

TOWARDS BLUE ECONOMY: A PATHWAY FOR SUSTAINABLE GROWTH

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To me, the Blue Chakra or wheel in India's national flag represents the potential of the "Blue Revolution", or the "Ocean Economy". That is how central the ocean economy is to us.

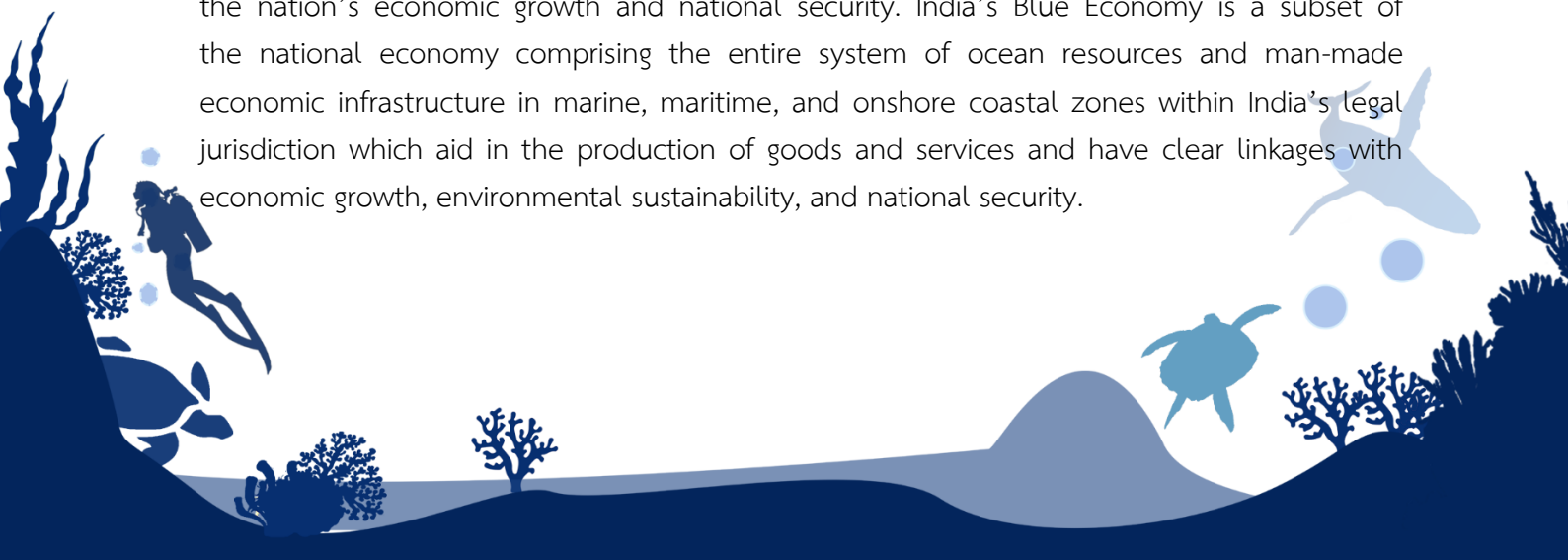
- Shri Narendra Modi, Prime Minister of India

