

Tides of Transformation: Balancing Growth and Environmental Responsibility in Cruise Tourism

Ayushi Srivastava and Commodore Debesh Lahiri (Retd)

ABSTRACT

Coastal and Maritime Tourism (CMT), commonly known as Blue Tourism (BT), encompasses various recreational activities held in coastal waters and beaches. It constitutes a significant portion, accounting for at least half, of the global tourism industry, contributing to the employment and sustenance of millions of people worldwide.¹ The success of coastal and marine tourism hinges greatly on the health of coastal and marine ecosystems, as they play a crucial role in drawing visitors. However, the ongoing decline and deterioration of these valuable resources are jeopardising the long-term sustainability and profitability of the industry, as well as posing a threat to the well-being of the local communities that depend on it.² The continued viability of this sector remains at risk from climate change, disasters, pollution, urbanisation and ecosystem degradation. Sustainable ocean-based tourism can restore and protect the ocean while delivering jobs and prosperity.³

Keywords: Coastal and Maritime Tourism, Blue Tourism, Sustainable Ocean-based Tourism, pollution, urbanisation and ecosystem degradation, Maritime India Vision 2030, heritage tourism, Ayurveda tourism, river-cruise tourism.

Introduction

Coastal and marine tourism constitutes approximately 50 per cent of all global tourism, equal to US\$4.6 trillion or 5.2 per cent of global gross domestic product (GDP).⁴ It is a vital component of the economy of small islands and coastal communities.⁵ In 2021, the estimated size of the global coastal and maritime tourism market was USD 2.9 trillion, and it is anticipated to grow at a compound annual growth rate (CAGR) of 5.7% from 2022 to 2030.⁶ Marine and coastal destinations were not impervious to the repercussions of the COVID-19 pandemic. The complete disruption of the steady influx of tourists via air travel and cruise ships had far-reaching consequences on businesses, governments, and communities. Nevertheless, even though the pandemic underscored the tourism sector's susceptibility to economic, political, and health crises, it also presented an opportunity for fundamental changes within the industry, aiming for a more sustainable future.⁷

The cruise-ship tourism industry is one of the most significant subsectors of marine and coastal tourism. Cruise-ship tourism contributes US\$150 billion to the global economy every year and supports 1.2 million jobs, paying US\$50 billion in wages.⁸ According to the UN World Tourism Organization and Asia-Pacific Tourism Exchange Center, cruise-ship tourism is a 'relatively young phenomenon' that emerged 50 years ago, yet is outperforming general annual tourism growth by around 8 per cent, becoming the

fastest-growing type of leisure tourism.⁹ The growth of the cruise-ship tourism sector has introduced new socio-economic opportunities, including improved standards of living, increased employment and training options, diversification for local communities, and the socio-cultural benefits that come from interactions between individuals from diverse cultural backgrounds. Nonetheless, the adverse effects of the conventional model of unrestricted tourism sector growth are quite evident.¹⁰

