

From blue growth to participatory, inclusive and sustainable blue economy in the Bay of Bengal Region

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Abstract It is well recognized that the oceans are of utmost importance for the future of humanity. Being one of the largest bays in the world, the Bay of Bengal region (BOBR) has greater potential for harnessing the benefits of the blue economy to humankind. In the present synthesis, it is highlighted that all maritime-related activities including fisheries in the region require proper utilization and management for attaining social, economic and ecological goals. It is a fact that the problems of IUU fishing, marine pollution, ineffective marine regulation and the non-traditional security menace are commonplace in the region. Although there has been a significant increase in both capture fisheries and aquaculture in all BOBR countries, potential multiple blue benefits to the BOBR are likely to be challenged due to geopolitical difficulties, pollution and habitat loss, biodiversity degradation, destructive fishing, and climate change apart from the lack of full implementation of legal instruments. Solid waste pollution due to poor management of abandoned, lost, or otherwise discarded fishing gear and the rapid and unplanned increase in aquaculture, especially shrimp culture is also becoming a great concern for coastal and marine pollution. Moreover, the benefits of blue growth have been unequally distributed and there are several ‘blue injustices’ that have led to the marginalization of small-scale fishers. The inclusion of small-scale fisheries as a core principle in the blue economy agenda and adoption of an interactive governance approach, where participants would deliberate upon their knowledge, experience, and aspirations could serve as an important platform for bringing in concerns of all parties into the blue economy playing field, which will also strengthen the process of knowledge translation between the community and research and facilitate bringing in research outcomes to the decision-making table.

Keywords: blue growth, blue injustice, Bay of Bengal region, ecosystem health, small-scale fisheries

INTRODUCTION

There is no agreement on the definition of Blue Economy. Several terms such as ‘blue growth’, ‘ocean economy’, and ‘marine economy’ have also been used to describe the use of oceans for various economic activities. The variation in definitions of the above terms is aptly described by Martínez-Vázquez *et al.* (2021). Blue growth is a term more related to the creation of multiple economic activities from marine resources (Boonstra *et al.*, 2018; Dalton *et al.*, 2019), while

holistically managing marine socio-ecological systems (Caswell *et al.*, 2020). The term marine economy is used to describe a system that covers all industries and regions in the marine space (Qi & Xiao, 2019), and a system that fosters social inclusion and environmental sustainability (Spamer, 2015). The term ocean economy is used to describe a process of global economic growth and development (Potgeiter, 2018), activities that include marine construction, resources, shipping,



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tourism and recreational industries located near ocean shorelines (Colgan, 2013), and activities which complement evolving development paradigms emphasizing greener, more sustainable economic pathways (UNDESA, UNEP, UNCTAD, 2011). The definition of blue economy encompasses the notion of sustainable use of ocean resources, which balances economic prosperity with environmental sustainability. The concept of the Blue Economy has arisen as a consequence of the international pressure to make the global economy “green” fostering the green economy i.e., an economy that seeks to reduce the environmental risks and ecological rarities that will ensure an improvement in human well-being and social equity (Silver *et al.*, 2015). During the United Nations Conference on Sustainable Development (UNCSD) held in Rio-de-Janeiro in June 2012 (“Rio +20”), the advancement of the “Green Economy” concept was focused on, and the term ‘Blue Economy’ entered into the maritime vocabulary. During the process of the advancement of the Green Economy concept, many coastal countries raised their concern about the focus of the Green Economy and its applicability to them (UNDESA, 2017). Subsequently, there has been a global recognition of the need for greater attention and coordinated action on oceans, seas, and sustainable development. Blue growth, or environmentally sustainable economic growth based on the oceans, is a strategy for sustaining economic growth and job creation necessary to reduce poverty in the face of worsening resource constraints and climate crisis. The ocean economy takes care of both human well-being and ecosystem health (Keating-Bitonti & Lipiec, 2022) integrating environmental and economic aspects (Schutter *et al.*, 2021). In a nutshell, the blue economy will generate wealth from ocean resources while protecting the marine ecosystem (Phelan *et al.*, 2020).

The ocean, if treated like a country, is the seventh-largest economy in the world with an estimated value of United States Dollar (USD) 2.5 trillion (Patil *et al.*, 2018; Lubchenco & Haugan, 2023), and this “blue economy” encompasses the sustainable use of ocean and coastal resources to drive economic growth and improve livelihoods, while protecting and nurturing marine ecosystems. There are increasing opportunities in sustainable tourism, food production, wastewater treatment, integrated solid waste management, and sustainable

coastal infrastructure, but securing these opportunities requires large investments, and governments and donors cannot meet the needs alone (ADB, 2021). There are many aspects of ocean sustainability ranging from fisheries and ecosystem health to pollution, which pose significant challenges under the blue economy initiatives. Furthermore, under the United Nations Convention on the Law of the Sea (UNCLOS), every maritime country is assigned an Exclusive Economic Zone (EEZ), which presents another important issue that requires the realization of the need for collaboration across maritime states.

Contribution of fisheries and aquaculture to blue economy in the bobr

The Bay of Bengal region is the northeastern part of the Indian Ocean, which is positioned between the Indian subcontinent and the Indochinese peninsula. The Bay of Bengal is considered one of the largest bays in the world. The bay is bounded on the west and northwest by India, on the north by Bangladesh, and the east by Myanmar and Thailand. Its southern limit is a line between Sangaman Kanda, Sri Lanka, and the northwesternmost point of Sumatra, Indonesia. The countries dependent on the Bay of Bengal of the Indian Ocean include littoral states (Bangladesh, the states of India that have the coastline of the Bay of Bengal, Indonesia, Myanmar, Sri Lanka [eastern, northern and southern provinces], and Thailand), landlocked countries and regions, which depend on the Bay of Bengal for maritime access (Bhutan, China, India and Nepal), and other dependent countries for fishing, international trade and container traffic (Maldives, Malaysia and Singapore). The littoral states bordering the Bay of Bengal have a populace of approximately 2.0 billion (United Nations, 2022). More than 200 million people in the Bay region reside in coastal areas, with a substantial proportion either partially or entirely dependent on fisheries or fishery-related activities (Singh, 2020). There are over 400,000 fishing crafts, with over 4.5 million people employed in fisheries and associated activities (Singh, 2020). Since the Bay is located in the centre of South and Southeast Asia, which represent two salient economic regions, the SAARC and ASEAN, the region manifests a pivotal strategic significance and plays a vital role in regional and global geo-

economics and geopolitics. The region has great potential to become a strong commercial community since most of the littoral states of the

region have fast-growing economies (Islam, 2003; Agarwala & Saha 2019).