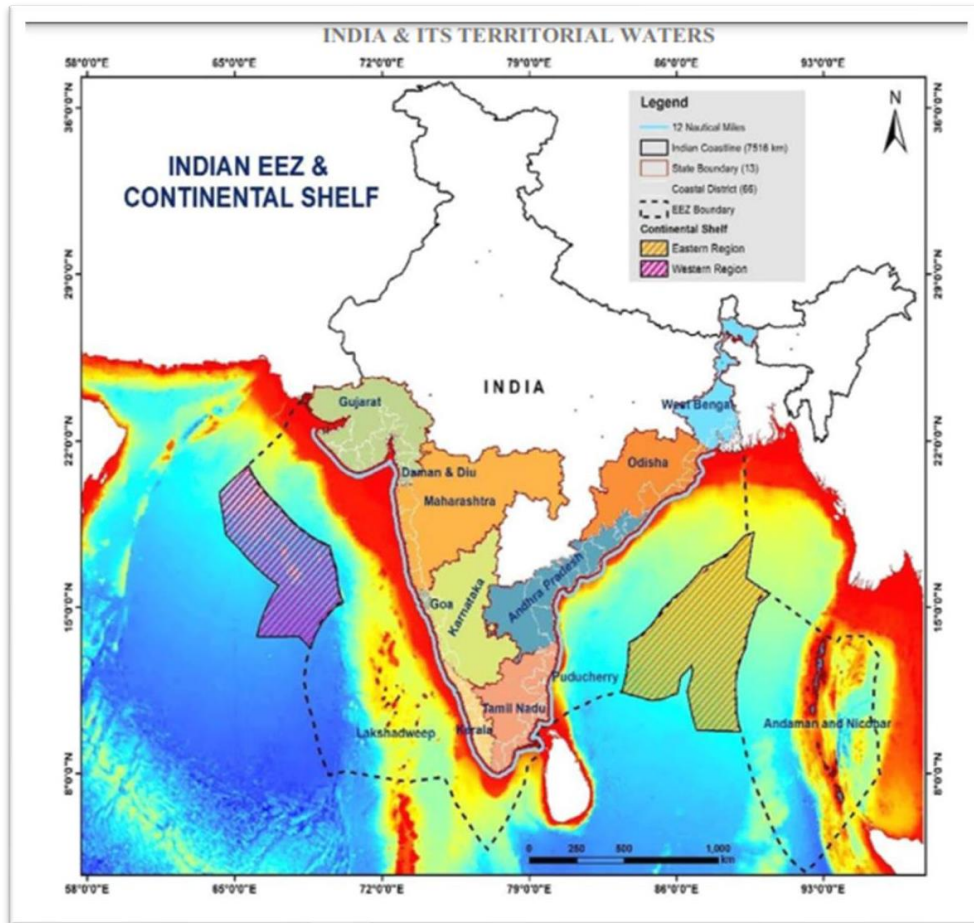
INTRODUCTION

Oceans cover 72% of the surface of our blue planet and provide a substantial portion of the global population with food and livelihood. Oceans are a storehouse of living and non-living resources and have features at the seabed that have not been explored. The oceans play a key role in the air we breathe, and the water we drink while also modulating the daily weather and climate patterns. Our present knowledge of the oceans is mostly confined to shallow waters. The global security issues involved with oceans dictate exploration of deep sea that needs specialized modern technology, which is not commercially available at present.

India has a unique maritime position. Its 7,517 km long coastline is home to nine coastal states and 1,382 islands. The country has 12 major ports and 187 non-major ports which handled about 633.87 million tons of cargo in the year 2019. Ninety-five percent of India's trade by volume transits by sea. India's Exclusive Economic Zone of over two million square kilometers is rich in living and non-living resources and holds significant recoverable resources of crude oil and recoverable natural gas. It can potentially enhance value addition in coastal manufacturing and services, trade, shipping, deep sea minerals, aquaculture and fisheries, and marine-related technologies. The coastal economy also sustains over 40 lakhs fishermen and other significant populations of coastal communities.

These vast maritime interests of India, therefore, have a vital relationship with the nation's economic growth and national security. India's Blue Economy is a subset of the national economy comprising the entire system of ocean resources and man-made economic infrastructure in marine, maritime, and onshore coastal zones within India's legal jurisdiction which aid in the production of goods and services and have clear linkages with economic growth, environmental sustainability, and national security.

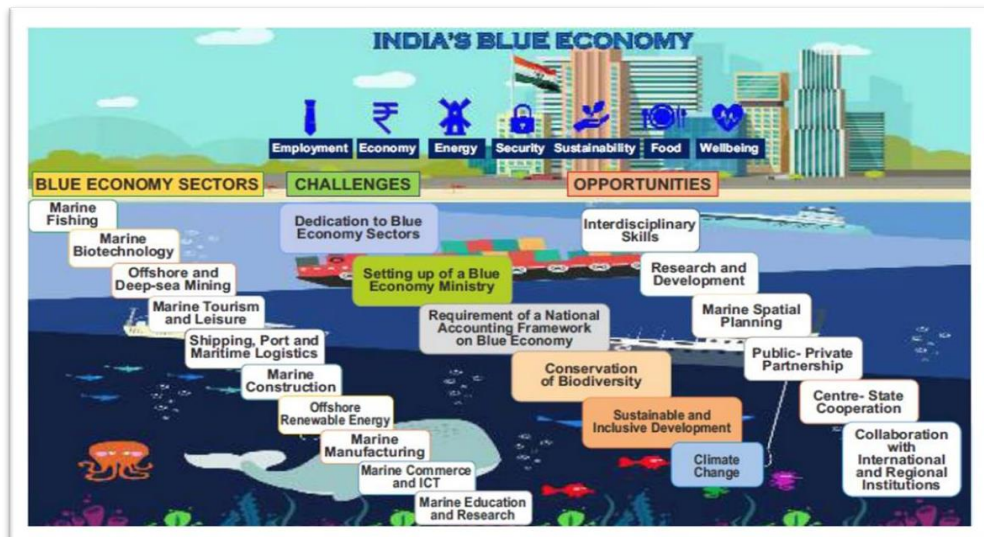




BLUE ECONOMY CONCEPT

The economic philosophy of the blue economy was first introduced in 1994 by Professor Gunter Pauli at the United Nations University (UNU) to reflect the needs of future growth and prosperity, along with the threats posed by global warming. The concept was based on developing more sustainable models of development including concepts of engineering based on “no waste and no emissions”. After the Third Earth Summit Conference—Rio+20 in 2012, the blue economy assumed greater importance. The concept of blue economy received more thrust when the United Nations’ Sustainable Development Goal 14 sought to “conserve and sustainably use the oceans, seas and marine resources for sustainable development” as a guiding principle for global governance and use of ocean resources.

