

# BLUE ECONOMY

## VISION 2025

Harnessing Business Potential for India Inc  
and International Partners



Knowledge Paper

by FICCI Task Force  
April 2017

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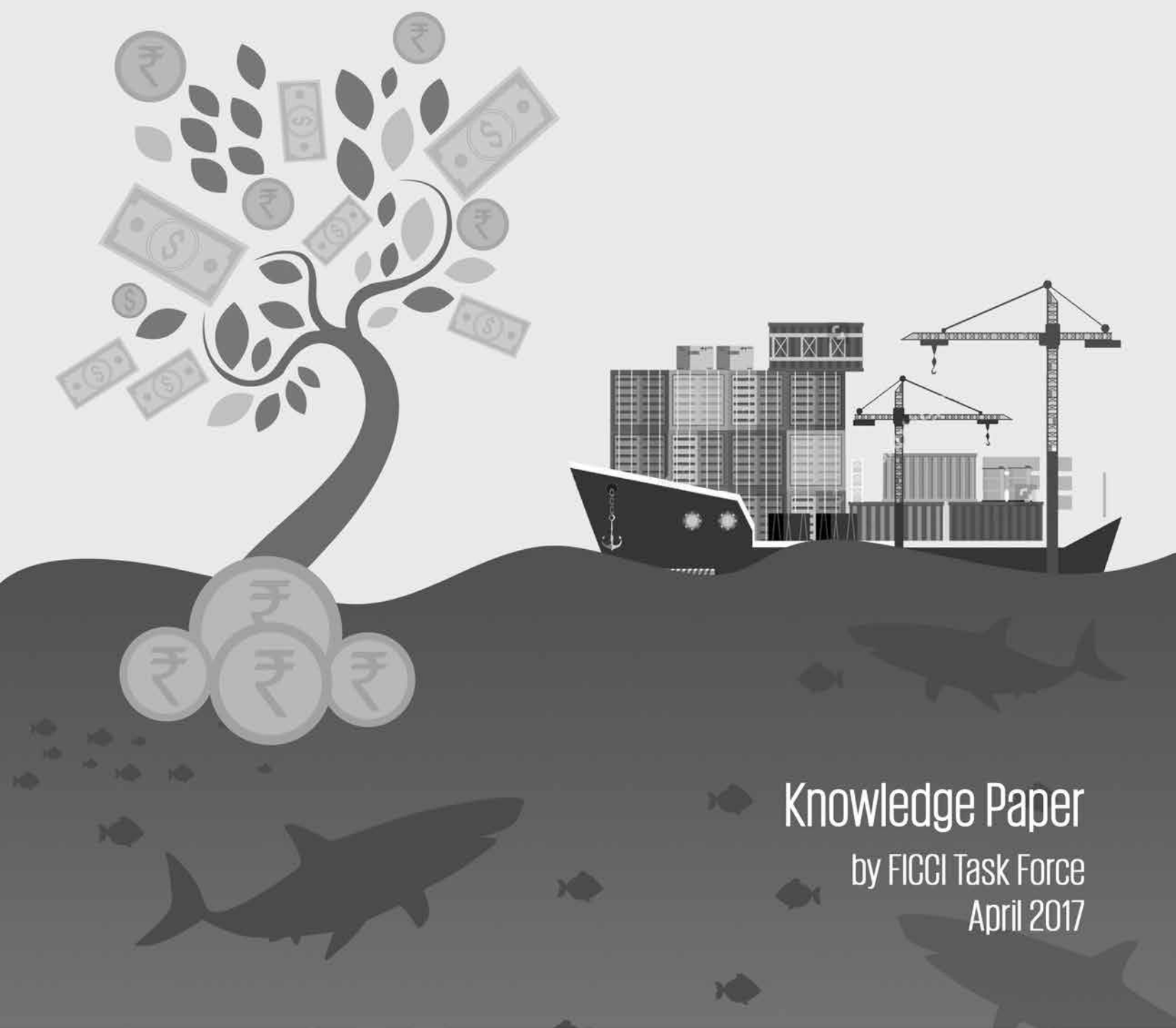
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## Message from President FICCI

*'Blue Economy Vision 2025' is a master document that synthesizes the knowledge and insights of academia and policy community with the perspective of Indian industry into one easy-to-read, comprehensive and authoritative document.*

*Through this study that has been prepared by a special Task Force, our endeavour is to reinvigorate the contemporary discourse and give a new direction to India's Blue Economy activities in coming times.*

*We hope that the study would form the foundation of India's economic engagement in Blue Economy and act as a point of reference for stakeholders in industry, government, policy circles and media.*

**Mr. Pankaj R. Patel**  
President - FICCI



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## Acknowledgements

At the outset, the Chair and members of the Task Force on Blue Economy express their deep appreciation to FICCI – especially Dr A. Didar Singh, Secretary General and Ms. Ambika Sharma, Director General – for their visionary initiative to sensitise the Indian business community about the magnitude of opportunities and challenges posed by the emerging paradigm of Blue Economy.

As the concept of Blue Economy is still an evolving one, the best way forward was to first generate a compact but comprehensive Knowledge Paper for setting an appropriate stage for a business-driven discourse on this futuristic challenge. FICCI has done a commendable job by setting up the Task Force which brings together relevant domain experts and business leaders under the leadership of Ambassador Rajiv Bhatia, Distinguished Fellow, Gateway House.

The Task Force also records its special appreciation for the valuable support, expertise and wider perspectives provided by the representatives of the Indian Ocean Rim Association Secretariat, Gateway House, Institute of Defence Studies and Analyses, National Maritime Foundation, Observer Research Foundation, Research and Information System for Developing Countries, Micro Tech Global Foundation and, most importantly, the Indian business and media community.

Finally, the Task Force is deeply grateful for the valuable assistance provided by FICCI officials led by Ms Sushma Nair, Joint Director.







# Executive Summary



# Executive Summary



*Blue Economy Vision 2025: Harnessing Business Potential for India Inc and International Partners* is a pioneering effort by FICCI to sensitise India Inc about the growing global and regional emphasis on sustainability of harnessing the ocean resources. It makes a convincing argument that the oceans, with a current estimated asset value of US\$ 24 trillion and an annual value addition of US\$ 2.5 trillion, would continue to offer significant economic benefits both in the traditional areas of fisheries, transport, tourism and hydrocarbons as well as in the new fields of deep-sea mining, renewable energy, ocean biotechnology and many more, only if we integrate sustainable practices with our business models.

With land-based resources depleting fast, there would be renewed attempts to further expand economic exploitation of the world's oceans. However, if not managed sustainably, growing economic engagement with the oceans could risk further aggravation of their already strained health with serious impact on their natural role as the single most important CO<sub>2</sub> sink and replenisher of oxygen. This, in turn, could accelerate global warming with catastrophic effects on fish stocks, climatic stabilisation, water cycle and essential biodiversity.

Global campaign for sustainable harnessing of the oceans, initially spearheaded by the Small Island Developing States (SIDS), has been gaining momentum for a more rigorous regulatory framework. This has led to the concept of Blue Economy which calls for harnessing of the oceans without undermining their sustainability in any manner.

With its geostrategic position in and critical dependence on the Indian Ocean, India has been leading the Blue Economy discourse at the highest level, with a greater focus on the Indian Ocean region. The essence of this approach was spelt out by Prime Minister Narendra Modi for seeking "Security And Growth for All in the Region" (SAGAR).



The success of the Indian approach for optimising the benefits of Blue Economy will essentially depend on the timely preparedness of the business community, whereas lack of readiness could entail heavy costs by way of losing business opportunities, dependence on others for strategic technologies, and new barriers to market access.

FICCI took the lead in carrying out an objective and direct assessment of this new paradigm with all relevant stakeholders by setting up a Task Force of domain experts and business leaders led by Ambassador Rajiv Bhatia, Distinguished Fellow, Gateway House and an acknowledged expert in the field, who have carried out extensive consultations with all relevant stakeholders, especially the business community. Their efforts over the last nine months have produced this compact Knowledge Paper with specific sections devoted to the scope, emerging regulatory framework, risks of status quo and real business opportunities in India and the region.

For transforming ideas into actions, the Knowledge Paper makes specific and actionable recommendations for time-bound follow up by all public and private sector stakeholders. It essentially calls for a Gandhian approach of balancing economic benefits with sustainability for meeting the broader goals of growth, employment generation, equity and protection of environment. Given the scale, diversity and sensitivity of working with the oceans, the Task Force seeks well-integrated Public Private Partnerships (PPP) with sound policy instruments. The need for developing technical know-how and skills, both domestic and in collaboration with global partners, has been strongly emphasised, especially for deep-sea operations. For optimal impact, Blue Economy must engage businesses from all segments – large, medium and small – in their niche capabilities. For specific follow up, the Task Force has recommended a National Conclave in 2017, followed by an International Conference in 2018 for identifying precise business opportunities and matching capabilities with needs.

In preparing the Knowledge Paper, the FICCI Task Force has drawn leading experts from Gateway House, IDSA, National Maritime Foundation, Observer Research Foundation, Research and Information System for Developing Countries, IORA Secretariat, Micro Tech Global Foundation and the Indian business and media community. The Knowledge Paper, which has a sharp business focus, will be shared with all stakeholders.







## SECTION I

# Overview





## SECTION I

# Overview

### Introduction

In June 2016, the Federation of Indian Chambers of Commerce and Industry (FICCI), the prestigious apex business chamber of India, decided to establish a Task Force, composed of top domain experts and business leaders, for crafting a business model for the nation's engagement with the Blue Economy.<sup>1</sup> This came in the global context of the growing importance accorded to the Blue Economy as well as articulation of the Indian government's vision during Prime Minister Narendra Modi's visit to Mauritius and Seychelles in March 2015.

The formation of the Task Force represented a well-considered endeavour to synthesise two streams of ongoing discourse, namely 1) the rich academic literature already produced by national and international institutions on the subject which is at the cutting edge of knowledge today, and 2) the valuable work being undertaken by the Indian Ocean Rim Association (IORA), especially viewed from the prism of FICCI's role as the Secretariat for the Business Forum of IORA. Since the First IORA Ministerial Blue Economy Conference, held in Mauritius in September 2015, this subject has gained momentum as a major field of international cooperation.

Another notable development that provided a fillip to the mission of the Task Force was the Retreat of Leaders of BIMSTEC (Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation), held in Goa on 16 October 2016. While preparing for their first-ever outreach summit with the BRICS Leaders, the leaders of India, Bangladesh, Nepal, Bhutan, Sri Lanka, Thailand and Myanmar, meeting under the BIMSTEC auspices, agreed that the development of Blue Economy showed "enormous potential" for the region. They noted that the Bay of Bengal was "home to over 30 per cent of the world's fishermen."

<sup>1</sup> The composition of the Task Force is at the end of this document.



Most significantly, the historic IORA Summit, held in Jakarta on 7 March 2017, resulted in adoption of the Jakarta Concord which, inter alia, referred to the Blue Economy as “a driver of inclusive and sustainable economic growth and development in the Indian Ocean region.” It further underlined the need for “promoting the Blue Economy as a key source of inclusive economic growth, job creation and education, based on the evidence based sustainable management of marine resources.”<sup>2</sup>

The key Terms of Reference for the Task Force were as follows:

- Explore the idea of developing a business model for India’s economic engagement with the Blue Economy nations,
- Prepare a roadmap for stakeholders’ consultations within India, followed by national and international level conferences,
- Guide preparation of outcome reports in order to trigger public debate and policy review,
- Integrate the desired business model with envisaged international cooperation in the field of Blue Economy.

In the past nine months, the Task Force examined the subject in depth from various angles and undertook its internal deliberations and studies. It arranged and benefitted considerably from the stakeholders’ consultations in India’s coastal states (viz. West Bengal, Maharashtra and Tamil Nadu), which were hosted by FICCI. These consultations provided very useful inputs from industry, business, civil society and technical experts, and have been suitably incorporated in the Task Force’s findings.

The Knowledge Paper embodies the collective wisdom of its authors. It reflects a broad consensus among them. The Task Force hopes that its analysis and recommendations will receive the close attention of policymakers, opinion-makers, business, industry and media, both nationally and internationally.

## Meaning and Scope

Although the Blue Economy has entered the arena of regular international debate and discourse for the past several years, no commonly accepted definition has emerged so far. Diversity of views is, therefore, noteworthy. The idea of Blue Economy gained prominence with the publication of Gunter Pauli’s book in 2010. This was essentially his report to the Club of Rome.<sup>3</sup> But the meaning of this concept seems to have evolved considerably in the past six years.

The National Maritime Foundation, an active Indian think tank, has adopted the following definition of Blue Economy: “Marine-based economic development that leads to improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities.”<sup>4</sup> Research and Information System for Developing Countries (RIS), a well-known think tank, maintains:

<sup>2</sup> [http://www.kemlu.go.id/Buku/JAKARTA%20CONCORD\\_FINAL\\_not%20signed.pdf#search=IORA](http://www.kemlu.go.id/Buku/JAKARTA%20CONCORD_FINAL_not%20signed.pdf#search=IORA) (accessed on 9 March 2017)

<sup>3</sup> Gunter A. Pauli, *The Blue Economy: 10 Years, 100 Innovations, 100 Million Jobs* (New Mexico USA: Paradigm Publications, 2010).

<sup>4</sup> National Maritime Foundation



“As a sub-set of the economy, Blue Economy covers all ocean-related activities including direct and indirect supporting activities required for functioning of these economic sectors, while adjusting to the costs of environmental damage and ecological imbalance caused due to exploitation of ocean resources for consumption. Therefore, the scope of Blue Economy is much wider and inclusive.”<sup>5</sup>

The IORA’s Mauritius Declaration on Blue Economy of September 2015 put it thus: “The Blue Economy paradigm is founded on the ecosystem approach, including science-based conservation of marine resources and ecosystems, as a means to realise sustainable development.”<sup>6</sup> It encouraged member-states to consider formulating “measures for the development of Blue Economy in a sustainable manner.”<sup>7</sup>

According to The Economist, the following working definition is worth considering: “A sustainable ocean economy emerges when economic activity is in balance with the long-term capacity of ocean ecosystems to support the activity and remain resilient and healthy.”<sup>8</sup>

Having examined various definitions and formulations, the Task Force chose to devise its own working definition of the Blue Economy, which is given below:

*The Blue Economy encompasses a wide range of economic activities pertaining to sustainable development of resources and assets in the oceans, related rivers, water bodies and coastal regions – in a manner that ensures equity, inclusion, innovation and modern technology. Subtly distinguishable from the “ocean economy” in terms of nuance and emphasis, the Blue Economy is a newer and more contemporary term, popular with Small Island Developing States (SIDS) as well as international organisations, media, experts and governments in a growing number of countries.*

The Blue Economy is viewed as an integral element of Sustainable Development Goals (SDGs). From the business perspective, Blue Economy requires innovative and dynamic business models, forming business connects between India and other relevant countries, especially those located in the Indian Ocean region.

It may be underlined that the theatre of the development of Blue Economy, from India’s prism, will be the waters surrounding it i.e. the Indian Ocean. Hence the countries situated in our immediate and extended neighbourhood would receive our focal attention. The Knowledge Paper is anchored in this geographical view.

## Significance

Why a pointed focus on the development of Blue Economy? It would, as IORA points out, “contribute to food security; poverty alleviation; the mitigation of and resilience to the impacts

<sup>5</sup> Mohanty, S.K.P Dash, A. Gupta and P. Gaur (2015). *Prospects of Blue Economy in the Indian Ocean*, RIS, New Delhi)

<sup>6</sup> “Mauritius Declaration on Blue Economy,” [http://www.iora.net/media/158070/mauritus\\_Blue\\_Economy\\_declaration.pdf](http://www.iora.net/media/158070/mauritus_Blue_Economy_declaration.pdf) (accessed 30 October 2016).