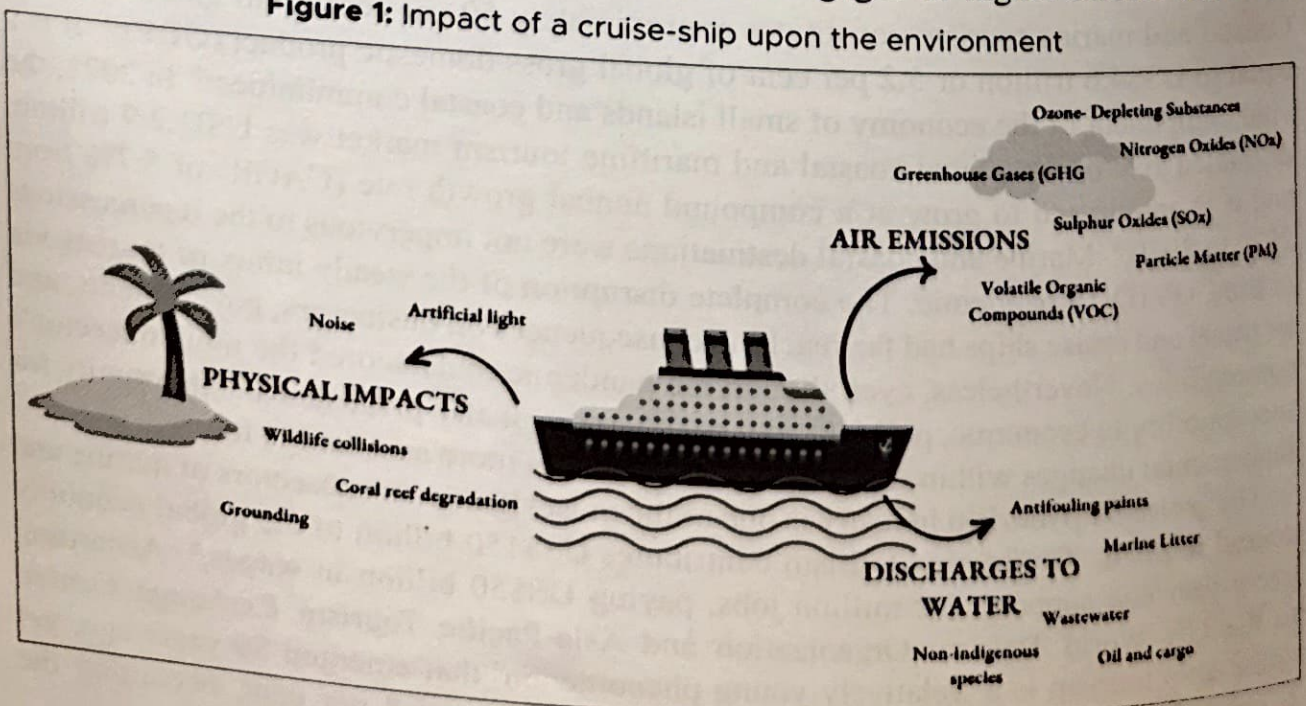
The burgeoning cruise-ship tourism industry is witnessing a notable surge in vessel dimensions and an enhanced array of travel destinations to cater to the rising customer demands. Consequently, the magnificence of these destinations, characterised by their inherent natural beauty, plays a pivotal role in satisfying the escalating demand. It is imperative to acknowledge that the cruise industry is intricately tied to environmental stewardship and regulatory adherence. For instance, research reveals that the cruise-ship tourism sector produces a considerably larger quantity of waste and pollutants compared to any other segment within the maritime industry.¹¹

Cruise-ship Tourism and Pollution

Cruise ships make a substantial contribution to environmental pollution, encompassing air pollution, water pollution, solid-waste contamination, chemical pollutants, noise, ballast-water issues, coral-reef degradation, and harm to marine ecosystems. Environmental organisations have likened cruise ships to “floating cities” that have a significant impact on the environment.¹² Research findings indicate that during a seven-day voyage, passengers on an Antarctic cruise can release carbon emissions per traveller equivalent to the annual average for an individual in Europe.¹³

Analysis reveals that a single person aboard a typical cruise-ship generates approximately 421.43 kilograms of CO₂ per day. Conversely, an individual who opts for a high-end hotel stay, utilises carbon-intensive transportation, and engages in higher-carbon activities,

Figure 1: Impact of a cruise-ship upon the environment



Source: Collated by the Authors

emits a significantly lower 81.33 kilograms of CO₂ per day. In comparison, the carbon footprint of an average vacationer on land stands at approximately 51.88 kilograms, which is less than one-eighth of that of the typical cruise-ship passenger.¹⁴ Cruise ships, despite industry efforts to promote environmentally friendly practices, are recognised as significant contributors of carbon emissions, exerting an inequitable influence on the wellbeing of port communities and destinations. In 2019, cruise vessels sailing from Seattle to Alaska during the six-month cruise season collectively released a substantial 1,120,324 tonnes of CO₂ equivalent — roughly equivalent to 1.1 million tonnes of gas emissions.¹⁵

According to a June study conducted by the European Federation for Transport and Environment, 63 cruise ships under the ownership of the parent company, Carnival Corporation, emitted 43% more sulphur oxides — a harmful group of air pollutants — in 2022 than all of Europe's 291 million cars combined. This statistic, although alarming, represents a significant reduction compared to a few years ago when Carnival Corporation's ships visiting European ports in 2017 emitted ten times the sulphur oxides produced by all European cars.¹⁶ This decline can be primarily attributed to a 2020 rule established by the International Maritime Organization, which lowered the sulphur content limit of ship fuel from 3.5% to 0.5%.¹⁷ However, despite reducing sulphur emissions per ship, the increasing number of cruise ships and their extended stays in European ports have led to an overall 9% increase in sulphur oxide emissions from cruise ships in 2022 compared to 2017, as reported by Transport & Environment.¹⁸