While there are traditional ocean activities, such as fisheries, tourism, and maritime transport, the blue economy entails emerging industries including renewable energy, aquaculture, seabed extractive activities, and marine biotechnology. The blue economy also attempts to embrace ocean ecosystem services, such as carbon sequestration, coastal protection, and waste disposal. The blue economy is indispensable for addressing many of the global challenges, such as food security, climate change, provision of energy, water, new medicines, oil, gas, minerals, and other natural resources.













Historically, two instances illustrated the emergence of the Blue Economy in India even before its conception. First, India was among the first in the world to create a Department of Ocean Development in 1981, now the Ministry of Earth Sciences (MoES). Based on the experience of more than three decades, India today has come a long way with the launch of new programmes such as “Deep Ocean Mission”, “Oceanography from space” and “Launching of the data buoys” along the Indian coastline. These initiatives have enabled satellites to transmit data on various oceanographic features including weather for scientific analysis. Second, Nili Kranti started by Hiralal Chaudhuri and Dr. Arun Krishna and launched during the 7th Five Year Plan (1985-1990) during the sponsorship of the Fish Farmers Development Agency (FFDA) by the Central Government of India refers to the time of intense growth of the worldwide aquaculture industry from the mid-1960s to the present day. Since then, the aquaculture industry has been growing at an average rate of 9% a year and India is one of the fastest growers.

In the Indian context, Blue Economy is the sustainable development of aquatic and marine-based economic activities that leads to economic growth and social equity, while preserving and restoring the nation’s environmental health. The relevance of keywords in the definition is appended below:

- Sustainable – Earth’s resources should be preserved for future generations.
- Development – Must lead to the economic wellbeing of people.
- Aquatic – Freshwater activities.
- Marine – Sea water activities.
- Equity – Socially inclusive growth.
- Preservation – Preserving the current resources.
- Restoration – the state of the environment before the uncontrolled exploitation took place needs to be restored.

COMPONENTS OF BLUE ECONOMY IN INDIA

<p>Fisheries</p>  <ul style="list-style-type: none"> • Fishery • Aquaculture • Seafood Processing • Mariculture 	<p>Marine Biotechnology</p>  <ul style="list-style-type: none"> • Pharmaceutical • Seaweed Harvesting • Marine Bio-Products and Nutritional Supplements 	<p>Marine Tourism</p>  <ul style="list-style-type: none"> • Water Activities • Coastal Tourism • Cruise Tourism • Beach Tourism 	<p>Marine Renewable Energy</p>  <ul style="list-style-type: none"> • Offshore Solar Energy • Offshore Wind Energy • Tidal Energy • Ocean Thermal Energy 	<p>Shipping, Port and Logistics</p>  <ul style="list-style-type: none"> • Shipbuilding and repairing • Port development • Cargo management • Maritime Logistics
<p>Marine Construction</p>  <ul style="list-style-type: none"> • Marine construction & dredging • Underwater works including cabling • Construction of ports and offshore bridges 	<p>Marine Manufacturing</p>  <ul style="list-style-type: none"> • Boat Manufacturing • Sail Making • Fishing Vessels, Cargo Vessels • Submarines, Yachts, etc. 	<p>Offshore and Deep-sea Mining</p>  <ul style="list-style-type: none"> • Oil and Gas • Rare Earth Metals • Hydrocarbon • Precious substances like gold, diamond 	<p>Marine Commerce and ICT</p>  <ul style="list-style-type: none"> • Marine Legal Services and Insurance • ICT Solutions • Marine Engineering • Financial Services 	<p>Marine Education and Research</p>  <ul style="list-style-type: none"> • Training in navigation, marine engineering, port management, maritime law, marine science, ship handling

FISHERIES

Fisheries sector is one of the main resources of the Indian Ocean which provides food to hundreds of millions of people and contributes to the livelihoods of coastal communities. It plays an important role in ensuring food security, poverty alleviation, and also has a huge potential for business opportunities. Global fish production is estimated to have reached about 179 million tons in 2018 with a total value estimated at \$401 billion, of which 82 million tons valued at \$250 billion came from aquaculture production. Aquaculture accounts for 46% of the total production and 52% of fish for human consumption.

India's total fish production during 2016–17 was estimated at about 11.41 million metric tons. This constituted around 6% of global production. The fisheries sector contributed approximately 1% of the National GDP and more than 4% of the agricultural GDP. The marine fisheries sector of India contributed 3.6 million tons in 2016 making the country the sixth largest contributor to global marine capture fisheries production. In the inland waters capture production, India stands at second position with 1.70 million tons and 14% of global production. Marine fish production in India so far has been heavily dependent on capture fishing constituted by about 1200 fish and shellfish species. However, production from capture alone is insufficient to meet the growing demand for seafood in the country.

Estimates indicate that by the year 2030, India's annual demand for fish will be about 18 million metric tons. Currently, we produce about 11 million metric tons annually. Therefore, 7 million metric tons is required. This calls for careful strategizing and a strong action plan involving all stakeholders. The marine capture fisheries sector will not be able to contribute very significantly given the limitations and the plateauing-off seen in the sector. Modest enhancements are likely from the deep-sea resources and the land-based fisheries and aquaculture systems. We need to aim at an increase in production in the range of 4 to 5 million metric tons annually from mariculture by 2030 if we are to meet the requirements.