<sup>7</sup> Ibid.

<sup>8</sup> “The Blue Economy: Growth, opportunity and a sustainable ocean Economy,” Green Growth Knowledge Platform. <http://www.greengrowthknowledge.org/resource/Blue-Economy-growth-opportunity-and-sustainable-ocean-Economy> (accessed 30 October 2016).





of climate change; enhanced trade and investment; enhanced maritime connectivity; enhanced diversification; job creation and socio-economic growth.”<sup>9</sup> India’s population is estimated to rise to 1.7 billion in 2050. The Blue Economy may offer a partial path towards food security.

## **Oceans: transport to resources – economic value**

The use of the oceans has diversified from a classic medium of transport to being a wellspring for resources. The economic richness of the oceans is represented by the variety of living resources (fish and marine vegetation which provide human protein and feed for other species), material goods (hydrocarbons, minerals, and sand and gravel), services (shipping, ports, shipbuilding, fishing, tourism), and renewable energy (wind, wave, tidal, thermal and biomass). They have acted as a catalyst for the development of a number of industries, both on land and at sea.

In recent times, environment, ecology and sustainable use of ocean-based resources have found reference in the maritime and marine discourse. In 2015, the global community announced its commitment to Sustainable Development Goals 2030 in which Goal 14 relates to sustainable development of the ocean resources: “Life Below Water – Conserve and sustainably use the oceans, seas and marine resources for sustainable development.”<sup>10</sup> Goal 14 is also linked to other SDG Goals such as SDG 1 (poverty), SDG 2 (food security), SDG 6 (water and sanitation), SDG 7 (energy), SDG 8 (economic growth), SDG 9 (infrastructure), SDG 10 (reduction of inequality), SDG 11 (cities and human settlements), SDG 12 (sustainable consumption and production), SDG 13 (on climate change), SDG 15 (biodiversity), and SDG 17 (means of implementation and partnerships).<sup>11</sup>

Several states, particularly the maritime states, have endorsed the concept of Blue Economy which is currently resonating in the United Nations, multilateral institutions, and national policy articulations.

According to the United Nations, the commercial value of various activities in the world’s oceans is estimated to be between US\$ 3 trillion to US\$ 6 trillion<sup>12</sup> (INR 20 lakh crore to 40 lakh crore). This is accrued from services and resources such as marine transport (90 per cent of global trade moves over the seas), global telecommunications (submarine cables carry 95 per cent of all digital data across the globe), source of food (fisheries and aquaculture feed 4.3 billion people with more than 15 per cent of annual consumption of animal protein), oil and gas (over 30 per cent is produced from offshore), marine tourism (5 per cent of the global Gross Domestic Product (GDP) and 6-7 per cent of global employment), shore-based commercial activity (13 of the world’s top 20 megacities and over 40 per cent, or 3.1 billion, of the world population lives within 100 km of the sea in about 150 coastal cities located along the coast and in island nations).<sup>13</sup>

<sup>9</sup> “Mauritius Declaration on Blue Economy,” [http://www.iora.net/media/158070/mauritius\\_Blue\\_Economy\\_declaration.pdf](http://www.iora.net/media/158070/mauritius_Blue_Economy_declaration.pdf) (accessed 30 October 2016).

<sup>10</sup> “Sustainable Development Goals” United Nations Development Programme

<sup>11</sup> “Goal 14—Conserve and Sustainably Use Oceans, Seas and Marine Resources for Sustainable Development” <https://unchronicle.un.org/article/goal-14- conserve-and-sustainably-use-oceans-seas-and-marine-resources-sustainable> (accessed 17 November 2016).

<sup>12</sup> <sup>13</sup> Ibid.



Besides, oceans provide pharmaceuticals and sea vegetation as food, and emerging sources of energy such as tides, waves, currents, and offshore wind are being increasingly tapped to enhance energy security.

According to another estimate, the value of key ocean assets is conservatively estimated to be at least US\$ 24 trillion (INR 160 lakh crore) with an annual value of goods and services of US \$2.5 trillion (INR 17 lakh crore).<sup>14</sup> Further, the oceans are pegged at the seventh position among the world's top 10 economies.

It is equally important to note that, according to the United Nations Environment Program (UNEP), ocean ecosystems are the least understood and most undervalued of all ecosystems. A holistic formulation of Blue Economy strategy must, therefore, be closely connected with emerging information and knowledge on the economic valuation of marine ecosystem services – notably the TEEB (The Economics of Ecosystems and Biodiversity) initiative on oceans and coasts.<sup>15</sup>

## Development of Blue Economy: India and Others

Given the economic potential of the oceans and the seas, a number of countries are investing enormous financial, technological and human capital to develop maritime economies and are striving to leverage their unique strengths.

Several countries have announced initiatives and action plans to promote the Blue Economy. Among the island states, Seychelles and Mauritius have been spearheading the discourse, while the European Union has developed a sophisticated framework for harnessing the oceans. Similarly, multilateral institutions such as Asia-Pacific Economic Cooperation (APEC), East Asia Summit (EAS), South Asian Association for Regional Cooperation (SAARC) and Indian Ocean Rim Association (IORA) have highlighted the potential and prospects of the Blue Economy in their statements and communiqués.

The Indian government stands committed to promoting the Blue Economy. Prime Minister Narendra Modi has spoken about it on several occasions at national and international levels. He observed: “To me the Blue chakra or wheel in India’s national flag represents the potential of Blue Revolution or the Ocean Economy. That is how central the ocean economy is to us.”<sup>16</sup> He endorsed Blue Economy as a new pillar of economic activity in the coastal areas and linked hinterlands through sustainable tapping of oceanic resources and announced his vision for the seas through “Security And Growth for All in the Region” (SAGAR).

The maiden Maritime India Summit 2016 in Mumbai witnessed investment commitments of nearly INR 83,000 crore (US\$ 13 billion) in the shipping, ports and allied sectors. The government plans to invest INR 12 lakh crore over the next ten years to develop 27 industrial clusters,<sup>17</sup> and to

<sup>14</sup> “Ocean Assets Valued at \$ 24 Trillion, but Dwindling Fast,” <http://www.worldwildlife.org/stories/ocean-assets-valued-at-24-trillion-but-dwindling-fast> (accessed 10 November 2016).

<sup>15</sup> <http://teeboceans.org/>

<sup>16</sup> [http://www.mea.gov.in/Speeches-Statements.htm?dtl/24912/Prime\\_Ministers\\_Remarks\\_at\\_the\\_Commissioning\\_of\\_Offshore\\_Patrol\\_Vessel\\_OPV\\_Barracuda\\_in\\_Mauritius\\_March\\_12\\_2015](http://www.mea.gov.in/Speeches-Statements.htm?dtl/24912/Prime_Ministers_Remarks_at_the_Commissioning_of_Offshore_Patrol_Vessel_OPV_Barracuda_in_Mauritius_March_12_2015) (accessed 5 February 2017)

<sup>17</sup> “Maritime India Summit: 141 deals worth Rs 83,000 crore inked for shipping, ports, says Gadkari,” DNA, 16 April 2016.



improve connectivity with ports through new rail and road projects. These are expected to create “immense employment opportunities” in the ports, roads and shipping sectors over and above the 10 million potential jobs (four million direct and six million indirect jobs) over the next ten years under the Sagarmala Project. The priority sectors for India’s maritime ecosystem include shipping, ports, Container Freight Stations (CFS)/Inland Container Depots (ICD) and Coastal Economic Zones (CEZ), road, rail and coastal connectivity, shipbuilding, investments, advisory, technology, training and leisure including cruise and lighthouse tourism.<sup>18</sup>

The People’s Republic of China has a Five-Year Development Plan for National Marine Economy which monitors progress of various marine sectors. The State Oceanic Administration (SOA) is the nodal agency. During 2011-2015, China’s ocean economy grew at an annual average growth of 8.1 per cent. In 2015, the marine economy was estimated to be 6.47 trillion Yuan (US\$ 989.3 billion or INR 6.7 lakh crore), which is 7 per cent higher than in 2014. This corresponds to about 9.6 per cent of the national GDP for 2015. The marine industry employs an estimated 35.9 million people.<sup>19</sup>

The Chinese leadership is conscious of the importance of the marine economy and has noted: “A developed marine economy is an important part of building maritime power.”<sup>20</sup> In March 2016, the Chinese government announced the 13<sup>th</sup> Five-Year Plan (2016-2020) which aims to achieve nearly 100 targets in the five-year period. China plans to develop smart ports, construct more ice-breaking vessels, transform the ship equipment industry and engage in deep-sea activities. These initiatives will help China to promote the growth of Blue Economy.

Bangladesh is perhaps the most vocal country in South Asia about Blue Economy. In 2014, it proposed the “Bay of Bengal Partnership for Blue Economy”<sup>21</sup> for an “inclusive and people-centric,” sustainable development of sea-based resources. The Blue Economy is high on its national economic agenda as nearly 30 million people in Bangladesh are “dependent on the sea for livelihood, and are engaged in fishing and commercial transportation.” Bangladesh is in the early stages of embracing the Blue Economy and confronts a number of technological and financial constraints to make the dream come true. It has instituted several measures, including setting up a research institute for study of marine science, oceanography and training personnel to develop skills for the sustainable development of resources. It has also established scientific collaboration with other countries to develop expertise on Blue Economy.

Seychelles and Mauritius are Small Island Developing States (SIDS) and highly dependent on the seas for economic well-being. Their economies are closely linked to the African economies which have endorsed Blue Economy. Further, they have established partnership for development of Blue Economy with Australia and India and are seeking support for technical, fiscal and security-related capacity building. Likewise, Maldives is highly dependent on the seas for its economic vitality and is a strong supporter of Blue Economy.

<sup>18</sup> “Maritime Nation India Conference 2016,” <http://maritime-world.com/mni2016/conference.html> (accessed 10 November 2016).

<sup>19</sup> “China’s marine output up 7% in 2015,” *Xinhua*, 3 March 2016.

<sup>20</sup> Wang Qian And Zhang Yunbi, “President Xi vows to protect maritime interests,” *China Daily*, 01 August 2013.

<sup>21</sup> “Bangladesh seeks ‘Bay of Bengal partnership’ for Blue Economy,” <http://bdnews24.com/Economy/2014/09/02/bangladesh-seeks-bay-of-bengal-partnership-for-Blue-Economy> (accessed 10 November 2016).



The United States has the largest Exclusive Economic Zone (EEZ) in the world which endows it with enormous potential for sea-based economic growth. Unlike many other countries, the United States makes a distinction between coastal economy and ocean economy. The coastal economy is primarily an urban economy and its thirty coastal states with a population of 255.8 million (82 per cent of the U.S.) employs over 107.3 million and contributes nearly US\$ 13 trillion (INR 88.4 lakh crore), which is nearly 83 per cent of the US GDP.<sup>22</sup> According to the OECD's Ocean Economy Database value, the ocean economy's output in 2010 was US\$ 1.5 trillion (INR 150,000 Crore); on a "business-as-usual" basis, the ocean economy could more than double to US\$ 3 trillion (INR 300,000 crore) and could employ approximately 40 million full-time equivalent jobs.<sup>23</sup>

The tourism and recreation sector was the largest sector by both employment and GDP. The US has set up the National Ocean Economics Program (NOEP) which measures key economic indicators of the coastal and the ocean economy.

In 2012, the European Union announced its "Blue Growth" strategy for sustainable development of marine and maritime sectors to contribute to the Europe 2020 strategy for smart, sustainable and inclusive growth.<sup>24</sup> The strategy pivots on three pillars: (a) develop aquaculture, coastal tourism, marine biotechnology, and seabed mining sectors that have a high potential for sustainable jobs and growth; (b) provide marine knowledge to improve access to information about the sea, marine spatial planning for an efficient and sustainable management of activities at sea, and integrated maritime surveillance to give authorities a better picture of what is happening at sea; (c) foster cooperation among countries. For the European Union, the Blue Economy represents roughly 5.4 million jobs and generates a gross added value of almost € 500 billion (INR 36 lakh crore) a year.

The Blue Economy has gathered momentum at the multilateral level too. The 2014 Perth Communiqué of IORA of October 2014 has noted that the Indian Ocean countries are "strengthening the Blue Economy"<sup>25</sup> through sustainable development of fisheries, judicious exploitation of minerals, harnessing renewable energy and encouraging coastal tourism to "stimulate growth and improve food and energy security" as a "common source of growth, innovation and job creation." The concept is slowly entering into other groupings such as the SAARC, BIMSTEC and ASEAN.

## Blue Economy and Security

There is a symbiotic relationship between Blue Economy and security. The 1982 UNCLOS<sup>26</sup> establishes a comprehensive framework for the regulation and management of the ocean space and addresses a broad spectrum of issues relating to regulation of navigation, marine protection, scientific research and seabed mining. Coastal states have accrued expansive sea spaces, designated as EEZ under the UNCLOS, and they promise enormous living and non-living sea

<sup>22</sup> For more details see Kildow, Judith T.; Colgan, Charles S.; Scorse, Jason D.; Johnston, Pat; and Nichols, Matt, "State of the U.S. Ocean and Coastal Economies 2014" (2014). Publications. Paper 1, [http://cbe.miiis.edu/cgi/viewcontent.cgi?article=1000&context=noep\\_publications](http://cbe.miiis.edu/cgi/viewcontent.cgi?article=1000&context=noep_publications) (accessed 12 November 2016).

<sup>23</sup> Source : <http://oecdinsights.org/2016/04/27/the-trillion-dollar-ocean/>

<sup>24</sup> "Blue Growth," [http://ec.europa.eu/maritimeaffairs/policy/Blue\\_growth\\_en](http://ec.europa.eu/maritimeaffairs/policy/Blue_growth_en) (accessed 12 November 2016).

<sup>25</sup> "Final Communiqué: 14th Meeting of the Council of Ministers of the Indian Ocean Rim Association Perth Communiqué 9 October 2014," [http://www.iora.net/media/151273/communiqu\\_\\_final.pdf](http://www.iora.net/media/151273/communiqu__final.pdf) (accessed 12 November 2016).

<sup>26</sup> UNCLOS – The United Nations Convention on the Law of the Sea.



wealth. This sea space also provides for sovereign rights for commercial activity in the EEZ, be it to catch fish, recover oil and gas in the area, or mine or extract other marine resources.

Although the UNCLOS regime may have brought about order at sea in terms of management of the sea spaces and resources, difficulties are encountered especially in disputed sea areas and when States seek to unilaterally exercise authority over them.

In order to tackle many of these challenges, maritime law enforcement agencies such as the coast guards and marine police have been mandated to ensure safety and security of economic assets and activities such as offshore oil platforms, protection of marine wealth, prevent illegal fishing, and help uphold national environmental regulations, thereby ensuring sustainable economic growth and livelihoods of coastal populations as well as upholding national commitments to international agreements and initiatives such as the SDGs 2030. As regards maritime and territorial claims and disputes, the international community is continuously engaged in resolving the issues as is evident from developments in the South China Sea and the East China Sea in recent years.







## SECTION II

# Legal Regime for Exploration and Exploitation of Marine Resources





## SECTION II

# Legal Regime for Exploration and Exploitation of Marine Resources

Inherent in the concept of Blue Economy is the optimum exploration and exploitation of marine resources within and beyond national jurisdictions. This also involves an inherent obligation to preserve, conserve and protect the marine environment for future generations.

The present legal regime for exploration, exploitation and conservation of marine resources as well obligations for the protection and preservation of the marine environment is contained in the United Nations Convention on the Law of the Sea (UNCLOS) of December 1982. This regime is based on spatial distribution of ocean space, and accordingly provides for the exercise of sovereignty, sovereign rights and jurisdiction.

