

Getting Blue from Brown: India's Struggle to Recolor the Economy

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Introduction:

It took nearly twenty years for the blue economy (BE) as an economic ideology, introduced by Gunter Pauli in 1994, to gain pervasive recognition. At the 2012 Rio+20 Third Earth Summit, the United Nations (UN) defined the blue economy in terms of its two primary characteristics: blue, which denotes the ocean or marine environment, and economy, referring to the overall economy. The seas, which comprise over 95% of the biosphere and more than 72% of the planet, have a critical role in maintaining GDP, regulating the climate, and driving economic prosperity (C. Kontovas, 2022). The sustaining utilisation of marine assets to support and progress the economy, occupations, and professions while maintaining the health of the ocean biome is referring to as the “Blue Economy” (BE) (WB, 2022). Alternatively, in Europe, all economic activity involving seas is classified as BE (EC, 2020). In South Asia, the notion of the Blue Economy—a systematic approach to harnessing ocean resources—is relatively recent.

In 2012, during the Sustainable Development Conference in Rio de Janeiro, Brazil, the United Nations coined the phrase “blue economy.” The goal was to create a sustainable economy, that was centered on the preservation of the ocean ecosystem. However, in the discourse on global development, the implication of the “Blue” pattern as an adjunct to the sustainability standards of economic strategy was still generally overlooked. Since the oceans make up three-quarters of the earth's surface, managing ocean resources is essential to the survival of civilization since marine biodiversity is vital to the planet's continued existence. Ocean and sea resource

conservation and sustainable use are also addressed by the UN in SDG-14. The activities related to the ocean include tourism, trading, non-living resource exploitation, livestock harvesting, and more (World Bank, 2016). There are also some indirect actions, such as the removal of industrial waste, habitat preservation, carbon confiscation, and endangered species protection. In addition, the marine biotechnology sector, the seafood business, and the exploitation of both renewable and non-renewable energy sources and minerals are all included in the oceanic service. Thus, the economic sector encompasses everything from vacation industry, shipment, harbour development, coastal improvement, aquafarming, and sea-bed excavation to energy resource exploration and habitation rebuilding. Moreover, ocean floor mining will increase in the future to extract minerals as the supply of land-based minerals decreases, especially for those metals that are in high demand like zinc and copper. This will lead to a rise in deep sea excavation. Utilizing offshore wind resources is another effort, in addition to offshore oil and gas exploration. The oceanic fish farming directly or indirectly support the livelihoods of over 200 million people, and as a result, the valuation of maritime and littoral assets and businesses has increased. According to United Nations study, these assets and industries are projected to be nearly 3 trillion dollars annually, or over 5% of global output.

Literature on Blue Economy

The idea of BE first emerged in the early 2000s, at a time when sustainable development was becoming more and more popular around the world. Gunter Pauli, a sustainability advocate and businessman from Belgium, first used the term “blue economy” in his book of 2011. (2) He presented the idea of a novel type of economy, one that relies on the sustainable and effective utilization of marine resources. He maintained that the seas and oceans hold undiscovered treasures and have the potential to address several global environmental and economic concerns, including poverty, energy scarcity, and climatic variation. He emphasized how the biotechnology, aquaculture, and renewable energy sectors may spur economic expansion while advancing social inclusion and environmental sustainability (Pauli, 2011).

Agenda 21, a comprehensive plan of action for sustainable development, was adopted at the 1992 United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro, Brazil. The plan emphasized the importance of the oceans, seas, and coasts in fostering development that is sustainable. The necessity of integrated management and sustainable use of ocean ecosystems and resources was emphasized during the summit (McCammon, 1992).

Additionally, the significance of the ocean economy as a catalyst for economic expansion and the eradication of poverty was underlined at the 2002 World Summit on Sustainable Development (WSSD), which took place in Johannesburg, South Africa. The Global Programme of Action for the Protection of the Marine Environment from Land-based Activities was established as a result of this and it aims to lessen the effects of human activity on the marine environment (Nath, 2005).

Modern issues, nevertheless, also pose a danger to the blue economy's viability and potential advantages. The health of the oceans and its resources are seriously threatened by pollution, overfishing, climate change, and habitat degradation. The environment is impacted by these issues, which also have social and economic repercussions such as the loss of livelihoods, cultural heritage, and biodiversity (Bari, 2017).