Table 1: Waste discharged by a 3000-passenger cruise-ship on a typical one-week voyage

Type of waste	Estimated amount generated (typical one-week voyage)	Content/type
Sewage (blackwater)	7,94,936.475 litres	Wastewater and solids from toilets
Greywater	37,85,411.8 litres*	Wastewater from sinks, showers, galleys, laundries. Contains detergents, cleaners, oil and grease, metals, pesticides, medical and dental wastes
Hazardous wastes	416.395 litres	Photo chemicals
	18.9271 litres	Drycleaning waste (perchloroethylene and other chlorinated solvents)
	416.395 litres	Used paint
	18.9271 litres	Expired chemicals, including pharmaceuticals
Solid waste	8 tonnes	Plastic, paper, wood, cardboard, food, cans, glass
Oily bilge water	94635.295 litres	Liquid collected in the lowest point in the boat when the boat is in its static floating position
* The interim Alaska report indicates that on average, cruise ships release 757082.357 litres of treated blackwater and greywater per day, with larger cruise ships potentially discharging up to 1324894.1244 litres per day		

Source: Summary of Cruise-ship Waste Streams, Bureau of Transportation Statistics¹⁹

The cruise industry transports thousands of individuals worldwide on a single voyage, and these passengers generate substantial quantities of sewage, grey water, oily bilge water, solid waste, and hazardous waste. Regrettably, this waste poses a threat to the delicate marine ecosystem, as even the least harmful substances can harm the surrounding flora and fauna. According to the Bureau of Transportation Statistics, a 3,000-passenger cruise-ship generates the following amount of waste on a typical one-week voyage:

Ballast water, crucial for safe shipping operations, maintains balance and stability for ships. However, its improper disposal poses a significant risk to marine ecosystems, introducing new species to foreign waters. For instance, signs of an introduction of an alien species were initially identified by scientists during a widespread outbreak of the Asian phytoplankton algae *Odontella* (*Biddulphia Sinensis*) in the North Sea in 1903. However, it wasn't until the 1970s that the scientific community began to scrutinise this issue in-depth. In the late 1980s, Canada and Australia faced significant challenges related to invasive species, prompting them to raise their concerns with the International Maritime Organization's Marine Environment Protection Committee (MEPC).²⁰ This discharge of contaminated ballast water presents hazards like introducing exotic species, altering ecosystems, and causing species extinctions through predation or competition.²¹

Cruise ships, while insulated internally for noise and vibration, lack exterior insulation, disrupting communication and sonar for sea mammals. Ship noise pollution, which can travel great distances, harms marine species reliant on sound for orientation, communication, and feeding. It has disrupted typical behaviour patterns, hindered feeding, heightened stress levels, and obscured communication. These effects can lead to injuries and fatalities.²² Wildlife collisions pose risks to marine mammals such as whales and manatees, with even a ship traveling at just 15 knots having a 79% chance of causing lethal collisions.²³ Over the past five years (and since 2021 in particular), the National Oceanic and Atmospheric Administration (NOAA) has identified at least 112 dead whales that washed-up with injuries consistent with ship collisions. However, this alarming statistic does not account for whales that do not wash ashore, leaving the actual number of harmed whales currently unknown.²⁴

Ships generally have a detrimental impact on oceans and sea life, with 90 countries reporting severe damage to coral reefs due to anchorage and sewage disposal. A single day of anchor drops can destroy extensive coral reef areas. Addressing these environmental concerns is essential to maintaining comfort and profit while reducing harm to coral reefs.²⁵