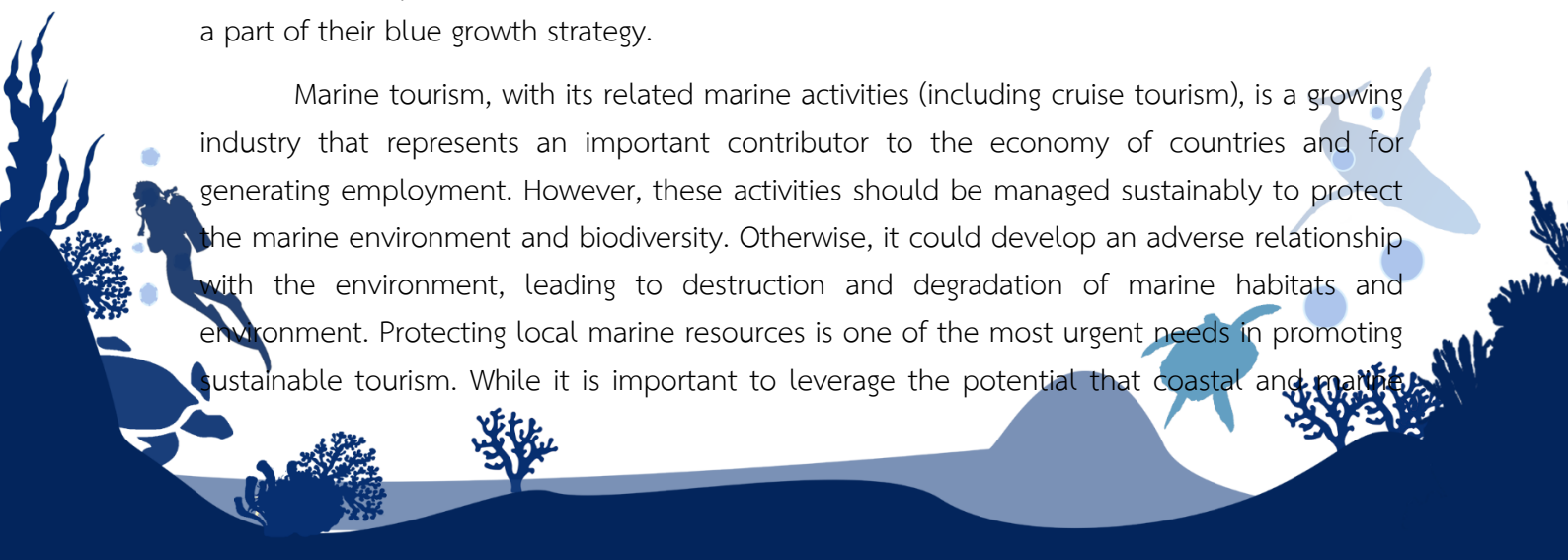
Mariculture is a subset of aquaculture and is the farming of marine organisms in salt water for food and other products such as pharmaceuticals and jewelry items like pearls. This is an important emerging subsector of the blue economy. Marine aquaculture is almost non-existing in India and the National Fisheries Development Board is currently exploring opportunities for marine cage culture in India. With the development of captive breeding and mass production technologies for high-value marine fish species, mariculture through cage farming is being established all along the coastal waters of maritime.

One of the approaches to intensify capture fish production is exploitation of deep-sea resources, which is yet to be tapped fully. India has an estimated harvestable potential of 3.3 million metric tons in deep sea areas at depths between 200 and 2000 mts in both EEZs and in Areas beyond National Jurisdiction (ABNJ). There are increasing cases of fishing in the high/deep seas in the most productive fishing areas of the world including the Indian Ocean. Genetic and biotechnological interventions offer huge potential for tapping the rich resources of ocean and meeting the Sustainable Development Goals towards realization of a blue economy in India.

MARINE TOURISM

Tourism has emerged as an important sector of the Indian economy. The total GDP contribution of Travel & Tourism was \$247 billion or 9.2% of GDP in 2018 growing at the rate of 6.7%, which is more than the global average of 3.9%. The coastal and marine tourism sector is poised to grow, expand, and diversify faster and can contribute substantially to the development of the country in the years to come. The European Union is the best example of such development where coastal and maritime tourism sectors have been identified as a part of their blue growth strategy.

Marine tourism, with its related marine activities (including cruise tourism), is a growing industry that represents an important contributor to the economy of countries and for generating employment. However, these activities should be managed sustainably to protect the marine environment and biodiversity. Otherwise, it could develop an adverse relationship with the environment, leading to destruction and degradation of marine habitats and environment. Protecting local marine resources is one of the most urgent needs in promoting sustainable tourism. While it is important to leverage the potential that coastal and marine



resources hold for tourism, at the same time various challenges that would eventuate in course of development should be negotiated. Specific to islands, these concerns are even more concerning.