The UNCLOS entered into force on 16 November 1994 and is regarded as the Constitution for the Oceans with near universal acceptance of 166 States plus the European Union.<sup>27</sup> The 1994 Agreement Relating to the Implementation of Part XI of the Convention and the 1995 Agreement on the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks form an integral part of the UNCLOS. Besides the UNCLOS, there are a number of other Conventions adopted by other bodies that regulate the harnessing of fishery resources, provide for protection and preservation of the marine environment and conservation of resources within the overall framework of the UNCLOS. There are also a number of regional arrangements and agreements.

## The Table on Legal Aspects

The Table below provides a broad overview of the existing legal regime under the UNCLOS for the exercise of jurisdiction, sovereignty and sovereign rights concerning the exploration and exploitation of resources, and indicates some possible areas of business opportunities.

<sup>27</sup> The convention has been ratified by 167 parties, which includes 166 states (163 United Nations member states plus the UN Observer state Palestine, as well as the Cook Islands and Niue) and the European Union. An additional 14 UN member states have signed, but not ratified the convention.





Table 1.

Maritime zone	Extent	Nature of Rights	Obligations	Resources	Possible Business Areas	Legal Requirements	Gaps in the Legal Framework	Remarks
Territorial waters	12 nautical miles(nm) from the baselines <sup>28</sup>	Full Sovereignty	Navigational rights: innocent passage for foreign ships	All living, non-living	Ports and harbour facilities and development  Tourism and Resorts	Domestic laws and regulations  Environment Regulations as on land territory.  Subjects as under Union, State and Concurrent Lists in the Constitution.	Issues that arise out of differences in the matter of interpretation by different High Courts	
Contiguous Zone	A further 12 nm from territorial waters up to 24 <sup>29</sup> nm.	Limited Sovereignty for the purposes of customs, fiscal, immigration and sanitary purposes						
Exclusive Economic Zone(EEZ)	200 nautical miles from the baselines <sup>30</sup>	Sovereign rights over living and non-living resources, production of energy from water, current, and wind.	Coastal State to enact laws and regulations for preservation, conservation and management of resources as well as protection of the marine environment  Determine maximum sustainable yield in respect of fisheries. Evolve methods for optimum utilisation.  Access to surplus for other States.	Fish, energy. Mineral resources are the resources of the Continental Shelf	Conduct of Environment Impact Assessment (EIA)  Technology Development  Production of modern fishing nets and techniques  Species specific fishing including joint ventures with other States of the region.  Technology for energy, desalination.  Technology and expertise to assess damage due to oil spill or other causes and to determine the impact, and restoration.	Activities in EEZ are conducted under domestic laws and regulations	In effect the Contiguous zone gets subsumed in the EEZ.  Comprehensive domestic legislations are required regarding fishing techniques, and also cover safety, security, liability and insurance matters.	

<sup>28</sup> Art. 3 of UNCLOS

<sup>29</sup> Art. 33, *ibid*;

<sup>30</sup> Art. 57 *ibid*;


Maritime zone	Extent	Nature of Rights	Obligations	Resources	Possible Business Areas	Legal Requirements	Gaps in the Legal Framework	Remarks
Continental Shelf	<p>Throughout the natural prolongation of the land territory up to the continental margin</p> <p>Limit to 200 nm where the natural prolongation of the land territory is less.</p> <p>Limit to 350 nm or even beyond (2500 mtrs isobaths plus 100nm) when certain conditions are fulfilled<sup>31</sup></p>	Exclusive Sovereign rights over natural resources of the seafloor, as well as sedentary organisms	Laws and regulations as in EEZ to apply for protection and preservation of the marine environment.	<p>Near shore resources usually are:</p> <p>Placer deposits for tin, titanium, zircon, chromium, iron, gold and diamond</p> <p>Phosphorites: mostly calcium phosphate used in agriculture</p> <p>Evaporites: (formed due to evaporation of sea water), mainly salt (Sodium Chloride), anhydrite and gypsum</p> <p>(calcium sulphate), and potash bearing minerals</p> <p>Off shore resources are oil and petroleum, gas hydrates</p> <p>Far shore resources (usually beyond 200nm) are polymetallic nodules, polymetallic sulphides and cobalt-rich ferro manganese crusts.</p>	<p>As in EEZ. In addition, technology for deep-sea drilling and tunneling.</p> <p>Off-shore analysis of resources and transport to mainland</p> <p>Extraction techniques</p> <p>Creation and management of artificial installations and platforms</p>	<p>When claims beyond 200nm, Submissions to the Commission on the Limits of the Continental Shelf (CLCS) and delineation as per recommendations</p> <p>Activities in the continental shelf are conducted under domestic laws and regulations</p>	<p>Several gaps in the time frame for submissions.</p> <p>No time-frame for CLCS to give its recommendation</p> <p>No timeframe to revise, submit new claim.</p> <p>No time frame to issue notification regarding delineation.</p> <p>As a result, there is no precision on the limits of national jurisdiction and the beginning of the international seabed area.</p> <p>Comprehensive domestic legislations are required that also cover safety, security, liability and insurance matters.</p>	

<sup>31</sup> Art. 76 (1), (4), (8), *ibid*;



Maritime zone	Extent	Nature of Rights	Obligations	Resources	Possible Business Areas	Legal Requirements	Gaps in the Legal Framework	Remarks
International Seabed area, "The Area"	Seabed and Ocean floor and the subsoil thereof beyond the outer limits of the continental shelf of a coastal State	The "Area" and its resources are the common heritage of mankind <sup>32</sup> , (a legal term). State Parties to UNCLOS administer and manage the resources of the Area through the International Seabed Authority (ISA) <sup>33</sup>	<p>Prospecting in the Area is free and without any time limit. However the ISA has to be notified.</p> <p>Exploration for resources is through contract with the ISA.</p> <p>Two areas (or blocks) in respect of PMS and CoFeMn) of equal estimated commercial value has to be submitted to ISA.</p> <p>One such area/block is reserved by ISA for future exploration/development by the Enterprise of ISA. Contract is entered into in respect of the other area/block.</p>	<p>Three categories of deposits have been identified so far. These are the polymetallic manganese oxide nodules</p> <p>(PMN), polymetallic sulphides (PMS), and Cobalt-rich ferro manganese crusts. (CoFeMn).</p> <p>These deposits are primarily rich in Nickel, Cobalt, Copper and Manganese, besides several other metals.</p>	<p>Technology development and technology transfer and sharing on commercial terms.</p> <p>Scooping, dredging and drilling technology required.</p> <p>Creation of appropriate deep-sea platforms and structures.</p> <p>Transport and storage of wet deposits recovered to mainland.</p> <p>Creation of on board processing facilities.</p> <p>Metallurgy and extraction of metals in mainland.</p> <p>Reserved areas/blocks contain detailed raw data. It is possible to apply for exploration contracts / joint ventures in the reserved area with the ISA</p>	<p>Exploration contracts to be entered with ISA.</p> <p>Only States and State sponsored entities can enter into contracts.</p> <p>Evidence of financial and technological capabilities needed.</p> <p>Details of contract terms including financial requirements and, Environmental obligations are contained in the Regulations adopted by ISA.</p>	<p>ISA has adopted Regulations for Prospecting and Exploration of PMN, PMS and CoFeMn.<sup>34</sup> Standard form of contracts and all other details for contract contained in these Regulations.</p> <p>Exploration contracts are initially for a period of 15 years and extendable for a further period of 5 years.</p> <p>The Enterprise of ISA is yet to set up.</p> <p>Currently Regulations for exploitation are under consideration in ISA.</p> <p>ISA has the obligation to protect flora and fauna in areas beyond national jurisdiction.</p>	<p>ISA has so far entered into 26 contracts<sup>35</sup>.</p> <p>16 for PMN</p> <p>6 for PMS and 4 for CoFeMn.</p> <p>Joint venture/ Collaborative arrangements with some of the companies involved could be explored.</p> <p>India's initial 15 year contract for PMN expires in 2017 and will be taken up for extension by the ISA in July 2017.</p>

<sup>32</sup> Art. 136, *ibid*;

<sup>33</sup> Art. 156, *ibid*;

<sup>34</sup> For PMN Regulations see ISBA/6/A/18 read with ISBA/19/A/9; For PMS see ISBA/16/A/12/Rev..For Cobalt rich Ferromanganese crusts see ISBA/18/A/11.

<sup>35</sup> As of March 2017. For a list of Contractors, please see [www.isa.org.jm](http://www.isa.org.jm).



Maritime zone	Extent	Nature of Rights	Obligations	Resources	Possible Business Areas	Legal Requirements	Gaps in the Legal Framework	Remarks
Biodiversity beyond national jurisdiction and genetic resources							The provisions of UNCLOS regarding legal issues concerning Marine Biodiversity beyond national jurisdictions, including genetic resources, are inadequate and the subject is currently under international deliberations within the overall framework of UN-CLOS. <sup>36</sup>	

## Implications for India

India's submission containing the data and information for delineation of the outer limits of its continental shelf is pending with the Commission on the Limits of the Continental Shelf (CLCS). Upon receiving the recommendations from CLCS, it will have the following options:

- 1) Accept the recommendations and proceed to establish the outer limits and deposit with the Secretary General of the United Nations and the Secretary General of the International Seabed Authority, the charts and relevant information including geodetic data describing the outer limits.
- 2) Make a revised submission to CLCS in areas where it is not satisfied with the recommendations;
- 3) Make a new submission to CLCS for consideration.

The legal regime of the continental shelf only applies to the seabed, its subsoil and the mineral and other non-living resources together with the living organisms belonging to the sedentary species.

Over the water column, the legal regime of the Exclusive Economic Zone applies up to 200 nautical miles, and the legal regime of the high seas applies beyond that limit. All States enjoy the freedom of fishing in the High Seas. However in the case of straddling fish stocks and highly migratory fish stocks, the provisions of the 1995 Agreement on the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks apply.

<sup>35</sup> See UNGA Resol. A/RES/69/292



In the international area, India has two contracts with the International Seabed Authority in the Central Indian Ocean. The first is a 15-year polymetallic nodules contract entered in 2002 and will be taken up for a further five-year extension at the 23rd session of the Authority beginning on 31 July 2017. The extension will be on the expectation that India will be ready to proceed to the exploitation stage in 2022.

At the time of its registration as Pioneer Investor, India had submitted a total area of 300,000 sq. km in the Central Indian Ocean divided into two areas of equal estimated commercial value, as required under the Convention. Subsequently, with the entry into force of the Convention and the establishment of the International Seabed Authority, India signed an exploration contract with the Authority, for an area of 150,000 sq. km, of which 50 per cent was relinquished to the Authority in accordance with the provisions of the Convention. The reserved area (namely, the other half of the original application area of 300,000 sq. km) with the Authority with raw data as submitted by India covers an area of 150,000 sq. km.

When India enters into a contract for exploitation in the future, it is likely to be in respect of a much smaller area. The remaining parts of the contract area will revert to the international area, but all data will remain with India. It may be worthwhile considering how this information and data could be put to commercial use.

The second is a contract for exploration for polymetallic sulphides entered into in September 2016 that will end in 2031. The application area, located in the central Indian Ocean, covers 10,000 sq. km and consists of 100 blocks, each of 10 x 10 km, which are grouped into five clusters, each containing 15 to 30 blocks.

The draft Regulations for exploitation are presently under consideration in the Authority. It is important for policymakers to undertake an in-depth study of this complex draft from India's point of view, and examine how India's interests are affected.

Since 1996, India has been an elected member of the Council of the Authority (the executive organ of the Authority) under category B, that is, one amongst the eight largest investors on seabed resource-related activities. In other words, for the last 20 years, India has been internationally demonstrating that it is one amongst the eight largest investors in the world with regard to activities in the Area.

An important development that is expected to take place when the first exploitation contract is issued is the establishment of the Enterprise<sup>37</sup>, the commercial arm of the Authority. The main function of the Enterprise is to begin seabed mineral exploitation in the reserved areas simultaneously with other contractors. The Enterprise, when established, will be without capital and technical knowhow and the only manner it can begin its functioning in an effective and competitive way is through joint venture operations.

The Blue Economy discourse should encompass the responsibility for pollution and polluter-pays regimes in the context of legal frameworks for claims on the riches of the oceans.



<sup>37</sup> The Enterprise is the commercial arm of the International Seabed Authority. See Art. 170 and Annex IV of the UNCLOS. The Enterprise is yet to be established.







## SECTION III

# Review of Business Opportunities and Constraints in India





### SECTION III

## Review of Business Opportunities and Constraints in India

The concept of Blue Economy has opened up a new horizon for economic development of countries through the use of ocean and marine resources, both at the national and international level. In the popular perception, the ocean economy has been equated with the fishing sector, but the coverage of Blue Economy is well beyond fisheries. It encompasses the entire economy of a littoral country, covering all economic activities including agriculture, mining, construction, manufacturing and services sector. Development of Blue Economy depends on the evolution of the established and emerging sectors and ocean-based industries and activities.

Broadly, established ocean activities include fisheries, shipping, port and maritime logistics, marine coastal tourism and leisure, conventional minerals exploration and production, and marine construction activities. Emerging sectors encompass renewable ocean energy including offshore wind, tidal and wave energy; offshore extraction of oil and gas in deep-sea and other extreme locations; seabed mining for metals and minerals; marine aquaculture; marine biotechnology; ocean monitoring, control and surveillance and education and research. Emerging sectors are characterized by the use of cutting-edge science and technology in their operations.

Blue Economy has a large potential in terms of income, employment generation, exports, but benefits cannot flow automatically. Conscious efforts have to be made in terms of planning, investment, and sectoral allocation of factor endowments to ensure natural growth of Blue Economy. For infusing dynamism in selected sectors, priority areas for different sectors of Blue Economy should be identified, based on the potential and feasibility of Blue Economy in India.





## Marine Fishing

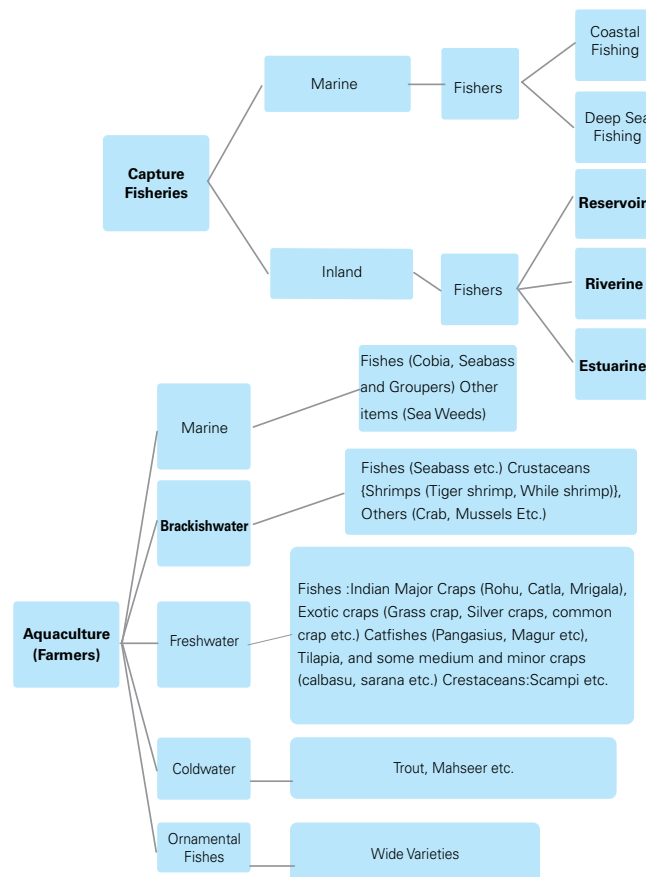
The Fishing sector is traditionally construed as one of the most important sectors of the Blue Economy. Its contribution is significantly felt in economic activities such as national income, trade, employment generation, food and nutritional security and various kinds of non-traditional economic security. The growing importance of the sector in India is due to domestic consumption, trade and cultural preferences.