The significance of policy consistency, governance frameworks, and stakeholder participation in ensuring the sustainable utilization of maritime resources has been underscored by scholars. According to Abhinav et al. (2020), there has been a new focus on the role that innovation, technology, and finance play in facilitating the shift towards a sustainable ocean-based economy.

As a vital tactic for sustainable development, the BE has recently gained attraction. One initiative that encourages the sustainable use of marine resources is the European Union's "ocean-based growth" policy. On the other hand, by utilizing marine resources, the African Union hopes to create jobs,

secure food supplies, and sustain economic growth through the implementation of the Blue Economy Strategy (Bond, 2019; Henderson, 2019).

All these researches suggest that the idea of the BE has its origins in the larger agenda for sustainable development and has grown to be an essential means of attaining social progress, economic expansion, and environmental sustainability.

Coloring the Economy Blue- Past and Present of Indian Experience

One of the main tenets of the blue economy is the balance of the economic, societal, and ecological aspects of sustainable improvement in oceans. A sustainable blue economy promotes food security, the elimination of poverty, means of subsistence, income, employment, safety, health, and political stability, all of which benefit current and future generations on a social and economic level. SDG Goal 14 brings the seas onto the development agenda by articulating the connection between sustainable development and the oceans. India's coastline spans 7,516.5 km, its exclusive economic zone is 2,37 million square kilometers, and its continental shelf is 530,000 square kilometers. India has a chance to boost its economic expansion by advancing the blue economy.

When compared to other blue economy industries, the fishing industry has a longer history. Fish is vital to the economic existence of many states as it provides jobs, export income, and sustenance. Fish and fishing goods were exported for a total of 143 billion US dollars worldwide in 2015, representing an 8% annual growth as per Commonwealth statistics. By 2050, there will likely be 960 crore people on the planet, which will increase the demand for protein-rich foods. The Indian peninsula is home to 4,056,213 people who fish for a living. In India, fishing provides a living for over 874,749 families in approximately 3432 villages and 1537 fish landing centers. In India, the fishing industry employs 15 million people and accounts for 6.3% of global fish production, with seafood exports of Rs. 1 lakh crore in 2015-16. Unreported and unregulated fishing, which yields between 1100 to 2600 crore tons of fish capture year, or 10 - 22 billion US dollars in

illicit or unrecorded earnings, has an impact on fish stocks. The government must take action to increase fish and prevent overexploitation since poor fisheries management costs more than 80 billion US dollars a year in lost revenue. In addition, mangrove forests and coral barriers—which serve as fish breeding and nurturing grounds—need to be protected. Given this, aquaculture needs to be promoted by the government to meet the requirements. Food security depends heavily on aquaculture, which provides 58% of the fish sold globally. The Indian government created an aquaculture area of about 26,869 hectares in 2016, which has helped 63,372 fishermen.

Except for 2012–2013, Table 1 shows that the marine fisheries industry saw positive annual average growth. Up until 2017–18, the inland fisheries sector's annual average growth showed positive growth rates. The inland sector accounted for the majority of the double-digit growth rate of 10.14% in the all-India fisheries sector in 2017–2018. Table 1 indicates that the production of fisheries will be improved by concentrating on growing the production of marine fisheries.

Shipping is the least expensive, fastest, and safest method of transportation and helps move large volumes of commodities. The cost of moving products is roughly 21% that of road transport and 42% that of rail transit. Additionally, less gasoline will be used for shipping. 15% of fuel consumed by road and 54% by rail is used in coastal shipping. India has an advantage in shipping because of its developed steel industry, experienced worker force, and technological know-how at low labor costs. It did not, however, have the domestic capacity to meet the high demand for ship repairs and rebuilding. There are currently about 32 shipyards in India, which are owned by the state governments (2), the federal government (6), private dockyards listed publicly (3), and privately owned dockyards (22). Eight public sector yards, including Hindustan Shipyard Limited and Cochin Shipyard Limited, manage the majority of India's shipbuilding capacity.

According to Table 2, cargo throughput at India's principal ports was 704.8 MT in 2019–20, with a 0.8% increase in 2019–20. Except for 2015–16, non-major port traffic increased from 2013–14 to 2018–19. In India, the volume of cargo handled by

smaller ports exceeded that of major ports, with a growth in 2018–19 of 10.22%.