In India, it is necessary to promote beach benchmarking standards using eco-labeling, sustainability procedures, and waste management systems. In accordance with the Blue Flag Standards, the Ministry of Environment, Forest and Climate Change (MoEFCC) has already rolled out 'Blue Flag Certification' in 13 nominated pilot beaches across coastal States in India. The certification scheme aims to improve beach clean-up and sustainable development to attract more tourists and make beaches pollution-free. All coastal States are now strategizing to develop and promote water sports, beach sports, and other marine tourism opportunities. The potential of cruise tourism, marine tourism, and lighthouses has been acknowledged and plans are being developed in India.

MARINE MANUFACTURING AND EMERGING INDUSTRIES, MARINE SERVICES

Marine manufacturing is a relatively untapped field of the blue economy. It covers a range of activities, such as shipbuilding, development of marine compounds and drugs, manufacturing of equipment and instrumentation, exploration materials for deep-sea mining, net making, boat making, and fish processing and aquaculture tools. Among services sectors, ship repair, marine finance, and insurance, coastal tourism and port services can unleash huge potential for investments and job-creation under an integrated policy to develop and harness the potential of the blue economy. The regulations to enhance ease of doing business (EODB) and the flow of private investment while applying time-tested paradigms of public-private-partnerships should be also geared to blue economy investments. With a fast pick-up in awareness about business and investment opportunities in the country, there would be demand for loans and other financial services for marine and other related sectors. A strong and deep market for supporting and satisfying the demand for finance and financial services is the need of the hour.

PORTS INFRASTRUCTURE, SHIPPING SERVICES, SHIPBUILDING

The seaport and maritime transport sectors are one of the important priority sectors under the blue economy, in which many countries are showing greater interest. India sits astride busy International Shipping Lanes (ISLs), through which, more than 120,000 ships and craft transit annually. Globally, there has been an increase in cargo movement around the world. Seaborne trade volumes grew by 4.4% in 2018 showing an upward trend. Considering the fact that 95% of the country's trade by volume (70% in terms of value) transits by sea puts the Indian maritime sector in an advantageous position. India is a potential destination for shipping and trans-shipment in the future. The shipbuilding industry in India is however currently on a decline. It needs investment in financial capital, physical capital, natural capital, and human capital to harness the potential of the blue economy. Currently, there are 28 shipyards in the country—six under Central Public Sector, two under State Governments, and 19 under



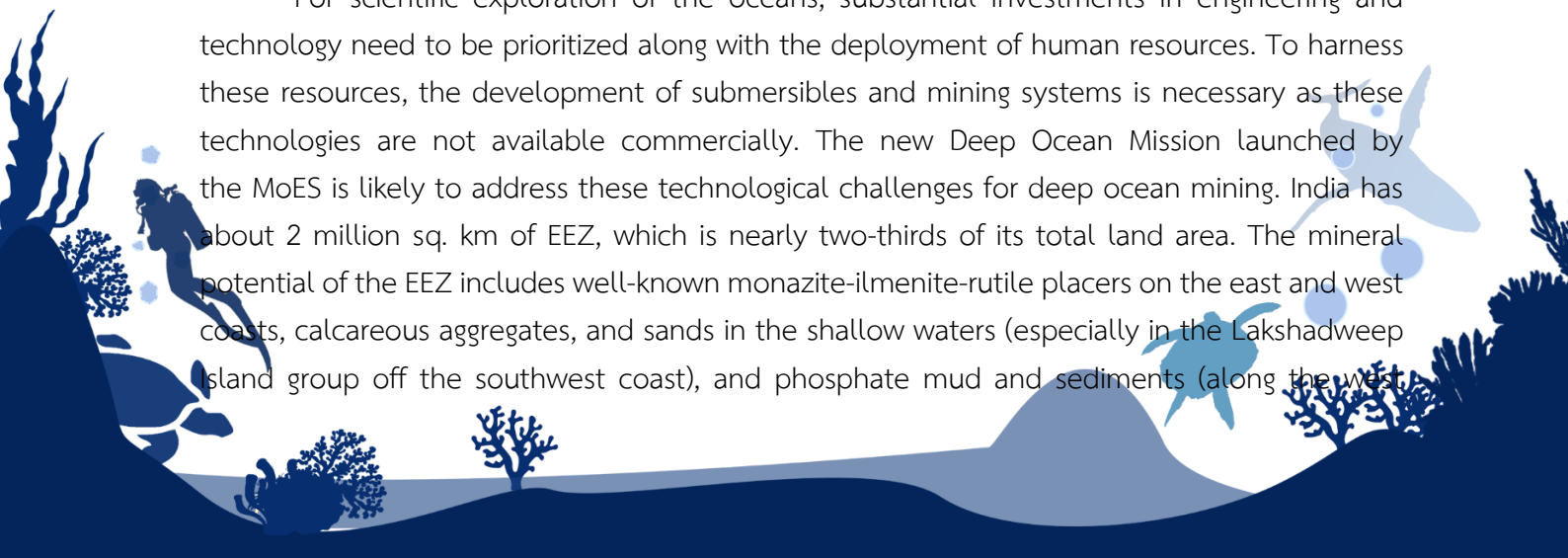
Private Sector. The industry is further facing a lot of competition from international shipbuilding yards located in Japan, South Korea, and China. The size of the Indian fleet is very small. As a result, the current availability of ships is poor. In order to increase the availability of the ships, the Indian Government has recently relaxed rules to enabling them to carry certain types of cargo without obtaining license.