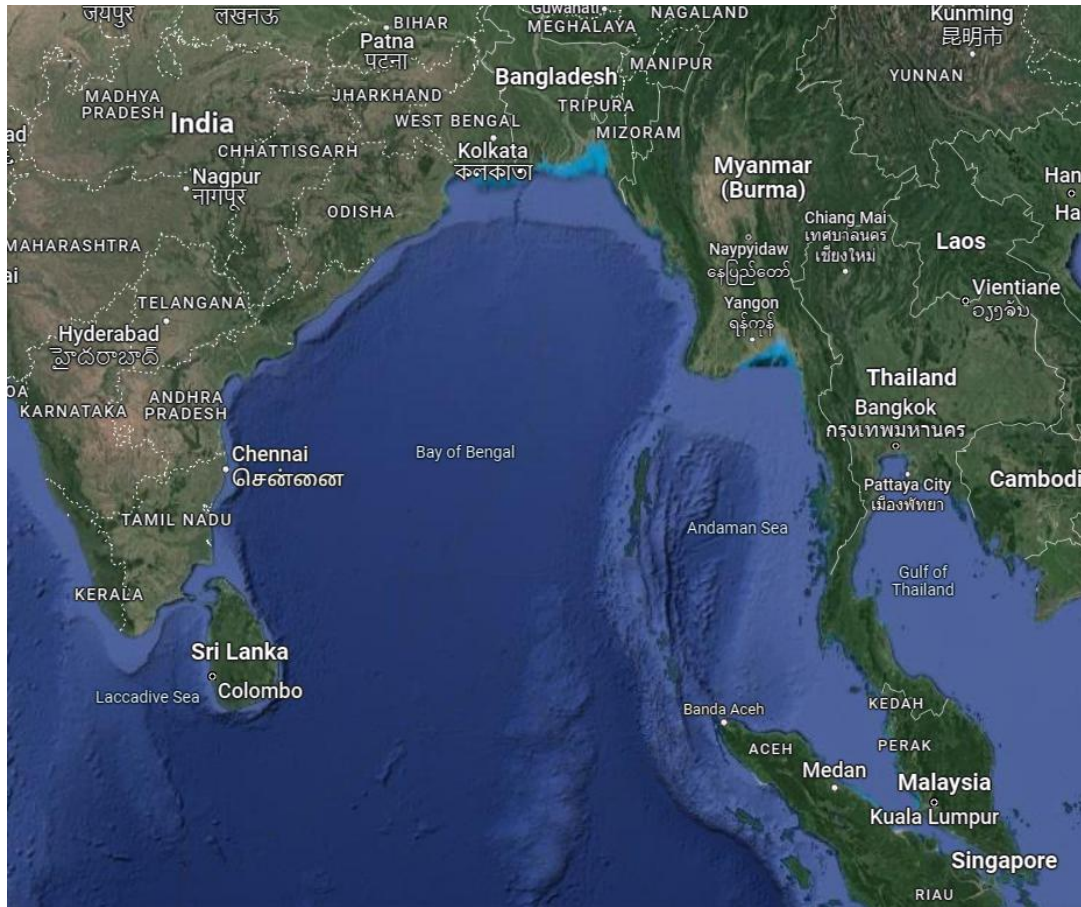


Fig. 1. Map of the Bay of Bengal (Source: Google Maps)

The Bay of Bengal has a distinct tropical marine ecosystem, and the abundance of wetlands, marshes, coral reefs, seagrass beds and mangroves have increased the productivity of the bay region. The Bay is not only a source of livelihood but also a valuable resource for foreign exchange. The BOBR is believed to be one of the biggest reserve sources of offshore hydrocarbon including gas and oil. Together with these non-living resources, its living resources like fish, and corals would contribute to the future economic development of the region (Rahman, 2017). Increased employment opportunities and food security would be supported

by the sustainable use and management of fishery resources. Moreover, future expansion of the offshore oil and gas industry would enhance the energy security of the littoral states.

The EEZs of the countries bordering the Bay of Bengal are shown in Figure 2. Of these, Sri Lanka is situated at a unique location. As there are no other maritime countries south of Sri Lanka under the UNCLOS, the island state has rights to claim an extended EEZ as depicted in Figure 3. The outer boundary of the extended EEZ has already been demarcated and the claim has been submitted.

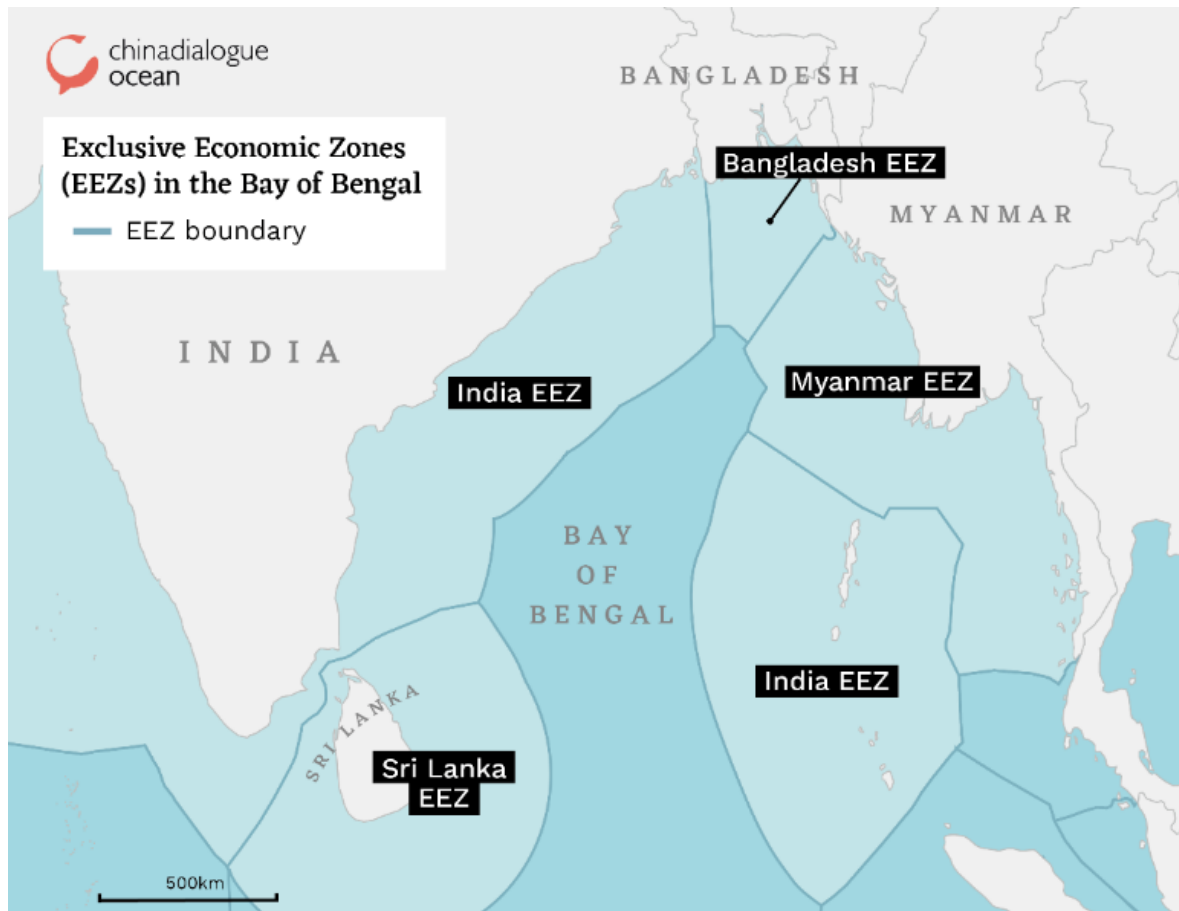


Fig. 2. The EEZs of the countries bordering the Bay of Bengal

(Source: <https://www.thethirdpole.net/en/regional-cooperation/going-beyond-bay-of-bengal/>) [accessed on 11.09.2023]

In Bangladesh too, after winning two verdicts on maritime boundary delimitation issues against India and Myanmar, the country has rights to claim over a vast sea area in the Bay of Bengal. Under the “Territorial Waters and Maritime Zones Act, 1974” (Act no. XXVI of 1974) of Bangladesh, there are provisions for the proper management and protection of coastal marine resources. However, the vast maritime domain in the region that hitherto remains unexploited requires proper utilization and management to provide extra weight to attain social, economic and ecological goals. This is of particular importance due to the reason that, like other ocean regions, the Bay of Bengal is also assembled with the problems of IUU fishing, marine pollution, ineffective marine regulation and the non-traditional security menace (Rahman, 2017). Bangladesh is reputed as a littoral country in the Bay of Bengal that has skilfully harnessed utilisation of the seas, oceans and marine assets.

