maritime zone that make it feasible to think about human interactions as an important variable in this context. This kind of synergism can take place through state-level interactions between high officials, institution-based negotiations, as well as micro-level people-to-people contact.

First, it is people who channel cultural and ethnographical ties. A significant portion of the South Asian migrant population contributes to the Southeast Asian market. The numbers are increasing day by day. Moreover, South Asian countries are some of the biggest recipients in the world and ten of the 20 top migration corridors in Asia are situated in South Asia. Although this is an important channel for increasing contacts, one has to consider associated challenges including migrant smuggling, human trafficking, exploitation, and harassment.

At an institutional level, the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) stands as the extant regional forum for the states in the region. Withstanding the critique of BIMSTEC not being able to bring visible "success" in 25 years, it is yet too early to conclude that it will never be able to do so. Since ASEAN is massively appreciated, at least for its economic integration in the region, some elements that contributed to its success merit inspection in order to re-energize BIMSTEC. ASEAN's pathbreaking integration schemes include the launching of the ASEAN Free Trade Area (AFTA) and the implementation of AFTA's Common Effective Preferential Tariff (CEPT) in 1993. However, these developments came into being after almost two decades of ASEAN's formation. Yet, BIMSTEC cannot stay back because of this. The pace of globalisation, trade, communication, technological development, and, most importantly, the fourth industrial revolution demands a faster pace of institutional development than ever. ASEAN's history also shows how important it is for the BIMSTEC countries to have an FTA.

One of BIMSTEC's strong points is its sectors and sub-sectors of cooperation, where a lead country is assigned to carry out a leadership role. The lead countries also connect with expert groups which

are in close contact with representatives from public and private institutions. It can be assumed that, over the years, working in a particular sector, these countries gain expertise in certain areas. Collaboration among the countries can thus be fruitful for the entire region. This way, an intangible string of contacts is created from micro to macro level. If regional integration must start afresh, a combination of top-down and bottom-up approaches needs to be adopted.

Researchers have a key role to play here. They can take up small and large-scale studies on communities, people, and their needs and make policy recommendations based on which regional integration can be facilitated. As a result, small and marginalised communities' voices will also reach the broader platforms. For example, when it comes to small-scale fisheries, women play a significant role. Their needs and challenges also differ from their male counterparts. On the other hand, a woman on the coast of Thailand will have a different perception of threat compared to a woman in India or Bangladesh, or Myanmar. Unless an ample amount of research and data are available on these crucial issues, sustainable policy outcomes will not be achieved.

The Bay of Bengal communities also need to look at their problems from their own perspectives. Here, two definite shifts are required: First, the research must be conducted from non-Western perspectives, based on field-level primary data. The non-replication of Eurocentric experience of specific designs that Southeast Asia adopted during the formation of ASEAN needs to be followed while framing inter- and intra-regional synergies in other parts of the world as well. Second, the perspectives must be on par with both maritime and land-based interests. Researchers need to be cognizant of the fact that a land-based understanding of functional geography will produce different research outcomes compared to maritime-based research initiatives. The broad titles and security concerns might be the same (i.e., human trafficking, climate change, transnational crime); nevertheless, one must consider how "trafficking" takes place differently through maritime and land-based channels, how "blue economy" is different than "economy in general" and how "piracy" across maritime routes is different from robberies, kidnaps or hijacking on the land fronts.

Finally, the force of digitalization must be recognized. On the one hand, it will have a significant impact on mobility and workflow. Automation has changed the course of human contribution and the future of synergism will follow suit. However, it also expedited regional diplomatic momentum. On March 16, 2022, as proposed by Indian Prime Minister Narendra Modi, the South Asian Association for Regional Cooperation (SAARC) leaders participated in a video conference during the COVID-19 crisis. On the other hand, it also helped distant states to come together. Bangladesh and Lao PDR (along with Samoa) recently had an inception meeting on digital and transport connectivity through a hybrid event on November 3, 2022. In the future, further, bilateral and multilateral initiatives can take place where digital connectivity can act as both the means and the end.

Conclusion

Understanding the functional geography combining the South and Southeast Asian countries around the Bay of Bengal is essential for a brighter and sustainable future. The bewitchment of the "Asian Century" cannot be limited to one or two countries in Asia. Rather, the Bay of Bengal region needs to explore its own Asian Century, where the countries can ensure an inclusive and sustainable

future for all. This requires more data and perspectives from this (functional) geographical region and proper utilisation of those findings. The Bay of Bengal has all the tangible and intangible elements prepared for a broader synergism. What it needs is an incessant channel of interactions that can build identity, and trust among the states, translating into a broader Bay of Bengal "community."

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