With India's strategic location in the Indian Ocean, an efficient well-gearred ship repair facility closer to the international shipping routes can attract foreign ships and vessel calling on the Indian ports as well as those passing through the vicinity of the Indian waters. For global competitiveness, there is a need for creating competition among ports and building in port specialization. The performance of Indian ports on most parameters has been low. However, with a renewed focus on port infrastructure development and EODB measures, ships calling at Indian ports are turning around faster and benefiting from higher berth productivity.

EXPLORATION OF OCEAN ENERGY AND DEEP-SEA MINERALS

India has taken a great initiative on Renewable sources of energy (solar and wind) and fossils fuels sectors. However, there is a potential of renewable energy that can be derived from the ocean. The ocean offers vast potential for renewable 'blue energy' from wind, wave, tidal, thermal, and biomass sources. There is a huge potential for offshore winds off the coasts of Gujarat and South Tamil Nadu. The Government of India through the Ministry of New and Renewable Energy (MNRE) has taken an initiative to tap clean energy from offshore winds. In addition, there are mineral deposits, such as PMN and hydrothermal sulphides, over the seabeds. By virtue of sustained exploratory activities and investments in the Indian Ocean, India was accorded the pioneer status on deep sea mining of polymetallic nodules/polymetallic sulphide (PMS) in an area of 75,000 sq. km in the central Indian Ocean by the International Seabed Authority (ISA) for exploration. In September 2016, the ISA approved an application submitted by the MoES for allotment of a 10,000 sq. km area along with 15 years plan of work for exploration of PMS along the central Indian Ridge and the Southwest Indian Ridge region of the Indian Ocean. These regions are enriched with iron, copper, zinc, silver, gold, and platinum. These contracts will open new opportunities for resources of commercial and strategic value in an area beyond national jurisdiction.

For scientific exploration of the oceans, substantial investments in engineering and technology need to be prioritized along with the deployment of human resources. To harness these resources, the development of submersibles and mining systems is necessary as these technologies are not available commercially. The new Deep Ocean Mission launched by the MoES is likely to address these technological challenges for deep ocean mining. India has about 2 million sq. km of EEZ, which is nearly two-thirds of its total land area. The mineral potential of the EEZ includes well-known monazite-ilmenite-rutile placers on the east and west coasts, calcareous aggregates, and sands in the shallow waters (especially in the Lakshadweep Island group off the southwest coast), and phosphate mud and sediments (along the west



coast, and possibly in the Andaman Sea).

ENVIRONMENTAL SUSTAINABILITY

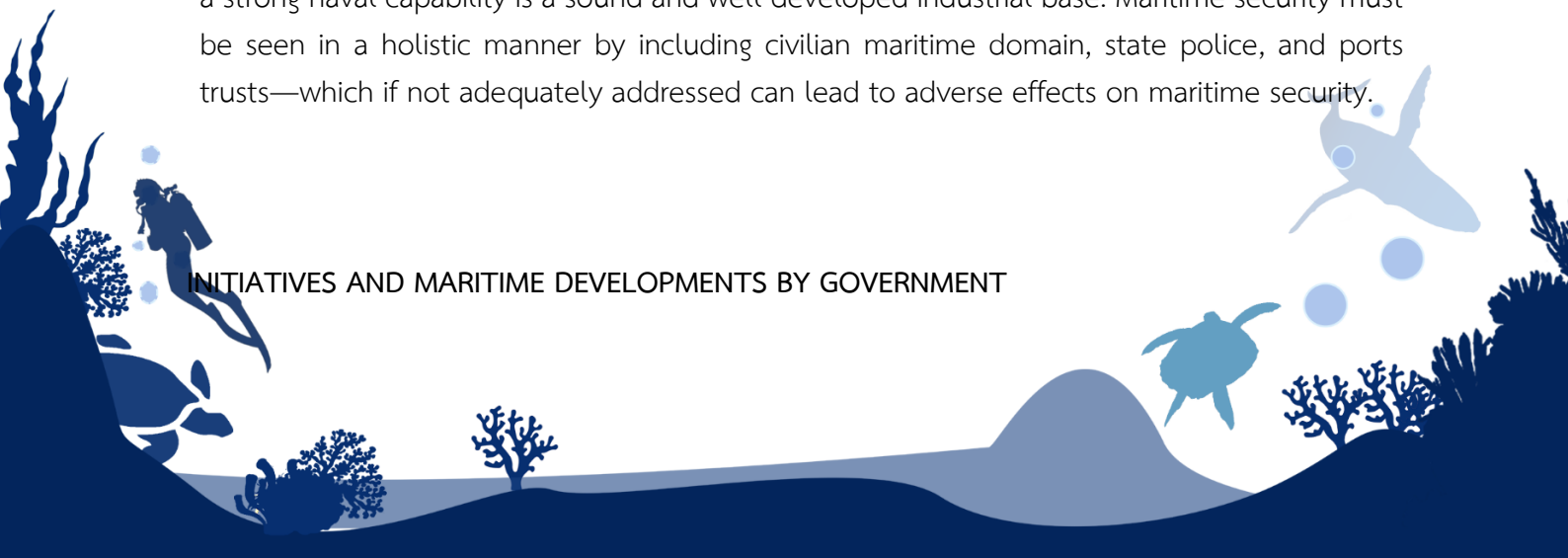
While there is a focus on economic activities related to blue economy, it is important to recognize that blue economy emphasizes the need for sustainability and protecting the health of oceans. Therefore, we need to address the issue of environmental sustainability more seriously. For example, marine pollution has grown to be a major concern today globally, dominated by plastic waste. Plastic and microplastics being nonbiodegradable remain in the environment for centuries. The United Nations has also called for the prevention and significant reduction in marine pollution of all kinds by 2025, particularly from land-based activities which are the main source of plastics and microplastics.