The interface between land-based and maritime transportation is provided by ports. Of India's ports, 12 are important and 187 are small. (Maritime and Ports) India's maritime strategy centers on increasing port capacity from 1 billion tons to 3.2 billion tons, which will propel the country's shipbuilding from 1% to 5% of worldwide production and increase the percentage of Indians working at sea to 9% from 6%. (Castellón) 9 out of the 10 largest cities are located in coastal states, and out of them 4 port cities have contributed to the GDP: Mumbai, Chennai, Cochin, and Mormugao. Major ports' net profit climbed from approximately 1150 crore in 2013–14 to approximately 3413 crores in 2018–19. Consequently, it went from 23% to 44%. The Sagarmala project was started by the Indian government once it became apparent how important port development was, the government proposed 189 port modernization projects under the Sagarmala project. Port-led development is envisioned by Project Sagarmala under four main categories: seaport upgrading, seaport development, littoral community development, and connectedness. This schedule of project called for the enhancement of over 40 ports and the construction of 6–8 new ones. Fourteen coastline economic regions and twelve power and industrial segments are anticipated.

Strong ports and the use of private vessels can promote trade significantly. International trade and globalization are widely regarded as being based on maritime transit. Cities, industrial centers, and about half of the world's population live near the coast. Considering the importance of coastal states' economies on imports and their openness to international trade, maritime transport is crucial. As evidenced by the 4,000-year-old ports in the Indus Valley and Lothal, India was a maritime nation long ago. India's main route to the west and east is via the sea. Maritime transport dominates the shipment of trade commodities to other nations, even if road and rail account for 70% of the connection. Committee for the Development of Transport Policy at the National Level India's ports and maritime sector are essential to the nation's ability to continue

growing economically. With a coastline that stretches over 7516.5 km, India ranks as the 16th largest maritime nation in the world. As part of the Sagarmala initiative, the Indian government intends to build ten coastal economic zones. The zones, which might include 300–500 km of coastline, will be transformed into manufacturing hubs with the help of port modernization initiatives.

In many nations, coastal tourism – which encompasses diving tourism, marine archaeology, surfing, cruises, ecotourism, and recreational fishing – is a significant economic driver. It preserves and honors regional customs, heritage, and cultures in addition to making money. Numerous nations' social, economic, and environmental well-being are correlated with it. One in eleven people work in the tourism industry, which is quickly growing to be the greatest worldwide industry. However, to draw tourists, environmental quality is crucial. Given its extensive coastline, India should encourage coastal tourism, as this could help to advance the blue economy. Eight beaches have been designated by the Indian government: Golden Beach in Odisha, Rushikonda in Andhra Pradesh, Kappad in Kerala, Ghoghla in Diu, Kasargod and Padubidri in Karnataka, Golden Beach in Gujarat, and Radhanagar in the Andaman and Nicobar Islands. It has applied for blue flag accreditation from the Foundation for Environment Education (FEE). These beaches will draw large numbers of visitors to the nation and encourage high-value travel.

Being 'Blue' from 'Brown': Challenges and Opportunities Before Indian Economy

The traditional style of managing the world economy, with its large carbon trail and untenable resource extraction, is referred to as the "Brown Economy." But it's now acknowledged that the hazards of climate change, which results from human deterioration of the environment, are too great to support the Brown Economy going forward. Thus, the new blue economy model conceptualized the oceans as "development spaces," whereas the old-fashioned economic functioning exploited the oceans as a conduit for unequal economic exploitation of world assets and the vacating of different types of debris. The new model aims to combine

marine transit, bioprospecting, renewable energy production, sustainable use, and the exploitation of oil and mineral richness. At least five components of the Blue Economy – namely, (1) carriage and harbor conveniences that follow the global regulations; (2) justifiable and systematically determined aqua farming and pisciculture (3) coastline, oceanic, and voyage tourism including nature-based tourism ; (4) Fossil fuel-based energy, biofuels, and renewable power resources, derived from littoral and alongshore sources and settings; and (5) submarine excavation inside and away from domestic economic zones—are fetching to the attention of government structures the employment opportunities and avenues for national development.

All of the SIDS, isle states, and the majority of the Indo-Pacific's coastline governments recognize the Blue Economy model, which presents India with a major chance to show inclusive regional leadership. Given that India's "blue" endeavors prioritize various aspects of national well-being, including food, health and economic security (especially security in terms of energy), will assist to provide a extensive impression of the more significant aspects of country's efforts to establish and maintain a BE. The hard realities of food scarcity have been repeatedly taught by history, and India is aware of the enormous potential that aquaculture holds for both food production and subsistence.