Activity in marine fishing has been experiencing a boom in recent years and contributing significantly to economic growth of the nation. The share of fisheries in agricultural GDP is around 4.7 per cent in 2012 and has registered a double digit growth since 2005. India, the 6th largest exporting country of the world, exported shellfish worth a total of US\$ 3.89 billion and finfish of US\$ 1.16 billion in 2015. In the global fisheries production ranking, India was 2nd in fresh water fish, 3rd in finfish, and 6th in shellfish in 2013. However, India has been a low-ranking country in the production of aquatic animals, aquatic products and aquatic plants in the world economy. In fish trade, India was the 8th largest exporter and 88th largest importer of the world in 2013.

India is emerging as a global player in the fisheries sector. Consistent with the international trend, the share of India's capture fishing is declining and aquaculture share is rising, thus opening large opportunities for promoting domestic production. In this regard, globalisation has made a major contribution for the expansion of demand for fisheries in the domestic as well as international markets. India has developed expertise in satellite launching, fabrication and application of such systems. This facility can be effectively used in the IORA region for identifying and locating fish clusters in the sea for facilitating capture fishing. Such satellite facilities may be used alternatively in other areas of economic activities such as search and rescue operations, meteorology and other applications in the region.

India is a trade-surplus country in the fisheries sector. India's fisheries exports were more than 31.5 times higher than its imports in 2013. While the country's exports stood at US\$ 2.4 billion, its

**Table 2: Taxonomy of Fisheries Sector**



imports were US\$ 76 million, registering a trade surplus of US\$ 2.32 billion in the corresponding year. Broadly speaking, the fishing sector comprises finfish, shellfish, aquatic animals, and aquatic products including sponge, coral and pearls; and aquatic plants such as algae, seaweeds, hatcheries, and processing of seafood and fish products as shown in Table 2. India is also an important exporter of aquatic plants and aquatic products, having the 17th and 23rd positions respectively in world ranking.

This sector supports livelihood of about 11 per cent of the world's population, thus providing a myriad of economic opportunities. This sector provides lucrative avenues for small and medium enterprises which should seize existing domestic opportunities.

## Marine Biotechnology

One of the fastest emerging high-technology sectors in Blue Economy is marine biotechnology. It has wide-ranging applications in industrial sectors including pharmaceuticals, cosmetics, nutritional supplements, molecular probes, enzymes, fine chemicals and agrichemicals. In the global economy, the size of biotechnology market is estimated at US\$ 2.4 billion which is expected to register an annual growth of 10 per cent. Marine bio-resources such as sponge, marine fish species, molluscs, bacteria, algae, olga, coral, fungus, sea worm, etc. are used extensively for industrial applications, drug developments, agriculture, fisheries, biofuel, oil spills, tissue and dental applications. Broadly speaking, marine biotechnology can be categorised into white by industrial biotechnology, red by pharmaceuticals, green by agriculture, and blue by biofuel as well as Bioinformatics.

Among various sub-sectors of marine biotechnology, the bio-pharmaceutical sector is expanding globally. The EU is a leader in this sector. According to a recent estimate, the pharmaceutical market of the EU is likely to reach € 8.6 billion in 2016, and has registered a compound growth of 12.5 per cent during the period 2011-16.

Marine biotechnology produces several kinds of products. For example, biopolymer is useful in wound dressing, bio-adhesives, dental bio-materials, tissue regeneration and 3D tissue culture scaffolds. Specific marine fish species are used for drug development to cure cancer, pain and inflammation, various forms of infections, malaria, schizophrenia, Alzheimer, and neo-vascular diseases. Sponge is used to prepare drugs for diseases like cancer, inflammation, viral infections, malaria and cardiovascular issues; coral for inflammation and wounds; marine fishes for inflammation, cancer, neo-vascular diseases and hypertriglyceridemia, among others.

There are certain drugs available in the market for specific critical diseases and these drugs are manufactured using marine bio-resources as shown in Table 3 below. Moreover, bio-resources and compounds are used for preparation of various cosmetic products, which are traded widely across the globe.

The relevance of white biotechnology is becoming important due to growing dependence on agriculture, particularly on sectors like fisheries and food additives. Polyculture is becoming important in fishing technology to replace conventional method of aquaculture production in mariculture. Since capture fishing is declining persistently in the face of growing demand for fisheries products, increasing supply of fish production in an environmentally sustainable manner



is becoming important. Agricultural biotechnology has the advantage of improving supply of high quality food on a sustained basis. This technology focuses on optimum food and feeding, health of cultural organisms, diseases and resistance.

**Table 3: Drugs Using Marine Species**

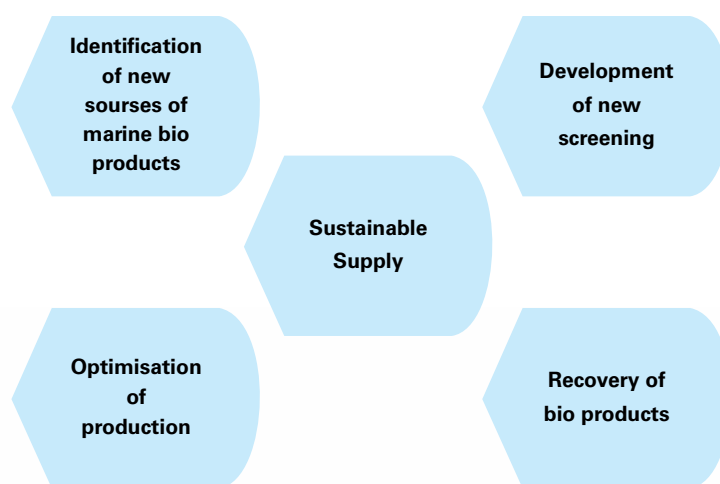
Disease	Source	Product
Antibiotic	Cephalosporium sp., marine fungi	Cephlosporins
Cancer	Marine Sponge	Ara-C
Cancer	Sea Squirt	Yondelis
Cancer	Sea slug	Dolastatin
Cancer	Bryozone	Bryostatin-1
Cancer	Shark	Squalamine Lactate
Inflammation, Asthma	Sponge	PL512602 (steroid)
Molecular Probe	Marine Sponge	Manoalide
Viral	Marine Sponge	Ara-A

*Source: Thakur and Thakur (2006)<sup>1</sup>*

Blue biotechnology is commercially sensitive for which detailed micro-level information is mostly reserved with companies, public research centers, patent databases etc. Biofuel and informatics offer lucrative business opportunities and most of these activities have been thriving in Europe, North America and South East Asia. In the US, micro and macro algae sector companies are engaged in large biofuel businesses, whereas companies in South East Asia work in the area of Bioinformatics.

Marine biotechnology offers ample business opportunities to the SMEs and large business conglomerates in various fields of activities. At the same time, the sector faces several challenges including regulatory ones which are vital for the healthy growth of the sector (see Table 4).

**Table 4: Challenges faced by Marine Biotechnology**



## Offshore and Deep-Sea Mining

Exploration of coastal and offshore mining is viewed as an important sector of Blue Economy globally. The EU estimated that the largest chunk of its ocean economy is sourced from offshore mining. Similarly, several other countries such as Australia, South Africa, Namibia, and Papua New Guinea are intensely endowed with marine minerals. Marine mining focuses on aggregates including sand, gravels, salt, sulphur, magnesium, oil and gas, tin etc. In addition, deposits of diamond, gold and other heavy metals are also found in the offshore.

With rapid industrialisation and urbanisation, pressure on commercialisation of aggregates and placers seems to have increased. It broadly includes the production, extraction and processing of non-living resources in seabed or seawater comprising minerals and metals from the seabed (in the deep sea) and onshore, marine aggregates (limestone, sand and gravel) and extraction of minerals dissolved in seawater. Offshore exploration is also striking in many locations for oil and gas. Though knowledge about the presence of aggregates and placers on the offshore is an old story for the last sixty years, exploration of such deposits is at its infancy because of difference in the exploration cost of mines on the land and in the sea. In fact, rising demand and prices of such metals including copper, zinc, etc. are the key factors that trigger interest in deep-sea mining for minerals in recent years.

So far as national and international jurisdictions for the ocean floor are concerned, there are three distinct marine domains. The reserves of aggregates and placers are located in the territorial waters and EEZs. India is rich in having large reserves of aggregates such as sand, limestone, gravels, etc.

**Table 5**

Minerals	Production 2013 (tonnes)	Reserves (million tonnes)
Ilmenite	740000	593
Rutile	16000	31
Zircon	20000	34
Siliminate	61597	226
Garnet	457626	34

Source: Mohanty (2017)

**Table 6:**

Minerals	Uses
<b>Ilmenite</b>	Pigment, Plastic, Cosmetics, Pharmaceuticals and Paper industries, Production of Titanium Metals used in aircraft industries
<b>Rutile</b>	Used for coating of welding electrodes and for production of titanium metal/sponge
<b>Zircon</b>	Foundries, Ceramic and Refractories Industries. Computer monitors, Television screens, cutting tools, scratch resistant bracelets, nuclear reactors in alloy form.
<b>Siliminate</b>	Used in manufacture of refractory bricks for high temperature applications. Used in steel and glass industries, glass kilns and heat treatment furnaces
<b>Garnet</b>	Manufactures of abrasives, grinding wheels for polishing glass/TV tubes, cleansing of casing/pipes in petroleum industry.
<b>Monazite</b>	Used in manufacture of detergent chemicals, Gas mantles, permanent magnets, colour TV tubes and fluorescent lights.



It has also large reserves of beach sand placers including Ilmenite, Rutile, Garnet, Zircon, Monazite, Sillimanite and Kyanite (Table 5). The applications of such minerals can be found in many industries (Table 6). Some offshore placers are originated from fossil shells like Ilmenite. They are high-valued placers, used in high-end manufacturing sectors. In order to overcome supply constraints in future, cultured farming may be promoted in coastal regions. Even though offshore mining opens up new opportunities for additional resources, it leads to negative externalities by inflicting costs in terms of adverse impact on marine environment.

Despite potential attractions of deep-sea exploration, commercial mining activities are yet to be commenced. Commercial exploration of deep-sea nodules is expected to begin in Papua New Guinea in 2017 by a Canadian firm. In the area beyond national jurisdictions, the International Seabed Authority has entered into 26 exploration contracts. Sixteen of these contracts are for exploration of polymetallic nodules, 6 for polymetallic nodules and 4 for cobalt-rich ferromanganese crusts.

In India at present, placers are mined by state agencies, but exploration of deep-sea mining on a commercial basis is yet to happen. Because of a pressing demand for large investment in production, extraction and processing of aggregates and placers, state-run agencies are unable to augment domestic production to meet the current required targets. In this regard, private sector may be allowed to enter the sector in a PPP model in order to expedite the pace of exploration of aggregates and placers in India.

## Marine Tourism and Leisure

Marine space provides numerous opportunities for tourism and recreation such as swimming, sun-bathing, pleasure boating, snorkeling, surfing, reef walking, whale and dolphin watching, and SCUBA diving among others. Besides conventional tourism, coastal (or marine) tourism assumes considerable importance in the context of the Blue Economy. Several initiatives have been taken by coastal nations to promote marine tourism in different national and regional locations. Cruise shipping and lighthouse tourism are given exclusive emphasis in these initiatives. In order to attract more foreign tourists, marinas may be developed along the Indian coast.

The range of employment opportunities include hotels, restaurants, housing and residential activities, vending, beach hawking, agriculture and fishing activities. The growth of tourism sector in the country has a lasting impact on coastal environment in terms of urban sprawl, urbanisation, production of waste and social environment.

## Shipping, Port and Maritime Logistics

As a fast-growing emerging country, development of port infrastructure plays an important role in promoting various developmental activities, including trade. The Ministry of Shipping reports that much of India's international trade (about 90 per cent by volume and 70 per cent by value) is carried through maritime transport. The sector covers a wide range of services which are broadly divided into two categories: shipping industry and maritime logistics.



Despite India being a major player in the global trade, it has been lagging behind several other countries in terms of containerisation measured by TEUs (Twenty-Foot Equivalent Units). According to the World Ports Ranking, two of India's major ports namely, Jawaharlal Nehru Port and Madras Port figured in the top 100 ports in 2014. Moreover, India enjoys advantage in the cargo handling segment due to which five Indian ports including Paradip, Jawaharlal Nehru Port, Bombay, Madras and Calcutta figured on the world's top 100 ports list.

In several major shipyards, private sector participation is not permitted. For a more effective and efficient PPP type model, both Micro, Small and Medium Enterprises (MSMEs) and large enterprises may be allowed to operate in all Indian shipyards.

For improving efficiency of the major ports, minor ports could be roped. The relative performance of major and minor projects is presented in Table 7. There are about 27 ongoing projects undertaken for Indian water transportation and coastal shipping with a total investment of INR 7,414.14 crore. These initiatives may strengthen India's port and shipping sector.

**Table 7: Port Performance of India 2015-16**

	Year 2015-16	
	Major Ports	Non-Major Ports
Number of Ports	12	200
Cargo Handled (in MTPA)	606	466
Containers ('000 TEUs)	8,198	4,341
Passenger Traffic ('000)	-	-
Employment ('000)	37,238	-
Financial Performance (in INR Mn.)	Actual Expenditure -17,477	
	Operating Profit - 42,680	-

*Source: Indian Ports Association, Ministry of Shipping Annual Report 2015-16, Ports in India 2016 publication by India Infrastructure Publishing*

## Marine Construction

Construction in the marine and offshore environment offers great opportunities for innovation. It is emerging as one of most exciting fields of engineering practice. Marine construction typically involves dealing with construction, diving and dredging activities, hydraulic engineering, underwater works including cabling, construction and development of ports and offshore bridges.

Recent government policies have attracted participation of foreign investors in the Indian port development sector. A number of ports have started operating on Build, Operate and Transfer (BOT) basis, which includes construction of cargo handling berths, container terminals and warehousing facilities, installation of cargo handling equipment, construction of dry-docks and ship repair facilities. The New Foreign Direct Investment (FDI) policy has allowed automatic approval up to 100 per cent FDI for construction and maintenance of ports and harbours.





The Sagarmala Project is a major initiative of the Indian Government to impart dynamism to the port sector. It is expected to tackle the challenge of under-utilised ports by focussing on port modernisation, efficient evacuation and coastal economic development.

Two companies in India have turned the challenge of low draft in Indian ports into an opportunity by coming up with innovative floating port structures and floating cranes and barges at Jamnagar and Kandla ports respectively. Other private players should learn from these companies and come up with innovative and cost-effective business models. The marine construction sector offers large opportunities to private sectors in India.

Some of the key opportunities in India are:

- About 36 ongoing projects undertaken for Port Development with total investment of about INR 70,178.2 crore.
- Around 32 ongoing projects undertaken for Port Modernisation with total investment of about INR 9982.8 crore
- 33 ongoing projects aimed at Port-led Development with a total investment of INR 1,50,657 crore
- 4 ongoing projects related to green port initiatives with total investment of INR 419 crore.

## Marine Renewable Energy (MRE)

Renewable energy enjoys almost 22 per cent share of the global energy mix. Considering the fact that MRE has potential to have sizeable returns to capital, more inflow of investment into the sector could provide a solution to the “Energy Trilemma” that includes energy security, energy equity and environmental sustainability.

There are various forms of marine renewable energy: (1) offshore solar energy, (2) offshore wind energy, (3) wave energy, (4) tidal energy, (5) ocean thermal energy, (6) salinity gradient, (7) ocean current energy, and (8) energy from marine biomass. Nature of harnessing energy from different sources of MRE is different as presented in Table 8. Energy potentials in some of these sources are reported by various government agencies in India as shown in Table 1. Solar and wind are the two important sources of MRE in India. Considering the level of technology development so far, most of the offshore energy sources may become commercially viable only after 2020.