India is also committed to phase out single-use plastics. India needs a far more robust waste management strategy, behavioral changes in place to counter the rising ocean pollution and degrading health of oceans. The MoES through the National Centre for Coastal Research (NCCR), Chennai has taken up an awareness programme and assessment of marine litter along the Indian coasts. Through 6900 volunteers, they have collected almost 30 tons of marine litter. An analysis of this waste suggests that most of marine litter is in plastic form (food wrappers and cups). The United Nations General Assembly (UNGA) has decided to develop an international legally binding instrument on the conservation and sustainable use of marine biological resources in areas beyond national jurisdiction under the UNCLOS.

INTERNATIONAL COOPERATION AND MARITIME SECURITY

There is a huge potential for India to engage in international cooperation in the blue economy. India should carefully identify international partners with common interests, proven capabilities, and know-how in the blue economy for technology sharing, adaption, and transfer with long-lasting benefits. India, in turn, should share its own capabilities with other maritime partners and neighbors for enhanced goodwill and interdependence. A comprehensive plan to understand the requirements of our maritime neighbors and offer focused assistance for their capacity development through the supply of hardware, training, joint operations, data gathering/sharing for better marine domain awareness, and disaster relief should be evolved. Maritime security should be seen as a complement to terrestrial security. The prerequisite for a strong naval capability is a sound and well-developed industrial base. Maritime security must be seen in a holistic manner by including civilian maritime domain, state police, and ports trusts—which if not adequately addressed can lead to adverse effects on maritime security.

INITIATIVES AND MARITIME DEVELOPMENTS BY GOVERNMENT



India-Norway Task Force on Blue Economy for Sustainable Development: It was inaugurated jointly by both the countries in 2020 to develop and follow up joint initiatives between the two countries.

Sagarmala Project: The center piece of India's push for the blue economy is the Sagarmala project launched in 2015, that includes constructing ports, augmenting coastal infrastructure, developing inland waterways, intensifying fishing, and creating special economic zones and tourism promotion. The Government has identified 12 major ports and 14 Coastal Employment Zones (CEZs) as part of the National Perspective Plan under the Sagarmala program. Development of Coastal Economic Zones (CEZ) would become a microcosm of the blue economy, wherein industries and townships that depend on the sea will contribute to global trade.

O-SMART: India has an umbrella scheme by the name of O-SMART which aims at regulated use of oceans, marine resources for sustainable development.

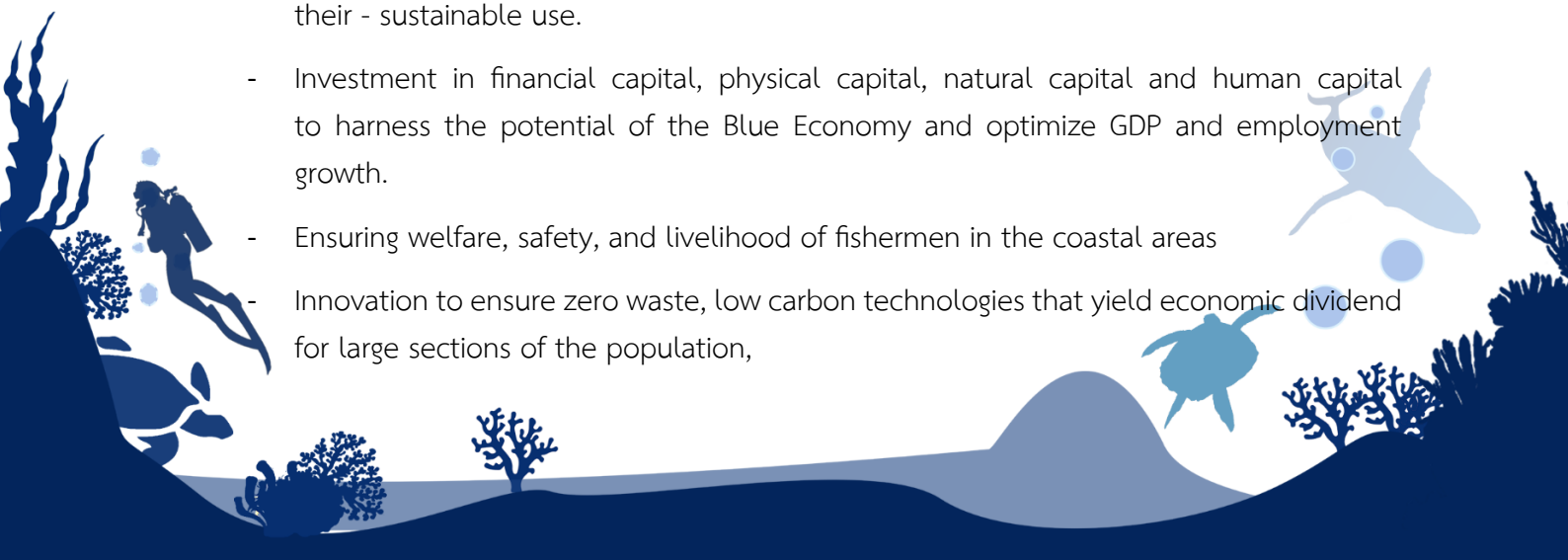
Integrated Coastal Zone Management: It focuses on conservation of coastal and marine resources, and improving livelihood opportunities for coastal communities etc.