India’s approach, under the procedures of the blue economy, is to direct its efforts to preserve, manage, and safeguard the marine environment, with a focus on a cooperative approach, through regional collaboration (Chathurvedi, 2022). India has also taken the initiative, through the ambitious ‘Sagar Mala Project’, to promote port-led development in the country by harnessing India’s 7,500 km long coastline, 14,500 km of potentially navigable waterways and strategic location on key international maritime trade routes. In Sri Lanka, the country’s proximity to major sea lanes has led to the emergence of industries and the building of port capacities. Sri Lanka, like other countries in the region, is facing numerous challenges in optimizing blue economic resources. As an inland nation, Sri Lanka struggles particularly with ecosystem degradation and declining fish stocks.

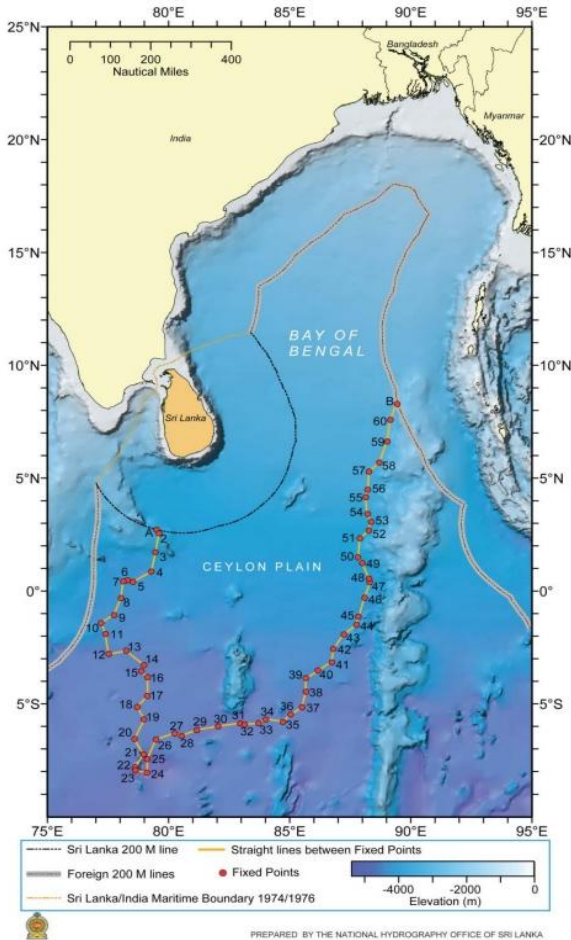


Fig. 3. The extended EEZ of Sri Lanka

(Source: https://www.un.org/depts/los/clcs_new/submissions_files/submission_lka_43_2009.htm) [accessed on 11.09.2023]

Globally, fisheries and aquaculture produced 214 million tonnes in 2020, of which 178 million tonnes were aquatic animals. Compared to 9.9 kg per capita destined for human consumption in the 1960's, 2020 reported more than double this amount; 20.2 kg per capita (FAO, 2022). While fisheries and aquaculture employed about 58.5 million people, it has been estimated that about 600 million livelihoods depend, at least partially, on these sectors. Even after the outbreak of Covid-19, international trade in fish and fish products generated about 151 billion US \$, in 2020 (FAO, 2022). BOBR countries too have recorded significant increases in fisheries and aquaculture production as shown in figures 4 and 5. All BOBR countries have recorded significant increases in both capture fisheries and aquaculture production. This growth in capture fisheries production has shown a tremendous increase after the 1980's, marking probably a golden era of blue growth in fisheries. Yet, other than Indonesia, all other BOBR countries show a flattening of the capture fisheries growth curve showing the inability of capture fisheries to further contribute to total fish production. This limited potential of capture fisheries would have provided a strong impetus for aquaculture production, which has increased at a fast pace after the year 2000.

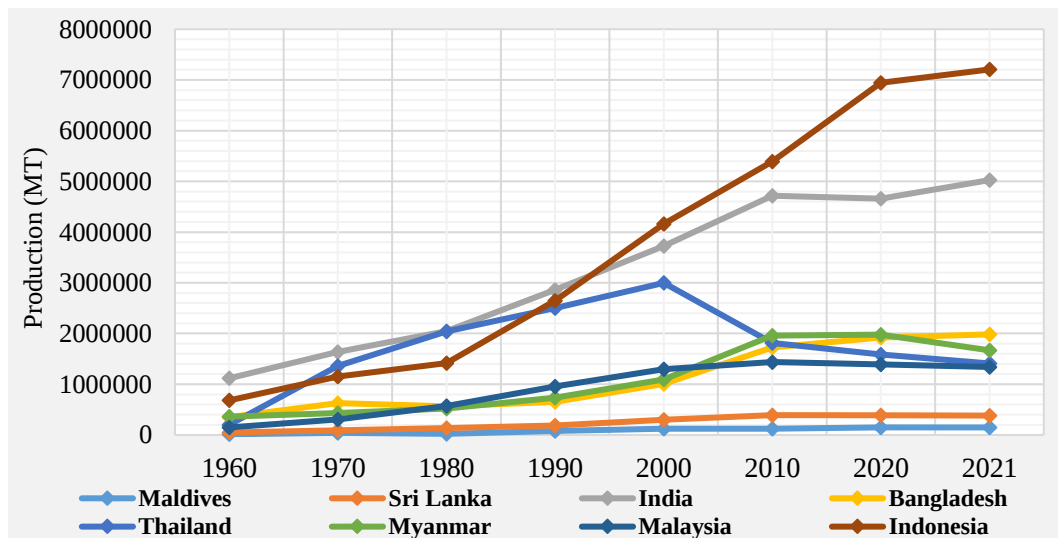


Fig. 4. Growth of Capture Fisheries Production Bay of Bengal Region (MT).

(Source: <https://www.fao.org/3/i0433e/i0433E04.htm>) [accessed on 10.07.2023]

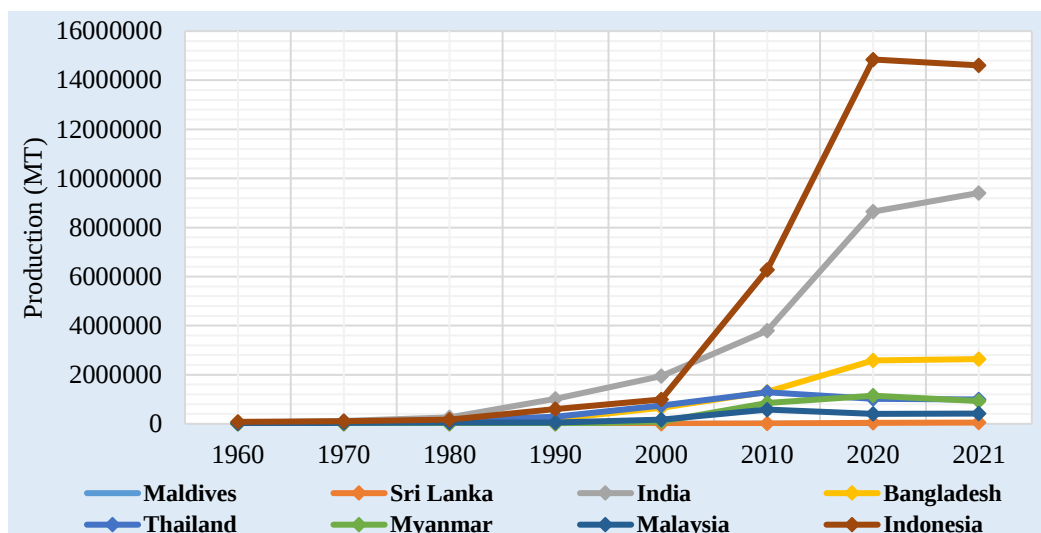


Fig. 5. Growth of Aquaculture Production Bay of Bengal Region.