Offshore wind energy is the most mature energy in comparison to other forms of marine energy with respect to their technology development. The world’s exploitable offshore wind resource is around 30 times higher than global estimation of average electricity generation. Wave energy is emerging as a viable source of energy providing substantial energy with minimum environmental impact. Even though tidal energy has immense potential, the full-scale development of this industry is not achieved yet due to environmental concerns.



Commercial viability has not been achieved in several sources of MNE due to technology-related constraints. As of 2014, no commercial grid connected turbine is operational<sup>38</sup>. In regard to osmotic power, it has been observed that the commercial viability of the technology is far away even though the first osmotic power plant was established in 2009 in Norway. Similarly, feasibility of Ocean Thermal Energy Conversion (OTEC) is mostly observed in tropical areas. The available technology in the sector not only generates energy but also provides desalinated water, which could be beneficial to island dwellers.

For providing a big push to the sector, the Government of India has announced a policy under which a full exemption of excise duty is applicable on pig iron and ferro-silicon-magnesium which are used as components in manufacturing wind energy generators. A tax holiday for first ten years for offshore wind energy has been proposed by the government and the same tax holiday benefits are already being used by the solar energy sector. The government has also proposed zero tax for services like resource assessment programs, oceanographic study by third party and utilisation and installation of vessels.

As enabling environment for investment is building up, India is among the top five countries which have invested in renewable energy (UNEP, 2016)<sup>39</sup>. India's cumulative investment in the sector is adding up to US\$ 10.2 billion as against US\$ 102.9 billion in China in 2015. However, financing continues to be a major constraint for the development of the renewable energy sector in India.

**Table 8: Marine Renewable Energy Potential in Trade**

Renewable marine energies	Potential installed capacity
Offshore wind energy	1GW <sup>1</sup>
Offshore solar energy	100MW <sup>2</sup>
Wave energy	41GW <sup>3</sup>
Tidal energy	8000 MW <sup>3</sup>
Ocean Thermal energy conversion	180 G <sup>4</sup>
Osmotic Power	2.6TWG <sup>5</sup>

Source: <http://mnre.gov.in/file->

Since India has set the target of achieving a five-fold rise in renewable energy capacity from 30 GW to 175 GW by 2022, exploring marine renewable energy sources would be the best way to enhance India's energy mix. India has a long coastline of 7,500 km (including island territories), which provides ample opportunities for generating multiple sources of marine renewable energy, but the country has a long way to go for achieving this goal.

<sup>38</sup> Appiott, J., Dhanju, A., & Cicin-Sain, B. (2014). Encouraging renewable energy in the offshore environment. *Ocean & Coastal Management*, 90, 58-64.

<sup>39</sup> Frankfurt School-UNEP Centre/BNEF, (2016),

"Global Trends in Renewable Energy Investment 2016," <http://www.fs-unep-centre.org> (Frankfurt am Main)





## Marine Manufacturing

Marine manufacturing is a globally dynamic sector and an important segment of the Blue Economy. Korea, Japan and China are emerging as key market players replacing the US and the EU. India has the potentiality to emerge as a new global leader in ship manufacturing. Its meteoric rise in the global market has been perceptible during the last decade.

Marine manufacturing consists of construction, repair and maintenance of boats, ships (Ro-Ro, RoPAX, Lo-Lo), fishing vessels, cargo vessels, submarines, yachts and other floating structures. It also includes the manufacture of technology used in the marine industry such as navigation equipment. The ship dismantling industry (also referred to ship breaking or ship recycling) is also another growing industry which involves deriving value from materials and equipment comprising end of life ships.

India has a strong ship breaking industry. The global market for this industry is mostly shared by countries such as India, China, Pakistan and Bangladesh. These four countries accounted for nearly 67 per cent of the global ship breaking industry in 2011. India is emerging as the largest market for the global industry along with Bangladesh. Though the industry is a highly polluting one, it has large spillover effects on the Indian economy.

India has a large ship building base, but it needs to be modernised. At present, India has 23 shipyards, of which 7 are under administrative control of the Central Government, 2 with state governments, and the rest are in the private sector. The Indian shipping industry, with a marginal share of 0.1 per cent of global shipbuilding market in 2002, has expanded manifold during the last decade, accounting for 1 per cent of world shipbuilding industry.

This global industry has strong entry barriers and also high-risk factors which are alarmingly large. However, India has a large reservoir of a cost-effective skilled labour force and the availability of ancillaries, which can take India forward in this sector. Recently emerging global players also have similar endowments due to which they are able to compete with the US and the EU to capture a share of the global market.

However, there remain several challenges that hold back the shipping industry from reaching its full potential. At the same time, there are several opportunities that need to be tapped to see the linear growth of the industry in the next decade (Table 9)

## Marine Commerce and ICT

Marine commerce broadly comprises marine financial services, marine legal services, marine insurance, ship finance and related services, ship chartering, ship classification and media and publishing.

Marine ICT includes marine engineering consultancy, meteorological consultancy, environmental consultancy, hydro-survey consultancy, project management consultancy, ICT solutions, geo-informatics services, yacht design and submarine telecom among others.



**Table 9: Indian Shipping Industry: Challenges and Opportunities**

## Challenges:

### **Intrinsic Constraints of Domestic Market**

The differentiated impact of statutory levies and financing cost differentials vis-à-vis other key players downsize the proper functioning of the sector.

### **Issue of Scalability**

Industry is in its nascent stage; the fiscal and policy support not well developed; significant cost disadvantages on account of import dependence of raw materials which negates the low labour cost advantages too.

## Strengths:

### **Low Labour Cost**

Labour Cost is the driving factor in this industry and India enjoys comparative advantage in this vis-à-vis other key players

### **Strong Supporting Industries**

India has a strong base of light manufacturing industries which could provide raw materials and thus reduce its import dependence

### **Long Coastline**

India enjoys a long coastline which could provide a breeding ground for shipping yards

### **Recent and Upcoming Opportunities in India**

About 13 ongoing projects undertaken for Shipbuilding, Ship Repair and Ship Breaking with a total investment of about INR 9,560.2 crore. These projects include works like:

- Building of Jetties to support anchorage operations
- Development of Marine Clusters among others

Source: [www.ipa.nic.in/showing.csftml?1D=290](http://www.ipa.nic.in/showing.csftml?1D=290)



Table 10:

Types of Marine Insurance	
<b>Cargo Insurance</b>	Includes export and import Shipments by ocean going vessels, shipments by streamers, boats, shipments by inland vessels etc.
<b>Hull Insurance</b>	Includes insurance of ships (hull, machinery etc.)
<b>Liability Insurance</b>	Includes both maritime operations and related shore side liability

Source: Mohanty (2017)

Marine insurance is an important element of the general insurance industry. It primarily covers for the losses suffered due to marine perils. Indian marine insurance is regulated by the Indian "Maritime Insurance Act, 1963." Some of the important marine insurance sectors in India are presented in Table 10. India has large business opportunities in this sector.

## Marine Education and Research

Ocean and coastal policy issues are becoming critically important throughout the world. Since ocean development and Blue Economy are accorded priority in the debate on development and global governance, technology solutions to these issues are becoming imperative. Marine education and research aim at development of inclusive strategies for successful protection of the oceans. A transdisciplinary subject, it needs coordination of several departments where partnership of private and government sectors is required.

Marine education involves spreading ocean literacy and ocean science. Within marine research the key areas are: marine spatial planning, fisheries management, restoration, and methods for increasing international cooperation in science and technology.

Objectives of comprehensive marine education and research are:

- To enhance awareness of marine environments and economies by increasing understanding of coastal and ocean systems;
- To promote sustainability issues governing ocean economy such as natural resource management, climate change impacts, food security and safety, renewable energy production among others; and
- To impart training to maritime personnel in the maritime sectors like navigation, marine engineering, port management, maritime commerce, maritime law, marine science, ship handling and inland water transportation.



India has been a major global supplier of marine personnel because of its competent, efficient and cost-effective approach. As a supplier of marine personnel, its niche has been in the area of global shipping industry. Government statistics indicates that India has supplied more than 80,000 seafarers to the global shipping industry.

At present, India has 130 public and private maritime training institutes, offering numerous pre-sea and post-sea training courses. There are seven maritime universities. The Sagarmala Project effectively supports skill development centers such as maritime institutes, which can produce skilled manpower to operate modern infrastructure. In this regard, several experimental projects are in the pipeline to promote maritime educational programmes in India (Table 11). Like several marine nations, India should have an Ocean Science University, catering for inter-disciplinary studies. Such an overarching institution can be linked directly with the Skill India initiative.

**Table 11:**

Recent and Upcoming Opportunities in India
<p>Four ongoing Projects related to <i>Maritime Education, Training and Skill Development</i> with total investment of Rs. 183.34 crore which includes the following projects:</p> <ul style="list-style-type: none"> <li>○ Development of Gujarat Maritime University</li> <li>○ Setting up Logistics and Maritime University at Kakinada, Andhra Pradesh</li> <li>○ Procurement of VTS Stimulator for Training Centre at Kolkata</li> <li>○ Capacity building of workers involved in ship recycling activities at Alang, Gujarat</li> </ul>

Source: [www.ipa.nic.in\\*/showing.cshhtml?ID=290](http://www.ipa.nic.in*/showing.cshhtml?ID=290)



**SECTION IV**

# A Global Perspective







## SECTION IV

# A Global Perspective

Since time immemorial, oceans' resources have been utilised by mankind for food, livelihood, transport and other purposes.

Deteriorating ecosystems of the earth pose a grave threat to the future well-being of all mankind, but for the Small Island Developing States (SIDS), it could be a matter of sheer survival. Genuinely concerned about their future, the SIDS have been strongly advocating the cause of sustainable usage of the earth's resources, especially the oceans. They were the first to articulate a coherent and convincing argument for the Blue Economy at the Rio+20 UN Conference on Sustainable Development (UNCSD) at Rio de Janeiro in June 2012.

At this conference, the world community agreed that these natural resources should be used sustainably to meet the goals of poverty eradication through sustained growth, enhanced social inclusion, and improved human welfare by creating decent work for all, while at the same time maintaining a healthy functioning of the earth's ecosystems. Though initially propounded by the SIDS, the merits of Blue Economy have been progressively embedded into the larger global agenda and approaches for development; as a result the UN five-year Agenda for Action 2012-16 has accorded high importance to the sustainable usage of the oceans and the seas.

## Emerging Global Governance

Governance and regulation of the economic exploitation of the oceans, especially beyond the national jurisdiction, is evolving fast. It calls for nations' active participation to defend their legitimate interests. As of now, the UNCLOS provides the basic legal framework for all activities in the oceans, covering delineation of maritime zones, resource exploitation, navigation, preservation of marine





environment, marine research, development and technology transfers as well as the rights and obligations of the States.

The UNCLOS is complemented by two implementing agreements: (a) the 1994 Agreement relating to the Implementation of Part XI of the Convention (which deals with exploration and exploitation of the ocean resources of the international seabed area), and (b) the 1995 Agreement relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (commonly referred to as the UN Fish Stock Agreement). These Agreements form an integral part of the Convention.

The Commission on the Limits of the Continental Shelf (CLCS) considers submissions by a coastal State where the continental shelf extends beyond 200 nautical miles and gives its recommendations with regard to the outer limits of the continental shelf that is proposed to be established by the coastal State.

The area beyond the outer limits of the continental shelf established by a coastal State on the basis of the recommendations of the CLCS is the international area and is considered as the “common heritage of mankind” and the activities therein are administered by the International Seabed Authority (ISA).

The International Maritime Organization (IMO) has its own very comprehensive regulatory framework for the shipping sector, ensuring the safety and security of maritime navigation as well as protection of marine environment.

Other important international and regional conventions which could apply to the development of Blue Economy include:

- a) Ramsar Convention on wetlands of international importance;
- b) Convention on Biological Diversity (CBD) for protecting ocean biotechnology;
- c) Nairobi Convention for protection and conservation of coastal environment of East African coast;
- d) MARPOL for prevention of pollution by ships;
- e) African Maritime Transport Charter on promoting regional cooperation and best practices in maritime transport;
- f) World Heritage Convention which also seeks to protect sites of human heritage on high seas; and
- g) International Whaling Commission (IWC) for controlling all kinds of whaling activities.

A process is underway to lay down binding instruments under the UNCLOS on conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction.



The World Trade Organisation (WTO) is also getting progressively involved in dealing with the question of fishing subsidies and environmental goods and services (EGS).

Decoupling environmental degradation from the developmental process is at the very heart of the Blue Economy. This fits well with India's own initiatives and priorities such as renewables and energy efficiency, Swachh Bharat, cleaning of rivers and promoting cleaner production and delivery mechanisms, which would eventually also guide various flag-ship programmes including Sagarmala, Smart Cities, Skill India and Make in India, with sustainability as an integral component. The essence of decoupling environmental degradation from development has also the potential to create employment in projects relating to new systems of waste treatment and recycling which will ensure that no pollutants find their way into our rivers and oceans.

## Criticality of Indian Ocean

Historically, Indian people, especially in the coastal regions, have been very active in maritime trade, cultural exchanges, and movement of people for generations. This led to the presence of an Indian Diaspora, cultural footprint and mutual familiarity across the Indian Ocean region. (It is home to nearly 40 per cent of the world population, spread over 40 littoral States.)

In addition to the significant economic contribution of fisheries, coastal tourism, ports and hydrocarbon extraction, nearly 90 per cent of India's trade, including energy products, travels through the Indian Ocean. The shifting of global economic engines to the region has enhanced the region's salience for Indian and global economic growth by way of large and growing markets, investments, regional hubs for energy, transport, tourism, education and healthcare. Regional growth and stability is also essential for the well-being of the large and widespread Indian Diaspora which makes immense contributions to the nation's economy.

Unfortunately, the region also suffers from disruptive forces of piracy, armed conflicts, organised crime and terrorism, posing a major challenge not only to the security of maritime trade routes but also to the mainland as brought to fore by the 26/11 Mumbai attack. Deteriorating ocean ecosystems and global warming can disrupt weather systems with adverse impacts on the monsoon and freshwater availability with increasing frequency of droughts and floods. Therefore, safety, security and conservation of marine ecosystems of the Indian Ocean are not a matter of choice, but an essential national security priority for India.

India has always sought greater cooperation in the Indian Ocean region and played a key role in setting up and strengthening the Indian Ocean Rim Association for Regional Cooperation (IOR-ARC), since re-named as the Indian Ocean Rim Association (IORA). It now brings together 21 member states, 7 dialogue partners and 2 observers. IORA has identified six priority areas for cooperation, namely maritime safety and security; trade and investment facilitation; fisheries management; disaster risk reduction; academic and scientific cooperation; and tourism and cultural exchanges, which are in line with India's priorities. The Indian Ocean region has also exhibited considerable dynamism with its global trade tripling since 2003, reaching US\$ 4.2 trillion in 2012. A significant achievement was the intra-regional trade growing from US\$ 302 billion to US\$ 1.2 trillion in the same period, a clear evidence of growing regional economic linkages.



## Prime Minister Modi's Indian Ocean Vision

India's holistic vision for the Indian Ocean region was articulated by Prime Minister Modi during his visit to Mauritius in March 2015. It has the following key objectives and elements:

1. Safeguarding our mainland and islands and defend our interests.
2. Deepening economic and security cooperation with our friends in the region, especially our maritime neighbours and island states.
3. Collective action and cooperation for peace and security in India's maritime region.
4. A more integrated and cooperative future that enhances the prospects for sustainable development for all.
5. Primary responsibility for security rests with IOR countries, while extra- regional countries would be engaged through dialogue, visits, exercises, capacity building and economic partnership.

PM Modi summarised his approach by stressing that India sought a future for the Indian Ocean that could live up to the name of SAGAR – Security And Growth for All in the Region. He also asserted that India was ready to work with all regional partners to create a prosperous, secure and developed Indian Ocean region.