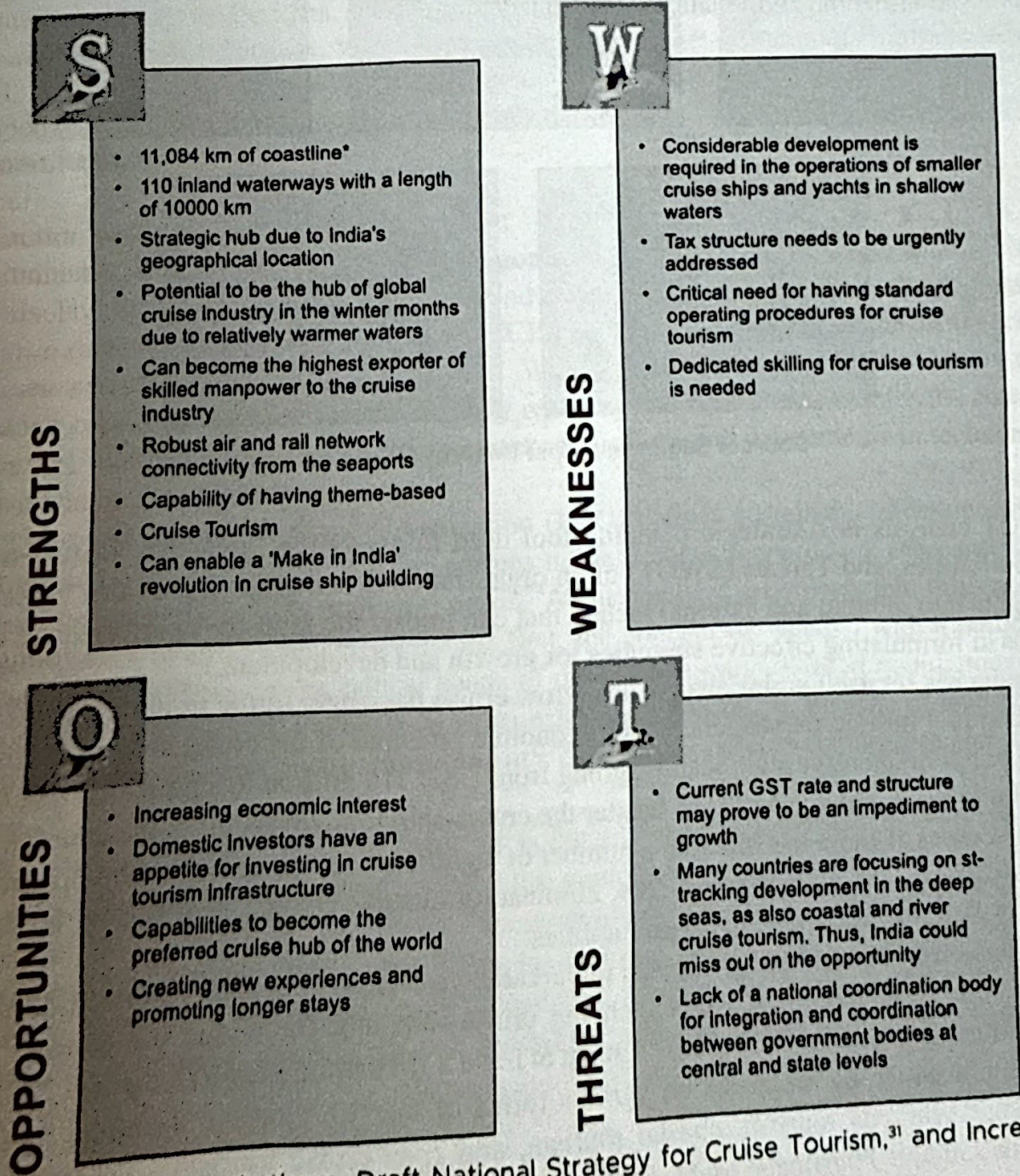
India and Cruise-ship Tourism

Cruise-ship tourism plays a vital role in India's economic development, attracting substantial foreign capital and significantly contributing to the country's revenue generation. In coastal regions, there is a noticeable convergence of economic, environmental, and demographic pressures, resulting in a complex situation that poses multifaceted challenges to the effective and sustainable management and governance of these coastal zones.²⁶ India possesses substantial potential in the realm of cruise tourism, particularly in its coastal