(Source: <https://www.fao.org/3/i0433e/I0433E04.htm> [accessed on 10.07.2023])

Of the BOBR countries, the largest Blue Economies in respect of fisheries and aquaculture, are India (producing annually 5,024,905 metric tons of fish from capture fisheries and 9,403,000 metric tons of fish from aquaculture) and Indonesia (producing annually 7,206,879 tonnes of fish from capture fisheries and 5,515,207 tonnes of fish from

aquaculture (Table 1). The other large blue economies producing about 3 million tonnes of fish each year include Bangladesh and Myanmar. As it is evident from the figures, the growth rates of both capture fisheries and aquaculture have been highest in Indonesia.

Table 1. The Largest Blue Economies (with respect to Fisheries and Aquaculture) in BOBR Countries

Source: <https://www.fao.org/fishery/en/information> [accessed on 30.09.2023]

Country	Production in year 2021 (MT)	
	Capture Fisheries	Aquaculture
Maldives	144,993	n.a
Sri Lanka	380,278	50759
India	5,024,905	9,403,000
Bangladesh	1,982,483	2,638,745
Thailand	1,412,123	989,898
Myanmar	1,665,740	929,216
Malaysia	1,337,231	228,081
Indonesia	7,206,879	5,515,207

The highest contribution of fisheries and aquaculture to the GDP has been reported by Maldives, with these sectors accounting for more than $\frac{1}{4}$ of the GDP (Table 2). Myanmar too has

recorded a contribution of almost 10% to the GDP, while the rest of the BOBR has recorded a contribution of less than 2% to the GDP by fisheries and aquaculture.

Table 2. Contribution of Fisheries and Aquaculture to GDP in 2006

Country	Contribution to GDP (%)
Maldives	26.6
Myanmar	9.9
Bangladesh	2.0
Indonesia	1.9
Thailand	1.6
Sri Lanka	1.3
Malaysia	1.1
India	0.5

Source: <https://www.fao.org/3/i0433e/i0433E04.htm>
[accessed on 10.07.2023]

Dissent on blue growth; the browning effects on the ecosystem and the human system

Although the Bay of Bengal offers multiple blue benefits to the South Asian region, such benefits will very likely be challenged and limited by the area's growing ecological vulnerability. Besides geopolitical difficulties, the countries also face serious impediments due to pollution, habitat loss, biodiversity degradation, piracy, international crime and climate change. Other challenges to the realization of the Blue Economy include erratic incentives, inadequate implementation of legal instruments, etc. (<https://blog.nextias.com/blue-economy-significance-challenges>). These challenges have significant impacts on the ecosystem and the human system, and many complaints of marginalization of small-scale fishing communities have been heard.

The sections to follow will provide evidence of diverse impacts of the blue economy that have caused threats to the sustainability of both the ecosystem and the human system. The term 'browning' is used here to denote a process that is environmentally unfriendly and non-sustainable.

Overexploitation and degradation of ocean resources

One of the cardinal issues the region is afflicted with is "overfishing". Over the years, fishing activities have intensively exploited the fishing grounds of the region, leading to a distinctive decline in fish stocks (Hussain & Hoq, 2010; Singh, 2020). Moreover, like other ocean regions, the Bay of Bengal region is also vexed with issues of IUU

fishing, marine and coastal pollution, unregulated technological change and climate change impacts (Hossain, 2020; Faiyaz & Al Arif, 2022). It is well documented that the marine fisheries resources around the world are under threat of depletion. The fraction of fishery stocks at biologically sustainable levels has decreased to 64.6% by 2019 (FAO, 2022). The situation of the BOBR fisheries sector follows the same scenario. High fishing pressure from mechanized boats and gears, unsustainable fisheries practices including blast fishing, bottom trawling and all related to IUU fisheries, high bycatches related to inefficient nonselective fishing gears, climate and environment-induced stock depletion, marine pollution and related maritime disasters, malpractices related to fish storing and handling and transporting are highly evident in all member countries in BOBR. In many BOBR countries such as India and Sri Lanka, civil societies have facilitated entry into fisheries by providing subsidies and livelihood capital (Amarasinghe, 2009; Amarasinghe & Bavinck, 2011; Singh, 2020). This has led towards overcapacity and overfishing since fishers have entered the fishery quite freely and have exploited the resources heavily.

The use of destructive fishing methods is not a new phenomenon, and they have posed seemingly intractable challenges to scholars, managers and policymakers seeking to phase them out (Petrossian, 2015; Slade & Kalangahe, 2015). The destructive fishing techniques, including the use of explosives and poisons, have been part of many small-scale fisheries for decades (Authman *et al.*, 2013; Petrossian, 2015). Blast fishing is infamous among many coastal countries as a fundamentally destructive practice that, at its most extreme, can reduce three-dimensional hard coral structures to flat, unconsolidated rubble, thereby decreasing the abundance and diversity of coral species and other vertebrate and invertebrate species that rely on coral reefs as their primary habitat. A study on the status of destructive fishing activities in the Pacific Islands showed that by the early 1980s, nearly half of the cases of reef degradation were related to damage from explosives and poisons (Veitayaki *et al.*, 1995). In Sri Lanka, Trincomalee and Batticaloa on the East coast, Hikkaduwa on the southern coast and Kalpitiya on the west coast are well-known grounds for blast fishing. Fishermen use TNT, C4, and gelignite as the blast, but later some of them switched to a water-based blasting gelatine which

has increasingly become the explosive of choice. In 2017, the Sri Lanka Navy seized 52 kilograms of water gel while they seized 63 kg during the first few months of 2019 (Rodrigo, 2022), indicating an increase in the usage of blasts, exerting more and more pressure on marine resources. Dynamite fishers select rock outcrops, and shipwrecks to deploy their dynamites and the same sites are preferred by dive tourists indicating the potential injurious impacts on tourists, which would have depressive effects on the expanding tourist industry, indicating its multi-sectoral impacts.

Tourism expansion and competition for coastal space and ecosystem impacts

In general, coastal and marine tourism in countries surrounding the BOB does not play a significant role when compared to other countries in the Southeast Asian region. However, eastern and western parts of Southern BOBR show a significant potential for tourism development, especially in Thailand and Sri Lanka, whereas northern BOBR shows a considerable attraction for local tourists, especially in areas such as Cox's Bazar in Bangladesh. The main reasons could be the opportunities for marine tourism based on the climate and weather, biodiversity, clear water, sandy beaches and the socio-economic status of the area. The Sundarban delta in Bangladesh is the world's largest continuous stretch of mangroves. These as well as the coral reefs of Sri Lanka, Maldives and India, and shipwrecks and underwater archaeological treasures in Sri Lanka support millions of floral and faunal species. Importantly, Sri Lanka has been ranked first among the top 24 countries to visit in 2023, by the travel site, <https://traveltriangle.com/>, and also the country has claimed the top spot in the world's leading travel guide, the Lonely Planet as the best travel destination in 2019.

However, the development of the coastal tourism sector causes unexpected but obvious negative impacts on coastal fishing communities. It is well known that coastal tourism develops because of the natural attraction of coastlines, remoteness, and its pristine and authentic nature, which provide an ambience, different from that found in congested urban areas where most tourists come from. Low cost of land and labour attract multinational tourist companies and wealthy and powerful tourism

stakeholders, who invest in tourism by purchasing or forcefully grabbing land using their power. This process has led to the marginalization of small-scale fishers, many of whom had lost their lands, traditional fishing grounds, craft anchorage and landing sites, and even beach access roads. This is related to the development and privatization of the coasts (i.e., tourist-only beaches), spatial conflicts with marine tourism activities like scuba diving and whale watching, and conservation enclosures that prohibit fishing (i.e., marine protected areas) (Alvarado & Taylor, 2014), where tourism-conservation initiatives pay fishers not to fish in certain areas (Biggs et al., 2016). Evidence supports the expectation that participation in fishing will decline as tourism develops and fishers will shift away from fishing in favour of tourism-related livelihood alternatives (Ngoc, 2018). The resultant, declining participation in the fishery is also driven by tourism-related development that leads to displacement or limits access to the fishery. Aggravating this scenario, growing coastal populations, overfishing and harvesting, environmental degradation, and climate change threaten the long-term sustainability, especially of many small-scale fisheries. In contrast, Miller (2022) indicated that while tourism development leads to a decline in fishery participation, this decline can be more than offset by increases in fishing efforts by those remaining in fisheries and improvements in fishing methods. Further, he highlighted that these impacts vary from place to place due to contextual factors in the biophysical environment and socio-political systems that shape how tourism development affects fishing behaviour. Yet, as the same author states, the impact of tourism development on fisheries is understudied within the small-scale fisheries (SSF) literature.