## Actions Matching Promises

India has responded with a series of cooperative measures to secure the above goals. Some of the significant initiatives are:

- a) **Security Measures:** These include the trilateral security mechanism with Sri Lanka and Maldives; 35-nation Indian Ocean Naval Symposium (IONS); bilateral naval exercises with regional partners; supply of naval hardware, training, capacity building and maritime surveys for the Island States of Sri Lanka, Maldives, Mauritius and Seychelles, and readiness to provide similar support to others; active participation in anti-piracy operations resulting in risk reduction and lowering of insurance burden for maritime industries; and important contribution to disaster relief activities.
- b) **Development Partnerships:** Key contributions have been grants and credits of over US\$ 3 billion to Bangladesh; US\$ 2.7 billion to Sri Lanka; US\$ 1.75 billion to Myanmar; close to US\$ 1 billion to Mauritius; US\$ 128 million to Maldives; US\$ 60 million to Seychelles; announcement of a fresh LOC of US\$ 10 billion and grants of US\$ 600 million at the Third India-Africa Forum Summit (IAFS-III) in New Delhi in November, 2015, which were over and above the already committed LOC of US\$ 5 billion. (A substantial component of funds allocated to Africa would be used for states in the Indian Ocean region.)
- c) **Education and Cultural Cooperation:** At IAFS-III, PM Modi announced 50,000 scholarships for the next five years for higher education and capacity building. India has also set in motion an ambitious outreach programme for the large Indian Diaspora, through a range of initiatives



and programmes. Project Mausam aims to promote archaeological and historical research on cultural, commercial and religious interaction in the region.

## Priority Countries/Regions for Business Opportunities

The Task Force has adopted the following criteria for identifying regional partners:

- A. Availability of real business opportunities in keeping with demonstrated Indian capabilities;
- B. Existence of interest in the target countries for seeking partnerships with India;
- C. Past positive experience of Indian companies in the identified sectors and target partner markets; and
- D. Availability of financial support by way of concessional credits or grants.

### Bangladesh

Oceans and extensive inland waterways are an integral part of Bangladesh's economic development. The 7th five-year plan (2016-20) has underlined the importance of the Blue Economy in the overall socio-economic development, and has identified specific projects for sustainable growth in fisheries, especially improved aquaculture, mariculture, deep-sea fishing; renewable energy; maritime industry, including ship and boat building; eco-tourism; maintenance of inland waterways; and capacity building, including the setting up of a marine academy. All these priorities coupled with India's experience, proximity and availability of good credit and other financing tools should be viewed as important business opportunities. India also has a bilateral MoU with Bangladesh for promoting cooperation in ocean economy.

### Myanmar

As close maritime neighbours, India and Myanmar have immense scope for mutually beneficial cooperation through trade, investment flows, infrastructure linkages, and people-to-people exchanges. The Kaladan Multi Modal Transport Project was envisaged in this context. Its full operationalisation needs to be expedited. A blend of maritime security and strategic factors is significant in this relationship. During the visit to India of the President of Myanmar in August 2016, the two countries agreed that maritime security cooperation in the Bay of Bengal was "vital" for them.

### Sri Lanka

Sri Lanka's growth, development and security are intrinsically linked to safety of sea-lanes and the health of the Indian Ocean. With an EEZ of over half a million sq. km, which is likely to expand significantly if Sri Lanka's claim under submission is conceded, 1600 km-long coast line with good sites for deep water harbors, close proximity to one of the busiest East-West shipping route, FTAs with major regional markets including India and vulnerability to climate change, Sri Lanka has been paying close attention to developing Blue Economy opportunities. Conscious of the emerging opportunities and challenges, it has set up a National Ocean Affairs Committee under the Ministry



of Environment which functions directly under the President. Sri Lanka has identified a series of priorities for green development, embedding the blue aspect as its important component.

Given the strategic location of the island and its past experience, the aim is to convert Sri Lanka into an important hub not only for container traffic but also for healthcare, education, BPO sector, high-end manufacturing and financial services among others. Sri Lanka has been a major destination for coastal and cultural tourism, a sector that has huge growth potential. Sri Lanka also aims to expand its fishing capacity both for deep-sea operations and aquaculture. Other important areas are solar and offshore renewable energy, ocean biotechnology and mining. There are also preliminary indications of oil and gas deposits.

The above priorities could open significant business opportunities for port- building, expansion and maintenance, ship-building and repairs, supply and maintenance of fishing fleets, cleaner and renewable energy equipment and technology and developing tourism infrastructure. India is working closely with Sri Lanka in providing maritime security, critical to Sri Lankan vision for emerging as a regional hub. Because of Sri Lanka's geographical and cultural proximity to India, existing FTA, close business ties and mutual awareness, availability of concessional credits, India's business community can surely further expand its footprint. There is little doubt that India, as the next-door market, can play a significant role in Sri Lanka's economic growth and its overall security. (A majority of container trans-shipments through Colombo port are already driven by the Indian trade).

## **Maldives**

Amongst the smallest of the SIDS, Maldives has a special need for integrating sustainability at every stage of its socio-economic development. The ocean is at the heart of Maldivian life, affecting its every aspect. "Blue tourism" has traditionally been contributing around 30 per cent of GDP and a majority of middle income jobs. While tourism would continue to be a major priority for Maldives economy, the country is also trying to diversify by developing high-end healthcare, higher education, residential housing, renewable energy, trans-shipment port and a SEZ for a range of economic activities and value addition, especially in cleaner technology and manufacturing sectors. Two flagship projects, namely iHaven and UTH, which aim to develop an airport, a new harbour, bunkering facility, real estate, resorts under the SEZ scheme, should be of special interest to Indian investors. The government has also introduced several concessions and incentives for foreign investors, ensuring ease of doing business and security of investment. Given its proximity to India, Maldives should be an attractive business investment option for Indian business.

## **Mauritius**

Mauritius is one of the first states in the Indian Ocean region to have adopted a comprehensive Blue Economy policy framework and a developmental roadmap as an integral part of its economic vision. It has assessed that a substantial part of its future growth and employment will come from ocean-linked activities. Mauritius has included all traditional as well as emerging aspects of Blue Economy in its plan. The sectors of immediate importance are: port expansion and modernisation; hubs for petroleum bunkering and storage; fishing terminal and processing; coastal tourism; and nature-supported healthcare hub, and transport and communication infrastructure to link its



remote islands. These projects would involve investments running into billions of dollars. There is significant scope for Indian business participation, especially as some of these projects could be funded under the Indian government's grants and concessional credits.

## **Seychelles**

Given its vulnerability to environmental degradation, including global warming, Seychelles has been marshalling a comprehensive plan for promoting blue development as part of its long-term policy. It has set up a special department under the direct supervision of the President for follow-up action. Its Blue Economy plan covers all ocean-borne activities, but the immediate sectors for action would be tourism, renewable energy, port upgradation and remote island infrastructure development. Investors from the region, especially the Gulf States, are already working on some infrastructure initiatives. Indian business must position itself to take advantage of these opportunities. This endeavour could be favourably supported by financial assistance from the Government of India.

## **Malaysia**

With an EEZ of 600,000 sq. km, rich oil and gas reserves, 95 per cent of trade being sea-borne, strong agro-forestry sector and an ambitious tourism sector, Malaysia is an important candidate for significant future gains from developing Blue Economy. Oil, gas and energy contribute close to 20 per cent of the GDP. The country is home to seven major federal ports with two of them, namely Port Klang and Port Tanjung Pelepas, listed as 13th and 17th amongst the busiest container ports in the world with a combined volume of close to 18 million TEUs. Bintulu Port is counted as the world's largest export terminal for LNG, whereas Johor Port is world's No 1 port for handling palm oil.

Such high volumes of sea-borne trade, and the growing coastal tourism (over 36 million tourist arrivals predicted for 2020) make Malaysia an important location for expanding businesses in port operations and logistics, ship-building and repairs, tourism infrastructure, agro-forestry and food-processing industries.

Mutual familiarity of the business communities on both sides, our historic ethno-cultural ties and significant complementarities will provide real opportunities for Indian businesses to further expand their presence, especially with more sustainable approaches.

## **Thailand**

The ocean is integral to the economic growth, development and security of Thailand, be it food security, trade and related infrastructure or the all-important coastal tourism. With over 42,000 active fishing vessels and the export of sea-food exceeding 1.7 million tons (valued at over US\$ 6.7 billion), Thailand is an important global player in fisheries. This sector provides employment for close to 700,000 workers.

Thailand is amongst the top tourist destinations in the world and the sector makes a major contribution to the national income and employment.





An export and coastal tourism dependent economy demands an advanced port, shipping and marine transport system. Along its over 3200 km coastline, Thailand has eight major deep sea ports in addition to four private ports permitted to handle container cargo. Thailand is also working with the Myanmar side to develop a 250-million-ton capacity Dawei Special Economic Zone in Myanmar, with Japanese assistance. Full operationalisation of India-Myanmar-Thailand tri-lateral highway would directly connect these areas with India's northeast, providing an important additional dimension to future business ties amongst these three partners.

In spite of a substantial natural gas reserve in the Gulf of Thailand, the country remains dependent on external sources for its energy needs. Conscious of its dependence on good environment including healthy oceans, Thailand is attaching high importance to sustainable business practices under its philosophy of "Sufficiency Economy" which calls for reasonable growth without jeopardising the rights of future generations. The country, therefore, places high priority on promoting clean energy, green technologies and business practices.

Thailand offers substantial business opportunities in ports, tourism infrastructure, fisheries and processing and renewable energy, mainly wind.

## **Indonesia**

With the second longest coastline in the world and an EEZ of 2.7 million sq. km, Indonesia is a real giant in ocean economy possibilities. Indonesian leadership seeks to convert the country into a maritime nation with a three-pronged strategy for maritime security, connectivity and commerce, and conservation through better management. Development of the Blue Economy sectors in Indonesia offers significant business possibilities in such sectors as ports, where the country aims to develop 180 major and minor ports; shipbuilding, especially for maritime security, inter-island transport, and fishing; logistics, mainly cold warehouses and marine ICT; food processing; mini and micro hydro power plants of up to 100 MW capacity. Indian companies are already active and more could be achieved with a greater focus.

## **Africa**

With a maritime jurisdiction of 13 million sq. km, continental shelf of 6.5 million sq. km, 38 of 54 states being coastal, vast lakes, some of the greatest river systems and, above all, large proven hydrocarbon assets and some of the richest land-based mineral deposits, Africa is a potential goldmine for future economic activity and business gains. Except for a few oil, gas and mining operations by multinationals and illegal encroachments, the region is still a virgin field both for on-land and high-seas business.

India has a long history of multi-faceted cooperation and linkages with the continent and continues to be fully committed to forging win-win developmental partnerships with significant backing of credits and capacity building. Indian presence is already quite strong in many sectors, especially construction, transport, textiles, pharmaceutical, small machines, agriculture and trading. There are also important investments in the hydrocarbon sector. However, business cooperation is still far below the overall potential. This needs to change. This challenge drives India's policy approach and work at various bilateral, regional and plurilateral cooperation fora like IAFS, IORA, IBSA, and BRICS.



## Kenya

Recognising the growing importance of the ocean as an important source of future growth, Kenya set up in May 2016 a special State Department for Fisheries and Blue Economy under the Ministry of Agriculture, Livestock and Fisheries. Their top priorities for developing Blue Economy include: developing a policy and regulatory framework for converting Kenya into a center for agro-based Blue Economy for enhanced and sustainable productivity. As part of their awareness campaign, Kenya would organise a National Blue Week Conference and Exhibition in 2017. During PM Modi's visit to the country in July 2016, the two sides agreed to pursue initiatives in the sustainable management and extraction of ocean based resources, and this was reinforced at the official discussions during President Uhuru Kenyatta's visit to India in January 2017.

## Tanzania

The Tanzanian approach to Blue Economy is driven by threats of piracy in their neighbourhood. Dar es Salaam port serves as the maritime gateway for several landlocked neighbours, including Zambia, Burundi, Rwanda, Malawi, Uganda and Eastern Congo. Discovery of huge offshore natural gas deposits near the southern coast is also noteworthy. In the absence of indigenous capacities, Tanzania seeks foreign support in all these sectors. This certainly opens business opportunities for India, especially as the Tanzanians would also need credit support through the available Indian LOCs.

## Mozambique

The government of Mozambique has identified developing Blue Economy as one of the national priorities. Mozambique is emerging as one of the top investment destinations in Africa for energy and agro-forestry industries, which would also require massive investments in basic infrastructure and capacity building.

Mozambique's coal reserves are estimated at over 20 billion tons with an annual export potential of over 100 million tons. Known natural gas reserves are over 275 trillion cubic foot (tcf), with current production exceeding 150 bcf. Converting these reserves into accessible wealth would also require large-scale development of ports, roads, repair and maintenance facilities, institutional setup and related capacity building.

This rich natural resource base has attracted foreign investors in coal and natural gas sectors. In the coal sector, major players are British-Australian Rio Tinto and Brazilian Vale. Indian companies present are Jindal Group, TATA Group and International Coal Ventures Limited (ICVL) – a joint venture of SAIL, NTPC, Vizag Steel and Coal India. In the gas sector, major players are: Sasol of South Africa, Anadarko of the US; Mitsui of Japan; and National Petroleum Corporation of China. Italian, Portuguese, South Korean and Thai companies are also operating.

ONGC Videsh has acquired 20 per cent stake in area 1 of Rovuma gas block at a cost of US\$ 5 billion in 2014, adding to the already held stake of 10 per cent by Bharat Petro Resources Ltd in the same block. Indian companies are also involved in infrastructure projects and food processing. Mozambique is a major recipient of Indian concessional credits, which support projects for drinking



water, power generation and distribution, irrigation, IT applications, road rehabilitation, housing and agricultural productivity. (India has recently signed an MoU for production and procurement of lentils). India has extended Lines of Credits (LOCs) worth US\$ 140 million for various projects before 2010. In 2010, India offered another concessional Line of Credit of US\$ 500 million to Mozambique.

Mozambique offers real and substantial business opportunities in diverse sectors and the Indian business community must work on them.

## **South Africa**

To harness the Blue Economy, South Africa launched “Operation Phakisa” in 2014, identifying four key sectors for developing Blue Economy as new growth sources. These ocean-driven activities are: transport and manufacturing, offshore oil and gas, aquaculture, and protection and governance. The high importance of this initiative is evident from the fact that the office of the President works as a special purpose vehicle for implementation and coordination. The thrust activities include: developing new and more sustainable capacities for storage and warehousing, shipbuilding and repairs, rig repairs and modernization, boats, aquaculture linked fish processing and marketing, creation of enabling environment for boosting offshore gas and oil sector and addressing the legislative and skill gaps in a comprehensive manner. Operation Phakisa is a priority and its progress is monitored at the top level. Given Indian capacities in all the identified sectors, experience of working in South Africa and availability of concessional credits should open attractive opportunities for Indian business in ship and boat building, food processing, and training capacity building.





**SECTION V**

# Recommendations





## SECTION V

# Recommendations

After deep study, extensive deliberations and considerable reflection, the Task Force decided to offer a set of recommendations listed below.

### Macro Approach

1. The Earth's resources are limited, while the needs of humankind – and the world population itself – are on the rise. It is, therefore, imperative to plan on maximising the utilisation and harnessing of oceanic resources. However, this should be done in a thoughtful, essentially Gandhian manner, ensuring an optimal focus on sustainable development. In practice, this amounts to according equitable priority attention to three key elements, namely Growth, Employment and Protection of Environment. This tripod may be used as a broad yardstick, with each project judged for ensuring sustainability. For this purpose, a high priority may need to be given to ecological protection and economic democracy.
2. Another fundamental consideration should be to balance the requirement of optimisation of business potential with the needs and interests of local, particularly coastal, communities. It is only through a broader inclusion of all stakeholders – big, medium and small – that the long-term sustainability and viability of the proposed expansion of Blue Economy opportunities would be ensured.
3. The Government of India has begun to pay higher attention to the twin issues of security and development in the Indian Ocean region. PM Narendra Modi's multi-pronged strategy of SAGAR and integrated port-led development through the strategic Sagarmala Project are welcome steps towards bringing the "Blue Revolution" in India and its extended neighbourhood. It is suggested that focused action, implementation, monitoring and updated follow-up, together with projection of progress/outcome to the people at large, will be beneficial in achieving the goals set by the political leadership.