National Fisheries Policy: India has a National Fisheries policy for promoting 'Blue Growth Initiative' which focus on sustainable utilization of fisheries wealth from the marine and other aquatic resources.

INDIA'S VISION FOR BLUE ECONOMY

The Government of India's Vision of New India by 2030 enunciated in February 2019 highlighted the Blue Economy as one of the ten core dimensions of economic growth. The Blue Economy was mentioned as the sixth dimension of this vision stressing the need for a coherent policy. India's approach to harness the Blue Economy's socio-economic potential is to focus on: -

- A framework for proper measurement of Blue Economy activities and their contribution to the national income.
- Spatially oriented planning along with scientific assessment of Ocean resources and their - sustainable use.
- Investment in financial capital, physical capital, natural capital and human capital to harness the potential of the Blue Economy and optimize GDP and employment growth.
- Ensuring welfare, safety, and livelihood of fishermen in the coastal areas
- Innovation to ensure zero waste, low carbon technologies that yield economic dividend for large sections of the population,



- Ocean security measures and balanced international engagements.

INDIA'S DRAFT POLICY FOR BLUE ECONOMY.

In order to reap the benefits of India's Blue Economy, the following draft policy framework is proposed. It is in line with the Government of India's Vision of New India by 2030. The policy document highlighted the blue economy as one of the ten core dimensions for national growth with following aim: -

- Enhance contribution of the blue economy to India's Gross Domestic Product.
- Improve the lives of Coastal Communities.
- Preserving Marine Biodiversity.
- Maintain the national security of marine areas and resources.

It emphasizes policies across several key sectors to achieve holistic growth of India's economy. It recognizes the following seven thematic areas:

- National accounting framework for the blue economy and ocean governance.
- Coastal marine spatial planning and tourism.
- Marine fisheries, aquaculture, and fish processing.
- Manufacturing, emerging industries, trade, technology, services, and skill development.
- Logistics, infrastructure, and shipping, including trans-shipments.
- Coastal and deep-sea mining and offshore energy.
- Security, strategic dimensions, and international engagement.

With its vast maritime interests, the blue economy occupies a vital potential position in India's economic growth. It could well be the next multiplier of GDP and well-being, provided sustainability and socio-economic welfare are kept center-stage. Therefore, India's draft blue economy policy is envisaged as a crucial framework towards unlocking the country's potential for economic growth and welfare. The Blue economy policy needs to be implemented at the earliest to ensure a multidisciplinary approach to its design and implementation on the ground. A holistic approach to oceans is need of the hour.

CONCLUSION

Blue Economy serves as a framework and policy for sustainable marine economic activities as well as new marine based technologies. Today, at the core of Blue Economy concept is the decoupling of ocean economic development from environment degradation. It is vital for nation states to acknowledge a subset of the entire ocean economy that has re-generative and restorative activities that have immense potential to enhance ecosystems, including maritime security and creation of sustainable livelihood.



India is growing rapidly and moving towards blue economy which is part of government vision 2030. Economic growth using ocean, sea and ports moving towards a sustainable development, tackling climate change, making the water pollution free and proper waste management sector, the fishery sector is a major contributor of blue economy. The Blue economy presents India with an unprecedented opportunity to meet its national socio-economic objectives as well as strengthen connectivity with neighbors and helps in focusing on livelihood generation, achieving energy security, building ecological resilience, and improving health and living standards of coastal communities. There is great need to learn from past mistakes and develop sustainable policy pathways that minimize negative impacts and require limited to no offset measures. The need of the hour is to focus on the “blue” in India’s economy and ensure that it is resilient, sustainable, and secure.