And yet, assuming that the fish populations that are present in the EEZ are just valuable for food would be unduly restrictive. Another field with immense potential is ocean-based biotechnology. Potential medications, such as novel antibiotics, can be found in abundance in marine microbes. Recent findings imply that the marine environment is a potential source of novel biologically active compounds, especially antibiotics. Since they are diverse and can grow quickly and sustainably in fermenters, oceanic microorganisms, and fungal organisms appear to be the most important sources for antibiotic discovery in this regard.

Similarly, India's future societal and economic development depends on energy – both conventional and unconventional. India has to rely more and more on the oceans to transport

its imports of fossil oil and its mounting trades of processed petrol produces. Under the auspices of the Ministry of Earth Sciences (MoES), India has adopted significant strategy measures in this direction as a lately accepted V- year plan known as the 'Deep Ocean Mission,' which targets to cultivate maritime know-hows for the long-lingering use of marine assets.

Issues like "Blue Carbon" and ocean acidification are quickly taking the front stage in terms of potential future economic models. An estimated 25% of the carbon dioxide produced by human activities has been absorbed by the world's oceans since the start of the Industrial Revolution. The seas' acidity increased by the same percentage as a result of this. There has been a notable and highly negative effect from the 25% increase in ocean acidity.

The Blue Economy presents several intricate obstacles to maintaining "balance," as soon as one looks past its obvious appeal. While there are major environmental dangers involved with maritime shipping, there is also the goal of maximizing its use. One example is ballast water, which frequently carries hostile microorganisms that are indigenous to a particular maritime region and are spread by increasing the number of merchant ships that visit other far-off oceanic regions.

That being said, there are significant obstacles associated with the Blue Economy. Consequently, India's decisions and actions in the area will demand a novel set of knowledge and perspicacity.

Conclusion

With persistent investment in the blue economy and the development of pertinent legislation, India envisions a bright future for sustainable energy. The blue business offers many prospects, but it also presents many difficulties. Particularly in the ocean's natural environment, there are several vertical challenges. To overcome these, India first establishes the benchmark for national goals before incorporating a multi-sectoral strategy through a blueprint that is more people-, nature-, and polycentric. India is establishing a marine organization that prioritizes sustainable growth and

modernization. In the process, India will need to uphold its core values of honest invention, maintainable progress, and real adaptation to environmental variation to protect its securities and become a prominent voice in blue economy policy.

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Appendix- Tables

Table 1 Fisheries Sector Data (2000-01 to 2017-18)

Year	Fish Production (in lakh tonnes)		Total	Annual Average Growth Rate (%)		All India
	Marine	Inland		Marine	Inland	
2008-09	29.78	46.38	76.16	1.99	10.24	6.86
2009-10	31.04	48.94	79.98	4.23	5.52	5.02
2010-11	32.50	49.81	82.31	4.70	1.78	2.91
2011-12	33.72	52.94	86.66	3.75	6.28	5.28
2012-13	33.21	57.19	90.40	-1.51	8.03	4.32
2013-14	34.43	61.36	95.79	3.67	7.29	5.96
2014-15	35.69	66.91	102.60	3.66	9.04	7.11
2015-16	36.00	71.62	107.62	0.87	7.04	4.89
2016-17	36.25	78.06	114.31	0.70	8.99	6.21
2017-18	36.88	89.02	125.90	1.73	14.05	10.14

Source: Government of India, Handbook on Fisheries Statistics, 2018, 2019, Ministry of Fisheries, Animal Husbandry and Dairying, Department of Fisheries, New Delhi, September, <http://doi.gov.in/sites/default/files/2020-08/HandbookonFS2018.pdf>.

Table 2 Shipping and Port Facilities				
Year	Major Ports		Non-Major Ports	
	Cargo(MT)	% Growth	Cargo (MT)	% Growth
2013-14	555.5	2	417.20	7.5
2014-15	581.3	5	470.6	12.8
2015-16	606.5	4	465.9	-1
2016-17	648.4	7	485.2	4.14
2017-18	679.4	5	528.5	8.9
2018-19	699.1	2.9	582.5	10.22
2019-20	704.8	0.8	.	.

Source: Ministry of Shipping, EXIM Bank Research, <https://eximmitra.in/en/Information/data-on-exports/research-and-publications/other's-information/ports-and-shipping>.