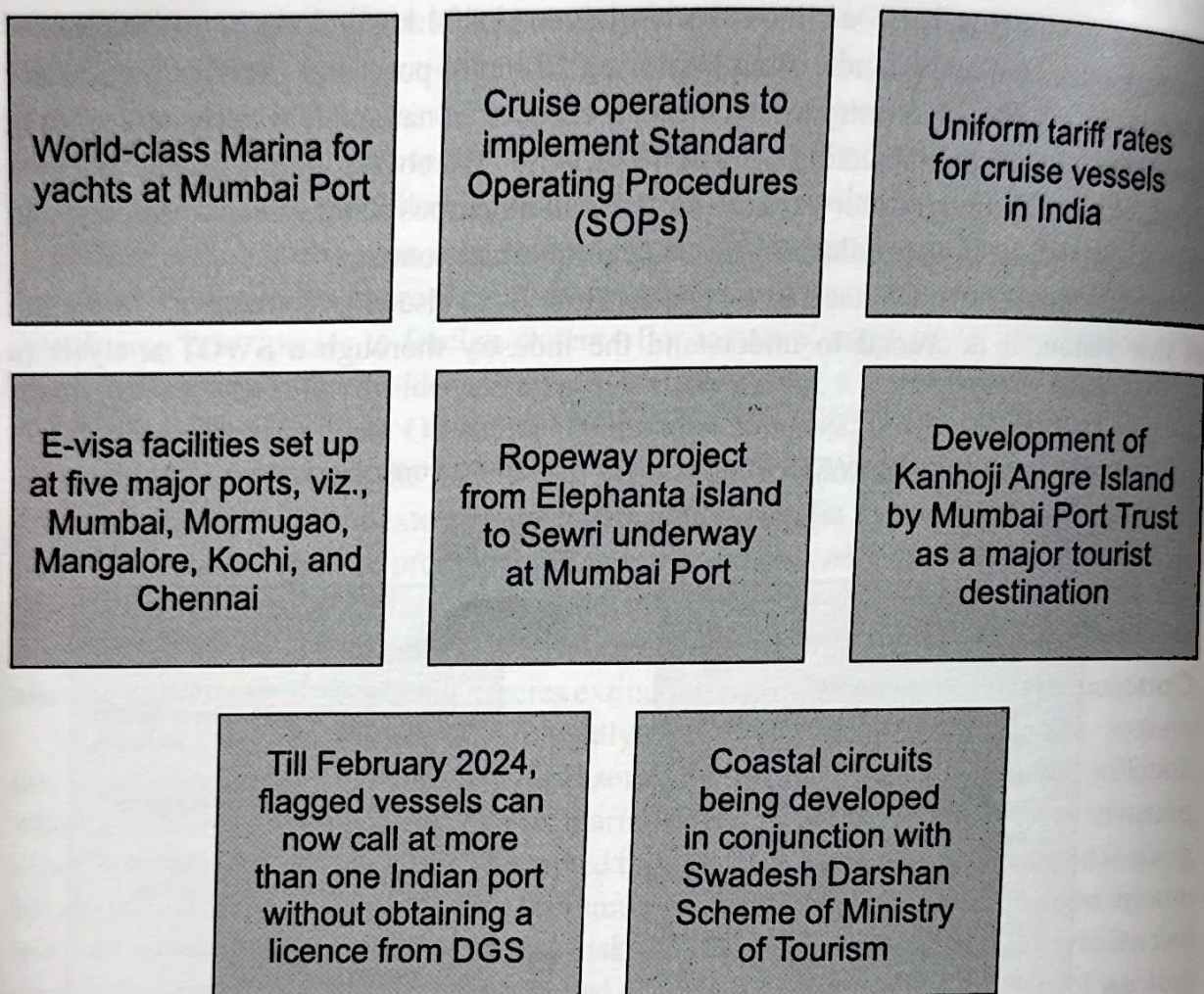
and river sectors. This potential is underpinned by a variety of factors. To begin with, India boasts an extensive coastline stretching over 11,804 km²⁷ along both the western and eastern coastal and islandic areas, featuring 12 major ports and over 200 non-major ports. Additionally, the country has an intricate network of navigable waterways spanning over 20,000 km, interconnecting around 400 rivers. Moreover, India's coastal regions, riverbanks, and national waterways are dotted with numerous states, union territories, and over 1300 islands, further enhancing its appeal for cruise tourism.²⁸

Indeed, India envisions itself as a "Global Hub for Cruise-ship Tourism".²⁹ In pursuit of this vision, it is crucial to understand the industry through a SWOT analysis (a

Figure 2: SWOT Analysis of Cruise-ship Tourism Industry



Source: Collected by Authors, Draft National Strategy for Cruise Tourism,³¹ and Incredible India International Cruise Conference 2022³²

Figure 3: Key Port Initiatives for Cruise-ship Tourism

Source: Sagarmala Post (March) 2020 Edition³⁵

SWOT analysis is a strategic planning tool used to assess the Strengths, Weaknesses, Opportunities, and Threats (SWOT) of an organization or industry. It provides valuable insights into internal and external factors that can impact the industry's performance and helps in formulating effective strategies for growth and development.)³⁰

India has set itself ambitious goals to grow cruise passenger traffic from its current 0.4 million to 4 million passengers.³³ The economic potential of the cruise tourism industry is expected to increase significantly, going from USD 110 million to a projected USD 5.5 billion in the coming years.³⁴ To bolster the cruise-ship tourism sector in the country, the Government of India has initiated a number of significant measures, including upgrading infrastructure, rationalising port fees, eliminating ousting charges, prioritising berthing for cruise ships, and offering e-visa facilities.