The tourists to the region are attracted by its climate and weather, biodiversity, clear water and long sandy beaches. However, the industry has its own socio-ecological features, impacts and economic opportunities. It is well understood that fisheries and tourism are overlapping in most instances and have the potential to threaten the ecological stability of coastal ecosystems such as coral reefs, resulting in phase shifts from highly diverse, productive and healthy coral ecosystems toward less productive coral-depleted ecosystem states. Moreover, destructive fishing practices,

clashes of overfishing and landing space, displacement of artisanal fisher groups by ever growing tourism facilities, and diversification of coastal tourism activities create a heated battleground between these two, economically important sectors. A few classical examples to indicate the intensity of conflicts between tourism and fisheries activities are available in Sri Lanka. Spearfishing for Napoleon wrasse (*Cheilinus undulatus*), whale watching and the killing of dolphins, collection of turtle eggs and killing of turtles, Blacktip shark (*Carcharhinus melanopterus*) fishery in Pigeon Island National Park and dynamite fishing on shipwrecks, and fish landing site and development of surfing infrastructure in Weligama Bay are some of them.

Marine Pollution

Marine litter is more visible in the areas covering the South Asian Seas region, (i.e., the seas bordering Bangladesh, India, Maldives, Pakistan, and Sri Lanka) comprising the Northern part of the Indian Ocean, along with parts of the Bay of Bengal and the Arabian Sea (Kapinga & Chung, 2020). Most marine litter first enter the ocean's environment via smaller rivers, and plastic is the most predominant litter item found in rivers and coastal beaches. Recent studies indicate that among the top ten most polluted rivers in the world, eight are in Asia, and two are in the South Asia subregion (i.e., 6th – Ganges, and 3rd – Indus). Rivers Indus, Meghna, Brahmaputra, and the Ganges in South Asia region account for roughly 22% of the plastic weight of the top ten plastic-polluting rivers, which translates into approximately 19% of the global Marine Plastic Pollution (Kapinga & Chung, 2020). According to Jang *et al.* (2018), of the marine litter on Sri Lanka beaches, classified by use, packaging material (55%) dominated the debris, followed by consumer products (25%) and fishing gear (20%). In terms of materials, plastic was the greatest contributor (93%) to marine debris. Beaches near a

river mouth or city and those with a barrier had greater debris accumulations in Sri Lanka beaches. The east coast of the country had significantly greater small debris density, possibly due to strong northeastern monsoon currents. Abandoned, lost or discarded fishing gear is another solid waste problem related to fisheries with the potential to degrade marine fauna and fauna perpetually. In addition to plastic pollution, Shyamol (2012) mentioned that the Bay of Bengal and Karnaphuli River are heavily polluted in areas close to the Chittagong port channel due to the discharge of oil and chemical waste from ships. Rashid *et al.* (2015) reported that the average concentration of nickel exceeded a value of Effect Range-Low: ERL ($20.9 \mu\text{g}\cdot\text{g}^{-1}$) along the east coast of the Bay of Bengal and the incidence of adverse effects on biological components exceeded 16.7%. Further, they showed that the concentration of Cd, Fe, Pb and Cu in seawater was relatively higher than the standard concentration and a considerable amount of heavy metals (0.035%) such as Zn, Pb, Cu, Fe, and Mg was found in sea shells, and oyster which may make them toxic (Rashid *et al.*, 2015). In addition, the rapid and unplanned increase in aquaculture, especially shrimp culture is also becoming a great concern for coastal and marine pollution in the BOBR. It is well proven that the heavy use of antibiotics and other chemicals used in shrimp farms is causing pollution in the water, which may harm other aquatic lives once they enter the natural systems. Shrimp culture in Cox's Bazar uses 620 tonnes of urea annually. It also generates 15 tonnes of waste daily, which is dumped into the sea (Rahman, 2006). According to a recent report, a dead zone is present in the Bay of Bengal Large Marine Ecosystem (BOBLME), which is approximately 60,000 km² in size, making the area devoid of marine life (Colombage, 2019). This dead zone is a new threat to the ecology which might have calamitous effects on the oceans and global N₂ cycle (Ghosh & Lobo, 2017; Mannan, 2020).

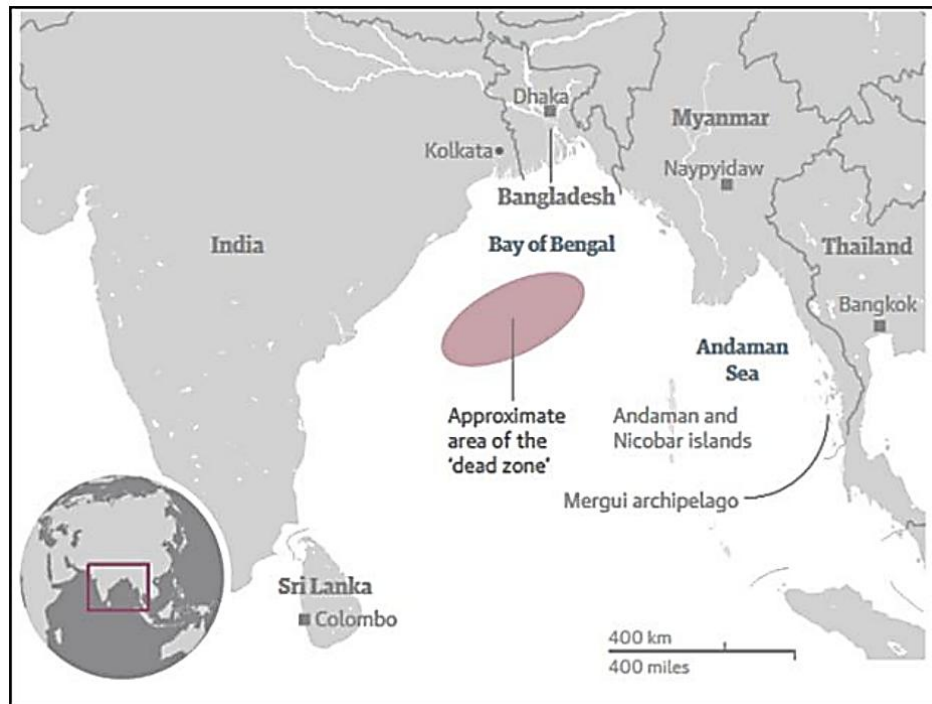


Fig. 6. Dead zone in BOBLME (Source: Ghosh & Lobo, 2017)

BOBR is quite active in respect of ‘shipping’ because a large diversity of ships passes through the Northeastern Indian Ocean before entering the Malacca straits which remain busy throughout the year. More than 50,000 merchant ships cross this strait connecting two big oceans, the Indian Ocean and the Pacific Ocean (Rodrigue, 2004; Fatima & Jamshed, 2020). Major ports like Colombo, Chittagong, and Bangkok have become shipping hubs for the world’s marine transportation sector, with a potential for significant water pollution by oil and chemical spills, collision and grounding of merchant vessels (Arachchige *et al.*, 2021). As a result, the region is being exposed to ever increasing ship-generated pollution such as ballast water, oil pollution, sewage, noxious substances, scraps and air pollution. More than 90% of the world tonnage is being scrapped in Asian countries (Buxton, 1991; SAFETY4SEA, 2019). Countries in the Bay of Bengal, especially Bangladesh are well known for ship scrapping, an extremely polluting industry, which has become the graveyard for scrapped ships having 24 ship-breaking yards. As a result, a remarkable number of marine species have disappeared from the ship-breaking areas and the catch volume of sea fish has been degraded to 50% only due to the adverse impacts of ship-breaking

activities (Hossain & Rahman, 2011). Further worsening the marine pollution status, ship disasters like the fire onboard were reported in the Very Large Crude Carrier (VLCC) ‘New Diamond’, which took place in the BOBR, giving a warning sign on future threats from possible ship disasters.