<sup>40</sup> For Mahatma Gandhi's approach on Trusteeship in the business domain, please see a recent interpretation offered by Rajni Bakshi in her research Paper entitled "Trusteeship: Business and the Economics of Well-Being": <http://www.gatewayhouse.in/trusteeship-business-and-the-economics-of-well-being/>





The above-mentioned fundamental guidelines should mould the future development of Blue Economy sectors in India and possibly in the extended neighbourhood.

## Desired Strategy

4. Considering the size, level, stakes and rich potential of the Blue Economy, the government or industry by itself cannot hope to achieve much. Hence, it is essential to adopt a holistic strategy anchored in Public Private Partnership (PPP). It should be designed to accelerate growth, while ensuring sustainable development.
5. The recommended strategy pre-supposes an identifiable mechanism of coordination of all Blue Economy-related planning and policy making in the Union government and state governments in the coastal states as well as in the national and relevant state-level apex chambers of business. A designated nodal ministry or agency at the Centre or Niti Aayog, together with the Ministry of External Affairs and FICCI, should take a sustained lead in this respect to promote and push the desirability of coordination in the future. The over-arching goal is to craft coordinated PPP Models for the development of the Blue Economy.
6. The lack of collaboration and coordination between the public and private sectors in the maritime domain needs to be addressed comprehensively. It is desirable to encourage ample mobilisation of inter-institutional linkages across the sectors and underline the need for reforms in order to fill in gaps in legislation and enforcement mechanisms.
7. The government and the private sector will need to make large-scale investments to harness the resources of the sea. Only then there will be marked increase in food from the seas, fisheries, aquaculture, shipping and port facilities, marine technology development and research as well as recovery of minerals, drugs and other assets from the sea bed.
8. India should demonstrate leadership in developing a normative framework for doing business and harnessing the ocean potential sustainably. This framework should
  - a) Ensure just and equitable environment for seizing the business opportunities in the Indian Ocean region.
  - b) Establish coordination between mature and emerging sectors. Since mature sectors (e.g. shipping, ports, maritime logistics etc.) have the experience of accounting for security challenges, they could provide valuable lessons to the new emerging sectors (e.g. minerals exploitation and renewable energy) in best accounting for security threats.
  - c) Include elements of national security, human security, marine safety and ecological integrity, both in planning and operations.



9. Both the national and international dimensions of Blue Economy are inextricably linked. This inter-linkage should be kept in view constantly. Two concrete steps which may be taken on a priority basis are:
  - a) An “Atlas of state-wise maritime spatial assets, capacities and planning” may be prepared by the relevant agency;
  - b) After a thorough study of how Blue Economy potential is being developed in the Indian Ocean region, a “Detailed Compendium of Best Practices” may be produced by the relevant agency.

Both documents will be of immense practical value as instruments in decision-making on the subject in the future.

10. Research and Information System for Developing Countries (RIS) identified the following 11 sectors constituting the Blue Economy: Fisheries, Marine Biotechnology, Minerals, Marine Renewable Energy, Marine Manufacturing, Shipping, Port and Maritime Logistics, Marine Tourism and Leisure, Marine Construction, Marine Commerce, Marine ICT and Education and Research. The Task Force believes that, in the coming years, India Inc needs to give priority to the following five sectors: Fisheries and Aquaculture; Seaport and Shipping (including port development); Tourism (including island development for tourism); Renewable Ocean Energy; and Mining (offshore hydrocarbons and seabed minerals). A detailed matrix on prioritisation of these sectors will be essential.
11. Indian authorities will need to take appropriate steps, including comprehensive legislations and administrative measures to exercise the sovereignty, sovereign rights and jurisdiction in the different maritime zones. There are limitations in national jurisdiction which should be clearly defined, especially with regard to the outer limits of the continental shelf.

## Resources beyond National Jurisdiction

12. A major challenge is to generate large-scale investments required to exploit the mineral resources, gas hydrates, and genetic resources. While several companies including the private sector are involved in the exploration and exploitation of these resources within the Exclusive Economic Zone, there is lack of coordination and dissemination of information and data mainly due to the proprietary nature of such data and information. Much of the data and information are available with the oil industry as well as with the government laboratories that are engaged in marine scientific research in these areas. Consortia of companies with safeguards to protect proprietary information may be considered.
13. In respect of resources beyond national jurisdiction (commonly, though not correctly, referred to as deep seabed resources), the current investors are either States or State-sponsored entities that have entered into contracts for exploration with the International Seabed Authority. Apart from large-scale investments involved, the technology and technical know-how is in the hands of a very few companies in USA, Europe and Japan. Private companies or corporations in these countries may be willing to collaborate on commercial terms and



conditions. It may be useful to explore such possibilities. (Current exploration contracts are in respect of polymetallic nodules, polymetallic sulphides and Cobalt-rich ferromanganese crusts.)<sup>41</sup>

14. India's contract for exploration in respect of polymetallic nodules in the central Indian Ocean Region is due for extension in 2017. While securing extension for a further period of five years, India needs to prepare for moving to the exploitation stage at the end of the five-year extension period (2017-2022).
15. In accordance with the scheme for exploration contracts, the International Seabed Authority holds large areas of reserved areas, with raw data and information submitted by the applicants for award of contracts. Indian companies may need to explore possibilities of collaborative arrangements for the development of reserved areas with multinational companies.
16. The international scenario indicates that interest in seabed mining activities is gaining momentum and a number of States and several private industries around the world are investing in the development of technology and technical skills. Partnership and collaborative ventures with some of these industries, especially with regard to lifting, extractive metallurgy, environmental impact assessment and restoration techniques should be considered seriously.
17. Apart from direct seabed related activities, other possible business opportunities are in the area of transportation of materials recovered from deep-seabed, port and storage facilities. Since India is the only country with a polymetallic nodules contract in the Central Indian Ocean and is expected to proceed to the exploitation stage, various logistics arrangements that may be required should be contemplated at the earliest, especially with South Africa, Mauritius and Seychelles.
18. Joint venture opportunities in the development of the reserved areas with the Enterprise<sup>42</sup> is another distinct possibility, as the Enterprise, when established, will be without capital and technical know-how. The only manner it can begin its function in an effective and competitive way is through joint venture operations. Planning for it needs to begin now. In short, action in anticipation is required.

## Trade and Investment

19. Measures to expand, enhance and deepen trade and investment linkages in the Indian Ocean region may be considered, as suggested below:
  - a) MSMEs: Considerable scope exists to strengthen MSMEs through improved market information and access, access to finance, fostering entrepreneurship and an enabling business environment regionally. Export competitiveness and innovation are key factors

<sup>41</sup> Six exploration contracts in respect of polymetallic nodules have been given an extension of further five years in 2016. These contractors are expected to be ready to proceed to exploitation stage at the end of the five-year extension period (2021).

<sup>42</sup> Six exploration contracts in respect of polymetallic nodules have been given an extension of further five years in 2016. These contractors are expected to be ready to proceed to exploitation stage at the end of the five-year extension period (2021).



for MSMEs to succeed. IORA member-states can create shared platforms for research and innovation.<sup>43</sup>

- b) Customising Technology: Assimilation of new and appropriate technologies by countries in the region will enable member-states to become increasingly competitive, strengthen regional integration and accelerate economic growth. Some IORA countries have developed successful SME clusters which could be shared with other members.
- c) Technology and Innovation: These are essential tools for harnessing the full possibilities of the Blue Economy. This objective may be secured, partially through our national endeavours and channels and partially through encouraging dialogue and cooperation between member-states and dialogue partners of IORA. Further, emphasis should be placed on revising and strengthening the relationship between universities/research institutions and industry.
- d) Legal and regulatory environment: It is desirable to bring coherence in the trade and investment regulatory environment. Efforts should be made to improve understanding and awareness about Blue Economy and urgency for regional collaboration. More joint customs posts in the region can improve the growth of trade in Blue Economy sectors.
- e) Skill and capacity building: The Indian government has launched 'Skill India' as a multi-skill development programme for job creation and entrepreneurship. Sector skill councils and vocational training institutes can initiate training programmes around promising sectors of the Blue Economy. India's private sector could take up skilling and capacity building programmes focusing on Blue Economy at the national and regional level.
- f) Women's economic empowerment: Empowerment of women and girls in the region is an important cross-cutting issue as they are important contributors to the economic and social development.
- g) As part of India's engagement with IORA, joint initiatives for empowerment and capacity-building of women, especially in the domain of entrepreneurship, may be taken. Vigorous efforts are also needed to integrate women into value chains and move them into higher value-added production and decision-making positions. More regional programmes are needed to ensure that women have greater access to financial services, credit and productive resources including land, which serves as collateral and provides the foundation for starting and growing businesses.
- h) Online business portal may be launched to connect Indian entrepreneurs, especially women, with their counterparts in IORA countries for building on business opportunities and skill sharing. The portal can be handed over to the IORA Secretariat once it becomes fully operational.

<sup>43</sup> Serious consideration may be given to the 10-point programme for region-wide cooperation, proposed by the President of India's Confederation of MSMEs at the panel discussion hosted by FICCI on 20 January 2017. Inter alia, it includes facilitating easier access to finance, integrating MSMEs with global value change, and developing common compliance mechanisms.



- i) India may create a knowledge network of stakeholders within the country that would stimulate innovative research on the needs of Blue Economy
- j) Financial assistance may be provided to foster fisheries stock and raise productivity of the poor fishermen in the coastal region. For furthering these twin objectives, incentives may be extended for maintenance of Marine Protected Areas, advancing fisheries research and development, and fisheries management and services, which can support sustainable fisheries and livelihood security of fishing communities.

## Valuable Inputs from Business and Other Sectors

20. Through detailed interactions with stakeholders in various parts of the country (viz. Kolkata, Mumbai and Chennai), the Task Force obtained a series of valuable inputs that deepened its study and research of the basic issues involved. India Inc believes that the Blue Economy has immense development potential and it could be an important contributor to economies of the countries bordering on seas. With this backdrop, the Task Force recommends the following suggestions received by it:
- i. Stakeholders in Kolkata expressed support for the need of trans-shipment ports in Kolkata in order to boost trade through the Eastern coast. This suggestion may be examined by relevant authorities.
  - ii. Mumbai should be viewed as the national hub for India's Blue Economy strategy, given its role as the country's commercial capital and its central location on the sea. Several entities situated in Mumbai (e.g. JNPT) can play a pivotal role in this context. Mumbai could play host to the National Conclave on Blue Economy, proposed below by the Task Force. However, Mumbai would need to engage the eastern, southern and western regions too.
  - iii. Designing and implementation of the Sagarmala Project should be closely studied and monitored by all stakeholders. India Inc needs to extend optimal support to this innovative programme. In particular, port development and connectivity to industrial zones and hinterlands (including cargo transportation through railways) should be developed steadily.
  - iv. Potential for marine tourism including eco-tourism, cruise tourism and maritime heritage tourism (especially in southern India), needs to be exploited fully by simplifying procedures and offering facilities and incentives to relevant entrepreneurs. Tourism in Lakshadweep, Andaman and Nicobar is also a low-hanging fruit that should be harnessed. Destinations in neighbouring countries such as Myanmar, Sri Lanka and Maldives may be covered in cruise tourism packages that could focus initially on Indian and later foreign tourists.
  - v. Concerning the fisheries sector, it emerged that a major and ambitious effort is required to improve hygiene, reduce waste, expand and modernise infrastructure. Strategic and long-term shift from fishing in coastal waters to deep-sea fishing should be a top priority. Ample injection of technology, financial resources, training, education and adoption of



best practices would be essential for this purpose. A comprehensive new strategy needs to be devised.

- vi. Stakeholders in Chennai suggested a thorough look at the day-to-day challenges in the fisheries sector, underlining the need for remedial measures. Besides, their reasoned appeal for introducing seaweed farming on a mass scale, marine fish farming and deep-sea water uses should also be heeded.
- vii. Aquaculture, an area of considerable expertise and proven results in India, deserves special consideration. Through application of new technologies (e.g. Genomics, Bio-informatics and GIS-backed satellite imagery etc.). This sector is in a position to increase production and also share its specialised facilities with other Indian Ocean countries.
- viii. Trade and project work form an integral part of business in the Indian Ocean region. Trade expansion needs to be ensured through a variety of measures: Indian companies should eschew unethical practices; a common certification standard for India-made machinery and equipment should be arranged in the region; Exim Bank should offer country-specific solutions and credit packages rather than following the “one size fits all” approach; direct shipping to key trade destinations should be set up; river transportation within India, particularly in the Northeast, should be improved; and a strategy for expansion of defence exports should be crafted.
- ix. Development of Smart Cities in India’s islands in Andaman and Nicobar was suggested. After deliberations on the pros and cons, an agreed view emerged that a couple of pilot projects may be considered in this regard.
- x. India should exert its leadership role in the IORA region by enhancing its skill development as well as education and research capability. This could be achieved by setting up a new University of Ocean Studies as well as leveraging excellent facilities available at various institutions in India.
- xi. Proposals to hold a National Conclave and an International Conference on Blue Economy also received broad support.
- xii. The government needs to develop a National Ocean Policy, after ample consultations with the coastal maritime states and other stakeholders. A specific policy framework for engagement with the Blue Economy should be crafted. With clear policies and incentives, desired actions by business may not take place. To motivate the business community, preferential trade mechanisms such as service tax exemption for select IORA countries could be considered.
- xiii. On the infrastructure side, measures are needed on two fronts: first, to create a critical multimodal transport infrastructure, and second, to create a complete IT bandwidth, both soft and hard, on the entire GIS mapping and telematics as well as a platform where available information can be shared and upgraded on a regular basis.





- xiv. The business sector will be unwilling to invest in green field projects of the Blue Economy until the government takes lead in making them relatively risk-free and business-friendly. In this context, the challenge of corruption and inefficiencies in our ports needs to be addressed squarely. A possible way could be to study and absorb the best practices, as applicable in Malaysia and Singapore.
  - xv. Blue Economy projects should be designed to adhere to climate change standards and guidelines suggested by the World Bank and other agencies.
  - xvi. It will be desirable to establish linkages between ocean-based and land-based industries and evolve a mechanism on how the Blue Economy would work in the overlapping areas. India should build skills in related sectors and then move to help other countries, especially the LDCs, on the Blue Economy opportunities.
  - xvii. Immense potential for international cooperation exists – and beckons. Enticing opportunities exist in fisheries, port, and tourism – particularly cruise tourism, inter-island transportation, bunkering and storage of petroleum. India can and should learn from other countries. The country has capabilities to provide services like shipping, hardware, service facilities, and intra-islands support for cargo and tourism. These should be further expanded and shared with our international partners.
  - xviii. In relation to the sectors and sub-sectors, identified in this document for harnessing future business opportunities, it was suggested that a Business Opportunities Matrix may be developed through subsequent dialogues. Several interlocutors also pointed to the need to prepare and undertake pilot projects in specific Blue Economy fields.
  - xix. It was also proposed that the Ministry of External Affairs should develop and promote the concept of “Blue Diplomacy” to boost the prospects of Blue Economy. In particular, its two constituents, namely Development Partnership Administration and the Indian Ocean Division, should be closely engaged with the follow-up phase of the strategy envisaged in this Knowledge Paper.
21. Inputs from civil society and think tank community reinforce the view that it would be important not to lose sight of measures that ensure the health of oceans, well-being of inhabitants on land, and the livelihood and welfare of coastal communities. The concept of integrated coastal development management and environmental sustainability of development should be embedded in our thinking. In short, the business potential and environmental sustainability of each Blue Economy project will need to be measured and balanced carefully.