Cruise-ship tourism has witnessed remarkable year-on-year growth at a rate of 35%.³⁶ India is actively committed to enhancing cruise-ship tourism within the nation. This commitment is reflected in the Government of India's "Maritime Vision Document 2030",³⁷ which places strong emphasis on various forms of tourism circuits, including heritage tourism, Ayurveda tourism, coastal tourism, and river-cruise tourism. These circuits include Gujarat Pilgrimage tours, Cultural and Scenic tours along and off the country's

western coast, Ayurvedic Wellness tours along and off the country's southern coast, and Heritage tourism along and off the country's eastern coast — all designed to stimulate demand for cruise-ship tourism. Additionally, efforts are underway to create appealing attractions such as lighthouses and islands along the coast to draw in more tourists. India also recognises the potential of river and inland cruises as valuable components of its cruise-ship tourism offerings.

Significant upgrades and modernization efforts are underway at seven major ports across the country, with the flagship project being the New International Cruise Terminal in Mumbai, incorporating a financial outlay of approximately Rs 495 crores. The iconic sea cruise terminal at BPX-Indira Dock is scheduled for commissioning by July 2024 and will be capable of handling 200 ships and up to 1 million passengers annually. Similar infrastructure enhancements are being carried out in other ports such as Goa, New Mangalore, Kochi, Chennai, Visakhapatnam, and Kolkata.³⁸

Conclusion

Tourism possesses the capacity to impact — directly and indirectly — all 17 of the Sustainable Development Goals (SDGs) goals, especially SDGs 8, 12, and 14. These goals lay focus on fostering inclusive and sustainable economic growth, promoting sustainable consumption and production (SCP), and ensuring the sustainable utilization of oceans and marine resources, respectively. Within the 2030 Agenda, sustainable tourism holds a crucial position. However, actually realising this agenda necessitates the creation of a well-defined implementation framework, and substantial investments in technology, infrastructure, and human resources.³⁹

The International Maritime Organization (IMO) defines sustainable development as a type of development that satisfies current needs without jeopardising the capacity of future generations to fulfil their own needs. Additionally, it articulates that this concept encompasses two fundamental elements: first, the concept of 'needs', with a particular emphasis on addressing the critical needs of the world's impoverished populations as a top priority; and secondly, the notion of 'constraints' imposed by the state of technology and social organisation on the environment's capacity to satisfy both present and future needs.⁴⁰

To prevent irresponsible discharge of pollutants and invasive species into the sea, governments and agencies must enforce the guidelines stipulated in the Ballast Water Management Convention of 2004. These guidelines include implementing Ballast Water and Sediments Management Plans, maintaining Ballast Water Record Books, and adhering to ballast water management procedures. Sustainable practices in transportation operations, including minimising non-renewable resource-consumption and promoting reuse and recycling, can further enhance environmental sustainability.⁴¹

Notes

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Note on Contributor

Ms Ayushi Srivastava is a Research Associate at the National Maritime Foundation (NMF). She holds a BTech degree from the APJ Abdul Kalam Technical University, UP, and an MTech degree in naval architecture and ocean engineering from the Indian Maritime University (IMU), Visakhapatnam Campus. Her current area of research focus is shipping and shipping-technologies, particularly those aspects that support India's ongoing endeavour to transition from a 'brown' model of economic development to a 'blue' one. She can be reached at ps1.nmf@gmail.com

Cmde Debesh Lahiri is a retired officer of the Indian Navy and is presently, the Executive Editor of the National Maritime Foundation (NMF) New Delhi. He is a regular speaker at webinars/seminars/workshops and conferences in India and abroad. He has authored/co-authored book chapters/technical project reports/well-researched articles and was a member of the Expert Advisory Group on Blue Economy to the Ministry of Environment, Forests and Climate Change (MoEF and CC) during India's presidency of the G20. His areas of research-interest include maritime geo-strategies of Russia, Israel, UK, US, and multilateral/regional constructs, Blue Economy and Climate Change, Disaster Resilience, Marine Pollution, Illegal Unreported and Unregulated (IUU) Fishing, Shipbuilding, Ship Repair and Ship Recycling, Multi-disciplinary technical subjects etc. He can be reached at debeshlahiri@gmail.com or mdtc2.nmf@gmail.com.