Impact of the blue economy on small-scale fisheries – lessons learnt from bobr

It is well known that “Small-scale fisheries make an important contribution to nutrition, food security, sustainable livelihoods and poverty alleviation – especially in developing countries” (FAO, 2014). The majority of the fish harvested in the Bay of Bengal comes from the small-scale sector. Despite this significant contribution, issues constraining the sustainable development of small-scale fisheries remain unattended. There is widespread poverty among SSF communities and the lives of many have become non-sustainable. Recent trends in Blue Economic Growth initiatives have revealed, apart from their benefits to various stakeholders, a process of marginalization of small-scale fishing communities. Small-scale fishers and fish workers in the region argue that their livelihoods have been

undermined by the blue economy or blue growth initiatives, which discern the ocean and the coastal area as an industrial arena. According to the existing literature, the most significant impacts of the blue economy on small-scale fisheries of the Bay of Bengal region are as follows:

- Dispossession, displacement and land grabbing;
- Environmental degradation;
- Undermining livelihoods of small-scale fishers;
- Undermining access to marine and coastal resources;
- Marginalization of women; and
- Exclusion from decision-making

Incidents of “land grabbing” and breaching of tenure rights of coastal fishers caused by blue economic development activities have been brought up by a number of authors in recent years (Bavinck *et al.*, 2017; Bennett *et al.*, 2015; Amarasinghe & Piyasiri, 2021). Ocean and coastal-based development activities have acted as drivers of the dispossession of marine and coastal resources from small-scale fishing communities. Power asymmetry between the fishers and other stakeholder parties (tourism stakeholders, investors, developers, etc.) can be clearly seen with respect to these incidences of violation of tenure rights. Small-scale fishers have been spatially displaced by their customary lands (Veuthey & Gerber, 2012; Bavinck *et al.*, 2017; Galappaththi & Nayak, 2017). The lament of many coastal fishers is that they are losing their traditional access routes to the beach and space on the beach due to continuous construction and development activities in the coastal region.

In what follows, we explore the impacts of the blue economy on the small-scale fisheries in the Bay of Bengal Region, through a review of literature.

Evidence from Bangladesh

With the assistance of the World Bank and the European Union, Bangladesh has restructured and amended its ocean-related policies, coastal management-related policies, laws and institutions to bring forth components of the blue economy. Under the blue economic development in Bangladesh, the government has initiated several development projects in the coastal zone (Hussain

et al., 2017; Hussain *et al.*, 2018). Twenty-three coastal areas have been identified to be developed into Special Economic Zones (SEZs). Several mega development projects such as the Japanese Economic Zone in Arihajar Upazila of Naryanganj District, the Chinese Economic and Industrial Zone in Anwara of Chattagrom and two Indian Economic Zones, Kustia and Mongla, have been initiated. However, fisher communities complain that the process of blue economic development has marginalized the local fishing communities, violating their customary rights to land and displacing them.

ITIBE (2021) pointed out that the construction of Maheshkhali Special Economic Zone has disrupted the livelihoods of the small-scale fish workers on Maheshkhali Island. The affected people have become migrants because they have been forcibly evicted from their traditional hamlets. Fishers have pointed out that the deep-sea construction activities of the Materbari coal power project have caused a significant depletion in the fish population in the area. Moreover, it was revealed that construction activities have disrupted the natural lagoons in the area, threatening shrimp farming activities (ITIBE, 2021). Another significant gap in Bangladesh’s blue economic development has been the poor communication among stakeholders, particularly between the developers and the coastal dwellers (Hussain *et al.*, 2017). The tourism development projects in Cox Bazaar City located on the southeast coast of Bangladesh, have been initiated without consulting the local populations. Moreover, the transformation project of the existing domestic airport in Cox Bazaar to an international airport has threatened the livelihoods of small-scale dried fish workers in the area, including women, because of the acquisition of large stretches of fish drying areas for construction activities.

Evidence from India

Displacement and loss of livelihoods, poor community consultation, and destruction of ecosystems have been reported as the major impacts of blue economic growth on India’s small-scale fishers (ITIBE, 2021).

The displacement of fishing people due to mega projects was brought to light by the participants at the aforementioned People’s Tribunal (ITIBE,

2021). It has been pointed out that due to mega projects such as the multi-purpose deepwater seaport in the district of Thrivunanthapuram, Kerala; Expansion of Karwar fishing harbour in Karwar, Karnataka; Thermal power plants in Karnataka; Steel plants in Maharashtra; Mormugao port in Goa and the Wadhwan port in the Palghar district of Maharashtra, thousands of small-scale fish workers have been displaced from their land, for which they had customary rights. In some parts of India, such as Goa, the adoption of blue economy has become an industrialization strategy to shift away from mining activities. However, these construction activities have been dispersed over large stretches of the coastal area, leading to the disappearance of entire fishing villages, such as the Kharewado fishing village on the coast of Vasco Bay. Moreover, the Mumbai coastal road project has driven the small-scale fishers to the margins, losing their lands and livelihoods (Arora-Desai, 2023; Movik Adam & Alankar, 2023).

Exclusion from 'blue decision making' has been reported in development projects such as Vizhinjam port in Kerala and the Blue Flag beaches project, where fishers had customary rights to coastal and marine resources. In the case of the Blue Flag beaches project, fish workers in Kozhikode district in Kerala and Kozhikode and Uttara Kannada district of Karnataka have complained that there had been little or no public consultation with the coastal communities. Not only the state has failed to adhere to fundamental management principles such as inclusiveness and democratic decision-making, but it has also failed to compensate the fishers for the loss of property or livelihoods (ITIBE, 2021).

Failures to focus on ecosystem health, causing environmental degradation have also been reported in several areas. In the Bharuch district of Gujarat, more than 15,000 fish workers who are dependent on the Narmada River estuary for their livelihoods, have been heavily affected by the Gujarat Industrial Development Corporation areas (GIDC) project (SNDRP, 2015; ITIBE, 2021). Thousands of industrial plants have started releasing sewage into the Narmada River, which has ultimately led to a

drastic reduction in fish production in the area. Moreover, marine and coastal pollution caused by the extensive black sand mining in Kuttanad region of Kerala has given rise to a massive depletion of fishery resources, pushing the small-scale fish workers to the dumps of poverty. Movik Adam & Alankar (2023) have shown how the transformation of coastal lands into profitable real estate in Mumbai, has threatened to undermine the livelihoods of the Koli fishing community¹. The prospective destruction of mangroves and biodiversity in the Palghar district in Maharashtra, due to the proposed Vadhwan port and coastal road construction have also been highlighted (ITIBE, 2021).

Evidence from Indonesia

Indonesian government has embarked on an economic growth process that is in conflict with the needs and lives of coastal fishing communities. Coastal land grabbing by tourism interests, environmental degradation, marginalization of small-scale fishers, and exclusion of women from decision making have been highlighted as the major impacts of the Indonesian Blue Economy on small-scale fisheries (ITIBE, 2021).