## Advocacy

22. People and consumers will continue to demand greater environmental accountability from business. Blue Economy initiatives essentially respond to these needs, opportunities and challenges, and the Indian society and business must position themselves for reaping the benefits of this change rather than bearing the costs.



23. As the Blue Economy is a new frontier, it is essential to disseminate awareness by embedding this concept into the education and training system, especially at business schools and in economic diplomacy modules by the Foreign Service Institute and the Indian Institute of Foreign Trade.
24. It is desirable to sensitise Indian missions and other institutions abroad to closely monitor Blue Economy initiatives in other countries for identifying best practices as also opportunities for Indian business.
25. It will be necessary to generate a comprehensive matrix linking available capabilities with potential demands for identifying concrete business opportunities.

## IORA

26. IORA strongly encourages its member-states to strengthen networking, mutual exchange of experiences and best practices in regard to the development of Blue Economy in the region. India is in the best position to take lead, and it should do so on a sustained basis.
27. The Government of India may consider persuading IORA to accept the Blue Economy as the seventh "priority area."
28. IORA being a natural partner institution for us, India should accord much higher policy attention to it than before. A deeper synergy needs to be developed at the level of thinking, planning and forging cooperation activities in the future. More resources should be made available to the Secretariat.
29. Finally, India needs to develop a special institutional relationship with the Troika of IORA.<sup>44</sup>

## FICCI

30. The vital task to craft and consolidate consensus on future policy actions at the local, provincial, national and regional/international levels awaits us. Given its rising profile and critical role as the Secretariat for the IORA Business Forum, FICCI is ideally placed to continue serving as the ultimate catalyst. Its innovative initiative to arrange the stakeholders' consultations in three major metropolitan towns demonstrated the need for engaging regional business and industry players and pursuing their grievances, views and suggestions with the relevant state and central authorities in the future.
31. Hence, following up on the path-breaking decision to establish this Task Force, FICCI needs to take the process forward by convening a National Conclave on Blue Economy in 2017. This may be accompanied by a matching Business Exhibition. A serious endeavour may also be made to launch a new over-arching body – "Indian Forum on Blue Economy" composed of officials, experts, business and civil society leaders.

<sup>44</sup> The present Troika comprises Australia, Indonesia and South Africa.



32. Subject to deliberations and outcome of the National Conclave, FICCI may consider hosting an International Conference on Blue Economy in end-2017 or early 2018. Support of the Union government, especially the Ministry of External Affairs, will be of crucial importance for the proposed event. The Task Force recommends it strongly.
33. The proposed conference would facilitate dialogue in a Track 1.5 format (comprising business leaders, independent experts and officials) from select countries in India's extended neighbourhood. Representatives of the following 19 countries may be invited to it:
- South Asia: Bangladesh, India, Maldives and Sri Lanka;
  - Indian Ocean: Mauritius and Seychelles;
  - ASEAN: Indonesia, Malaysia, Singapore, Thailand and Vietnam;
  - Gulf: Iran, Oman and UAE;
  - Africa: Kenya, Mozambique, South Africa and Tanzania;
  - Australia





## SECTION VI

# Conclusion





## SECTION VI

# Conclusion

Several countries have been engaged in policy initiatives and action plans to promote the Blue Economy. Among the island states, Seychelles and Mauritius have been spearheading the discourse, while the European Union has developed a sophisticated framework for harnessing the oceans. Similarly, multilateral institutions such as APEC, EAS, SAARC and IORA have highlighted the growing importance of the Blue Economy in their policy statements.

India is poised to emerge as a major maritime and naval power. It has placed the Blue Economy high on its agenda for economic growth. The essential objective is to develop Blue Economy through a robust regulatory framework which contributes to sustainable use of existing natural resources. The Indian government encourages proactive and facilitative governance which supports job creation, encourages innovation, and provides opportunities for knowledge-based businesses in key maritime sectors, within the framework of the nation's pursuit of Sustainable Development Goals (SDGs).

In essence, a clear national vision and a road map for growth that ushers the "Blue Revolution" are now becoming visible. Sustainable development of the Blue Economy will be an integral part of the "Blue Revolution." Oceans need to be protected; only then they will bestow humankind with more gifts that are essential for its material progress in the future. India's strategy should be further refined and adopted through solid synergy among a variety of stakeholders – business, industry, academia, experts and civil society, with the government providing the over-all guidance, support and sustenance.

In conclusion, we – the Chair and Members of FICCI's Task Force on Blue Economy – earnestly hope that this seminal Knowledge Paper will trigger a mix of spirited public debate, appropriate policy action and crafting of a comprehensive strategy to leverage business opportunities, both existing and emerging. Therein lie immense benefits for the people of India and the Indian Ocean region.





## FICCI Task Force on Blue Economy

S. No	Name	Designation	Organisation
1	Amb. Rajiv Bhatia	Chair, FICCI Taskforce on Blue Economy Distinguished Fellow Former Ambassador	Gateway House
2	Dr. Jyotsna Suri	Past President, FICCI & Co-Chair (Industry)	CMD, Bharat Hotels
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## Brief Profiles of FICCI Task Force on Blue Economy



**Ambassador Rajiv Bhatia I.F.S. (Retd)** is Chair of FICCI Task Force on Blue Economy. He served in or dealt with India's relations (from the Ministry of External Affairs) with a total of seven Indian Ocean countries, including as Ambassador/High Commissioner to Myanmar, Kenya and South Africa. He is Distinguished Fellow, Foreign Policy Studies Programme at Gateway House. As Director General of the Indian Council of World Affairs (ICWA) from 2012-15, he played a key role in strengthening India's Track-II research and outreach activities, especially relating to oceanic affairs. He was Senior Visiting Research Fellow during 2011-13 at the Institute of Southeast Asian Studies (ISEAS), Singapore. He is a prolific columnist and is frequently invited to deliver lectures on foreign policy issues. A former university college lecturer, he holds a Masters degree in political science from Allahabad University. His book *India-Myanmar Relations: Changing contours* (Routledge) has received critical acclaim in India and abroad.



**Dr Jyotsna Suri**, CMD of Bharat Hotels Limited, is the driving force behind the Group's operations. A multifaceted personality, Dr Suri is known for promoting Indian tourism globally. Her initiative 'Developing destinations and not just Hotels', to popularize destinations and boost tourism has inspired her to organise annual events in places like Drass, Leh, Srinagar, Khajuraho, Chitrakoot & Bekal in India. Her social initiative 'Project Disha' assists school students and local youth get access to "quality education with focus on skill development, leading to employment." After successfully establishing 'The Lalit' brand in India, Dr Suri decided to take the brand overseas, and the 70-room boutique hotel The LaLiT London opened with a bang. Dr Suri holds various portfolios with Industry Associations such as Past President of FICCI, Chairperson of FICCI Tourism Committee, only Indian woman member on the International Executive Committee of WTTC. Dr Suri has been a recipient of several prestigious awards and recognition for her contribution to tourism,





**Mr. Shoummo K. Acharya** is the Founder, Managing Director and CEO of eTrans Solutions Private Limited and is an acknowledged telematics pioneer with an in-depth knowledge and expertise in the field of surface transport, containerized cargo movement and logistic support and related systems and services. A Chemical Engineer from Jadavpur University, Shoummo started his career with Indo-Burma Petroleum as Sales Manager and then moved on to Balmer Lawrie & Co Limited. He was responsible for setting up Balmer Lawrie U.K., looking after tea trading and international container leasing. In 1994, Shoummo joined Indian Container Leasing Co. Ltd. (rechristened Transafe Services Private Ltd.) as its Managing Director. Shoummo is a charter member of TIE and past President of the Kolkata chapter. He was a member of the Working Group of the Planning Commission of India, set up to consider issues relating to logistics in the 11th Plan.



**Prof V N Attri** is Chair, Indian Ocean Studies (CIOS), Indian Ocean Rim Association (IORA), UOM, Mauritius. His policy briefs have been published in United Nations Global Sustainable Development Reports (2015, 2016). He is former ICSSR Senior Fellow, Government of India, New Delhi. He participated in the 2nd Blue Economy Summit, "One Ocean, One Future," in January 19, 2016, UAE. Visiting scholar at University of California, and Visitor at the George Washington University. He is a lead editor in with the Human Sciences Research Council (HSRC), on the Blue Economy book. The CIOS has initiated the quarterly Online Journal of Indian Ocean Rim Studies (JIORS). He is on the editorial board of many international journals. He is engaged in creating a network of scholars among IORA Member States and Dialogue Partners on the Blue Economy. Participated in IORA's Core Group Meetings and First Ministerial Conference on the Blue Economy.





**Ms. Rajni Bakshi** is the Gandhi Peace Fellow at Gateway House and author. She published a Research paper in October 2012 titled "Civilizational Gandhi." She is the author of *Bazaars, Conversations and Freedom: for a market culture beyond greed and fear* (Penguin, 2009) (won two Vodafone-Crossword Awards), *Bapu Kuti: Journeys in Rediscovery of Gandhi* (Penguin, 1998), *Long Haul: the Bombay Textile Workers Strike 1982-83* (1986), *A Warning and an Opportunity: the Dispute over Swami Vivekananda's Legacy* (1994), *LET'S Make it Happen: a backgrounder on New Economics* (2003) and *An Economics for Well-Being* (2007). Rajni serves on the Boards of Child Rights and You (CRY) and Citizens for Peace. She is also an Executive Committee member of the Gandhi Smriti and Darshan Samiti, an autonomous body under the Ministry of Culture and a long term associate of Centre of Education and Documentation. She has a BA from George Washington University and an MA from the University of Rajasthan.



**Ms. Ruchita Beri** is a Senior Research Associate and Coordinator, Africa, Latin America, Caribbean and United Nations Centre at Institute for Defence Studies and Analyses (IDSA), New Delhi, specialising in political and security issues of Sub-Saharan Africa. She is currently the Vice President of the African Studies Association of India, a member of the Africa Committee of the Confederation of Indian Industry (CII) and serves on the Executive Board of the Forum for Indian Development Cooperation (FIDC). She is also on the Editorial Board of *Austral: Brazilian Journal of Strategy & International Relations*. She has edited several books including *Africa and Energy Security* (2009), *India and Africa: Enhancing Mutual Engagement* (2013) *India and Africa: Common Security Challenges for the Next Decade* (2016) and has contributed journal articles and book chapters to over 80 publications. She has an M.Phil in African Studies from Jawaharlal Nehru University, New Delhi and a diploma on Conflict Studies from the Department of Peace and Conflict Research, Uppsala University, Sweden.





**Mr. Saibal De** is the Whole Time Director and Chief Executive at IL & FS Maritime Infrastructure Company Limited (IMICL). Mr De has more than 35 years of work experience spread across sectors and he has been specifically associated with the infrastructure sector for more than last 20 years, including maritime, logistics, urban infrastructure, industrial parks, SEZs etc. He has been responsible for the conceptualisation, structuring, implementation and delivery of many PPP projects across multiple sectors while working in partnership with the various State Governments. His current responsibilities for last seven years are in maritime and related infrastructure. Mr. De has B. Tech (Chemical) from IIT, Kharagpur and has also done short courses on Project Management and Infrastructure Finance and Project Development from IIM.



**Professor Saroj Kumar Mohanty**, Ph.D is serving at the Research and Information System for Developing Countries (RIS), a New Delhi based think-tank, supported by the Ministry of External Affairs, Government of India. As an economist, he has researched extensively on issues concerning Blue Economy and Indian Ocean Rim Association (IORA). He has been working on issues relating to bilateral and regional trading arrangements, South-South cooperation and multilateral trading issues. His current research interests are in areas like Asian economic integration, Mega-regionals, Africa, RCEP, SAARC, COMESA, bilateral trade agreements, regional fisheries trade, global value chain, etc among others. He has published several papers in both national and international journals. He has several books to his credit. He is heading India's Focal Point for the IORA Academic Group. He also served the Chairperson of the Academic Group of the Indian Ocean Rim Association (IORA) for 2011-12 and 2012-13.







**Ambassador Anup Mudgal**, IFS (Retd), is a former High Commissioner to Mauritius. During three spells at the Ministry of External Affairs in New Delhi, he dealt with India's neighborhood; ASEAN region; Russian Federation and some other countries of East Europe; HR issues; Estate matters. His assignments abroad mainly covered the EU and some of its leading member states (Germany, Belgium, Austria); Latin America, including NAFTA matters; Multilateral bodies such as IAEA, UNIDO, UNODC, UN OOSA, UNCITRAL. As High Commissioner in Mauritius, he worked closely on IOR issues, including defense/maritime security and Blue Economy. His domain specialisation includes maritime security/defense: ocean economy; project management; trade policy and market access; capacity building and human resource management; skill development; technology transfer/adaptation/applications. During his innings in Mauritius, a predominant Indian Diaspora country, Amb Mudgal handled several core issues affecting the so-called Girmitya societies. He holds M.Sc and M.Phil degrees from Delhi University.



**Cdr. Dipak Naik** is the President of Maharashtra Economic Development Council and Naik Environment Research Institute Ltd. He served the Air Arm of Indian Navy and flew for maritime reconnaissance and in Air-craft carrier based aircraft from 1971 to 1994. He served several ships in various capacities and was in command of Coast Guard Ship Vajra on deputation. He was the On Scene Commander (OSC) of the task force that mopped up the largest oil slick in Bombay High in 1993. He was the Naval Commander (INCOM) of Operation CACTUS which captured the coup leaders and mercenaries and restored the lawful government in Maldives in November 1988. After voluntary retirement in 1994 he is working on environmental impacts of development projects. He is an alumnus of the Defense Services Staff College and was an Air Navigation Instructor in Navy and in Air Force. His education qualification is M.Sc., P. Sc., Q.N.I.







**Shailesh Pathak** is the Chief Executive Officer of CityInfra Capital. He has over three decades of experience shared evenly between the private sector and Government of India's top civil service, the IAS. He has worked in private equity investing and fundraising, investment banking, project finance for Infrastructure and city projects, and smart cities and urban issues. His government roles included heading departments for public works and industrial development, among others. In his current role as CEO, CityInfra Capital, his focus is financing and execution of infrastructure and urban projects in South Asia and Africa. He is a member of B20 Germany 2017 and B20 China 2016. He was Chair of BRICS Business Council's Infrastructure working group in India. He is on national committees of India's leading business chambers on Infrastructure, Capital Markets, Urban Development and Anti-corruption. Mr. Pathak is President, Chevening Alumni India, and served as President, Eisenhower Fellowships India 2012-15.



**Mr. H. P. Rajan** retired from the UN where he served as Deputy Director, Division for Ocean Affairs and the Law of the Sea (DOALOS), Office of Legal Affairs, and Secretary of the Commission on the Limits of the Continental shelf, and Secretary of the Meetings of the States Parties to the UN Convention on the Law of the Sea, until 31 December 2011. He was one of the UNITAR-IPA Fellow on Conflict Resolution and Preventive Diplomacy, in 2007. Mr. Rajan served in the Government of India as Director (Antarctica) and later as Adviser in the then Department of Ocean Development. He has served as Assistant Professor of International Law at Jawaharlal Nehru University, Legal Adviser to the Republic of Maldives, Special Assistant to the Secretary General and Chief, Office of Administration and Management, International Seabed Authority. He was also one of the first elected Members of the Legal and Technical Commission. "Post retirement from the United Nations, he also served as Legal Adviser for Law of the Sea, at the Asian African Legal Consultative Organisation". Post retirement from the United Nations, he also served as Legal Adviser for Law of the Sea, at the Asian African Legal Consultative Organisation.





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## **The Federation of Indian Chambers of Commerce and Industry (FICCI)**

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