The enforcement of Omnibus Law² 2020 has opened up Indonesian waters to foreign fishing vessels and investors, by enabling them to purchase a fishing license (Dirhamsyah *et al.*, 2022; Raharja & Karim, 2022). These access controls and the burden of registration costs have marginalised the coastal fishing communities and repudiated their customary rights over fishery resources (Elia & Indrajaya, 2022). Several renowned international maritime infrastructure development companies have launched several infrastructure development projects in most of the coastal areas and small islands in Indonesia, such as the sand mining and reclamation project in Makassar city of eastern Indonesia's Sulawesi island, and Banten; the westernmost province of Indonesia's island of Java, artificial island development in Jakarta Bay, development of Tanjung Emas port in central Java, and Jakarta Giant Sea Wall project (ITIBE, 2021).

¹ One of the traditional, oldest fishing communities in Maharashtra

² On November 2nd 2020, Indonesia officially enacted the job creation law - commonly known as

the "Omnibus Law", which aimed at attracting investment, creating new jobs and stimulate the economy

Environmental degradation due to sand mining activities at the Makassar port caused severe environmental degradation in the traditional fishing grounds of local fisherfolk in Cambaya, Tallo, and Kodingareng Lompo islands. The fishers are bewailing that the mining activities have altered the tidal patterns and caused water pollution, leading to a distinctive decline in their fish catch and income (Khaerah *et al.*, 2021; ITIBE, 2021). Moreover, the Jakarta Giant Sea Wall project has destroyed the traditional fishing grounds of the fishers of Muara Angke, on the northern coast of Jakarta. Even though the government has provided the fisher folk with relocation sites, they have been reluctant to move since the proposed relocation sites were far away from the coast (ITIBE, 2021). The Mandalika Tourism Economic Zone project launched by the Indonesian Tourism Development Corporation (ITDC) has grabbed a considerable extent of land bordering the Seger Kuta beach. The lament of many small-scale fishers and women fish workers is that they have lost their customary rights of access to the beach and coastal space, due to ongoing constructions.

Evidence from Sri Lanka

Although it is popularly believed that blue economic development is new to Sri Lanka, the origins of blue economic growth can be traced back to the late 1950's when the country introduced motorised crafts and new fishing gear; the "Blue Revolution" (Amarasinghe, 2005). This technological revolution led to large increases in fish production. The government encouraged fishers to adopt the new technologies, via offering subsidies and group guarantees as collateral through cooperatives. Blue growth was well accepted by the SSF communities because the process ensured the inclusion of SSF communities who benefitted significantly from this expansionist wave.

Under the blue economic framework, the Sri Lankan government has launched massive development projects on the west and south coasts. Harbours, airports, highways and hotels, and industrial buildings are being constructed to accelerate development and attract foreign investment, threatening the livelihoods of coastal fishers (Ibrahim, 2020). Exclusion of communities from development decision-making, absence of any community consultation in implementing

development projects, coastal land grabbing by tourism interests, and marginalization of small-scale fishers can be highlighted as the major impacts of blue economic growth in Sri Lanka's small-scale fisheries (ITIBE, 2021; Koralagama & Bavinck, 2022). Fishers are complaining that they have lost their beach seining sites, craft anchorage sites and fish drying sites, first, as a result of climate-induced sea erosion and second, as a result of land grabbing by tourism interests and mega development projects such as the Port City project, Chundikulam National Park and Highway Corridor from Negombo to Jaffna. Coastal erosion caused by extensive sand mining activities for project construction has destroyed several coastal fishing villages and has evicted fishers from their customary lands without adequate livelihood compensation (ITIBE, 2021). Moreover, a considerable extent of land on the south, west and eastern coasts has been grabbed by tourism stakeholders; both local and foreign (first author's observations). Other than the tourism stakeholders, several manufacturing and processing companies have acquired coastal areas in the Northern Province restricting the beach access to coastal fishers (Koralagama & Bavinck, 2022). Moreover, the same authors have shown that, due to burgeoning coastal tourism activities on the west and south coasts, groups of small-scale fishers have migrated to the northwest coast for fishing activities, abandoning their traditional fishing grounds.

Evidence from Thailand

In Thailand, instances of loss of freedom and livelihoods, loss of food security, and marginalization of small-scale fishers including women fisher folk have been reported at the ITIBE (2021). It has also been reported that mega development projects like the Grand Thai Canal, Jana/Pak Bara port, the Eastern Economic Corridor and the Laem Chabang port have displaced small-scale fishers from coastal areas denying their access rights to coastal and ocean resources.

The fishing communities have proclaimed that the expansion activities of the Laem Chabang port, caused a significant depletion of fish catch in the area, and posed threats to their alternative livelihood activities such as mussel culture (Vongvisessomjai, 2006; Gandimathi *et al.*, 2020;

ITIBE, 2021). Moreover, fisher folk have pointed out that they are losing traditional access routes to the coast and coastal space, owing to industrial development programmes carried out in the coastal areas such as the Eastern Economic Corridor project. Development projects such as Laem Chabang port and Pak Bara Deep-sea Transshipment Port, have denied the livelihood rights of local fishing communities. Many small-scale fishers have lost their income sources, which has imposed serious consequences on their food security (Gandimathi *et al.*, 2020; ITIBE, 2021). Thailand's women fisherfolk complain that the blue economic development process has not recognized their role in fisheries and post-harvest sub-sector (ITIBE, 2021). They have been excluded from the decision-making process, which is exacerbated by poor recognition of their work.

Under the blue economy framework, Thailand's national fisheries management policies focus on minimizing fishing pressure and preventing Illegal, Unreported, Unregulated (IUU) fishing activities (Kadfak & Linke, 2021). Under the new fisheries management plan, registration of new fishing vessels has been stopped to limit entry into fisheries. Moreover, the anti-IUU policies have also called for stopping the registration of fishing vessels and other measures, which have denied fishers the right to engage in a livelihood. With the onset of the blue economic era, Thailand's marine and coastal tourism has increased at an accelerated pace (Koondee *et al.*, 2022). A considerable extent of beach areas around the country are increasingly being utilized for tourism-related constructions (Roy, 2019). These extensive and unregulated constructions have given rise to a significant depletion of fishery resources and mangrove forest coverage, pushing the small-scale fish workers in the area to misery.

Blue economy and blue justice

Following from evidence of adverse impacts of the blue economy on the small-scale fisheries in almost all BOBR countries, it could be easily deduced that small-scale fisheries have not been a component of the blue economy agenda. Unfortunately, the dark side of the blue economy playing field rarely surfaced in discussions concerning blue growth. Literature on Blue Economy often speaks of the positive side of the blue growth process, showing

its impact on food production, global trade, employment, energy use, bioprospecting, etc., as we have shown in the earlier sections, but an emerging concern during the recent past has been on the issue of Blue Justice. It acknowledges the historical rights of small-scale fishing communities to marine, inland and coastal resources as in some cases, these communities have used these resources for thousands of years (Chuenpagdee, 2020; "Blue Justice", 2023). It investigates the pressures exerted on small-scale fishers by other users of the ocean, including industrial fisheries, energy production, shipping, tourism, aquaculture, etc., threatening their livelihoods. Blythe *et al.* (2023) propose that "blue justice refers to the recognition, meaningful involvement and fair treatment of all coastal people with respect to how ocean and coastal resources are accessed, used, managed and enjoyed", which is also supported by Ertör (2021), Bennett *et al.* (2021) and Jentoft *et al.* (2022). As noted by Isaacs (2019), Blue Justice has at its core, fairness, or social justice principle, which recognizes the rights of small-scale fishers to access, participate and benefit from the blue economy.

Injustice emerging from the blue economy or 'blue injustice', is defined as, "the inequitable exposure of oppressed or marginalized people to coastal and marine harms, as well as their cultural and political exclusion from marine decision-making" (Blythe *et al.*, 2023), has now become a widely spoken issue which has led to many resistance movements by coastal populations. As we have noted in the earlier section, the major injustice caused by the blue economy agenda is the lack of concern for small-scale fisheries or blue injustices. It is quite clear that small-scale fisheries were not a component of the blue economy agenda in the past (Pinkerton & Davis, 2015; Cohen *et al.*, 2019). Some scholars are of the view that blue justice is a concept situated in social justice for SSF that contests the exclusion and marginalization of small-scale fishing communities (Isaacs, 2019). As Bavinck (2005) point out, small-scale fishing communities commonly suffer from unequal power relations, and there will be high competition between small-scale fisheries and other sectors, which may have much stronger political or economic influence such as tourism, energy, mining, industry and infrastructure developments (Jentoft, 2014; Piyasiri, 2018). Several authors have shown that small-scale fishers hold a relatively

weak position in the negotiations over marine and coastal development planning which directly affects their livelihoods (Purcell & Pomeroy, 2015). As Bhatta (2004), Buchan & Yates (2019) and Amarasinghe & Piyasiri (2021) have pointed out, decisions concerning coastal resource use and resource management need to be made with the participation of all stakeholders. In his book on, *Life above Water*, Jentoft (2019) noted that “Blue Justice for small-scale fisheries in the blue economy agenda means inclusion of small-scale fishers and community members as stakeholders with an eye towards power imbalances and equity”. Some have even made stronger statements saying that Blue Economy will only be truly sustainable if it focuses on small-scale fisheries (Pauly, 2018). Poor participation and lack of voice of SSF have been a common scenario in the arena of blue growth decision-making (McFarlane-Morris, 2019; Ablo & Asamoah, 2018; Reilly *et al.*, 2016).

Evidence of Blue Injustices from the BOBR region, as noted in the earlier section, is proof of these major issues of Blue Justice as mentioned by Bennet *et al.* (2021), who classified all injustice under 10 themes: 1. Dispossession, displacement and ocean grabbing; 2. Environmental justice concerns from pollution and waste; 3. Environmental degradation and reduction of

availability of ecosystem services; 4. Undermining livelihoods of small-scale fishers; 5. Undermining access to marine resources needed for food security and well-being; 6. Inequitable distribution of economic benefits; 7. Social and cultural impacts of ocean development; 8. Marginalization of women; 9. Human and Indigenous rights abuses; and 10. Exclusion from decision-making and governance. Not only in the BOBR region, but they have been observed globally, the reason why blue justice has surfaced strongly forcing the governors of the blue economy process to focus on the missing link; the SSF.

Governing the Blue Economy

Blue justice is an issue of governability, which needs to ensure that governance principles and the legislative process will provide justice to everyone. Jentoft & Chuenpagdee (2022a) mentions three governance orders, where governance decisions need to be made through the participation of diverse stakeholders. They emphasize the need to probe into the different governance orders and ask the question, of whether governance has done the right thing to ensure justice to all in promoting the blue economy (Table 3).

Table 3. Concerns under difference Governance Orders

Governance Order	Concerns
3 rd Order (Meta Order)	Principles, Rights (Policy)
2 nd Order	Institutions (setting the right rules)
1 st Order	Interactions among diverse stakeholders

Adopted from Jentoft & Chenpagdee (2022b)

At the meta order, governance principles need to take into account the rights and opportunities for progress for SSF, which need to be incorporated into Policy, while in the second order, institutions need to be set right (right rules of the game), which require, among other things, accepting the existence of ‘legal pluralism’ (diverse legal systems, such as state, community, religion, etc. applicable to same situation). This will require establishing co-governance procedures, where decisions are made to ensure that all relevant stakeholders are included in the blue economy strategies (Jentoft *et al.*, 2022). Policy gives guidelines to management and

institutions are the instruments of management. Since fishers form only one stakeholder group in the coastal and marine space, which consists of multiple stakeholders, the interactions among diverse stakeholders need to be managed properly to ensure justice to all. These institutions have an important role to play by setting the rules right. The most widely known institutional mechanism that ensure participatory and inclusive decision-making is ‘co-management’, and it has been suggested that such co-management processes need to be integrated, inclusive, participatory and holistic (Amarasinghe & Piyasiri, 2021). However, it is imperative that

governance decisions should be made through an interactive process, “where multiple actors deliberate, coordinate and cooperate at all orders of governance (Chuenpagdee & Jentoft 2009). Such a process will recognize the rights, norms and principles of small-scale fishers, and probably respects Rawls (1971)’s ‘difference principle’, which states that social and economic inequalities are permitted only if they “are to be to the greatest benefit to the least-advantaged members of the society”.

Several prescriptions as to how SSF could be incorporated into the Blue Economy agenda, are given in SSF Guidelines (FAO, 2015). “SSF Guidelines is meant to be both a buffer against further marginalization and a boost for their security and sustainable development” (Chuenpagdee & Jentoft, 2009). As laid down in Article 10.5 of SSF Guidelines, “states should establish and promote the institutional structures and linkages – including local-national-regional-global linkages and networks – necessary for achieving policy coherence”. Institutional structures such as co-management will be beneficial because there are a number of actors in the blue economy playing field each trying to win the game by achieving its objectives, which might conflict with those of others. It is only then that we could ensure the incorporation of SSF interests as a ‘core principle’ in the blue economy agenda.

SSF Guidelines came as a panacea for those who do not understand and thus do not participate in the Blue Economy game due to the issue of ‘language’. Words defining the blue economy are made by the proponents of the blue economy, and the blue economy language is not well understood by ordinary fisher. Thus, language itself is a source of injustice. This includes, “epistemic injustice,” which tends to exclude and silence those who do not understand the ‘language’. This is again classified into two: testimonial injustice (injustice based on identity: race, sex, religion, etc.,) and hermeneutical injustice (when someone’s experience is not understood by him or by others) (Hookway, 2010). Thus, if the interests of small-scale fishers are to be incorporated into the blue economy agenda, the fishers should get hold of the language because, “the one who controls the language controls the conversation, and the one who controls the conversation controls the action” (Jentoft & Chuenpagdee, 2022b). As it has been shown that

governance interventions are language dependent (Searle, 1995), SSF Guidelines could provide the fishers with instruments that help them to interact effectively with other blue economy actors in a language they understand, which reveals the need to implement SSF Guidelines to redress Blue Injustices. The process needs to ensure that SSF Guidelines are incorporated into policy, identifying the principles and rights (both access and human rights) of fishers, and that action plans are prepared based on policy which needs to establish the right institutions, which will guide interactions among diverse stakeholders. This has to take place through an interactive governance process, finally making the blue growth process participatory and inclusive.

Some major areas needing immediate intervention

In ensuring that the process of Blue Growth is sustainable in reaching both human development goals and ecosystem health goals, the established institutions need to take into account a number of issues as highlighted in the previous section, which point to certain important areas for immediate intervention. These include, not limited to, land and sea tenure, marine spatial planning, pollution, dispossession and displacement, epistemic issues, etc. As it was enumerated in the earlier section, the blue growth process has often been critiqued for its negative impacts causing dispossession of resources from local users from areas of the ocean or coast through spatial enclosures (Bennet *et al.*, 2021). This is very well outlined in SSF Guidelines, with special mention of customary rights of SSF to aquatic resources and land; “States, in accordance with their legislation, and all other parties should recognize, respect and protect all forms of legitimate tenure rights, taking into account, where appropriate, customary rights to aquatic resources and land and small-scale fishing areas enjoyed by small-scale fishing communities” (FAO, 2015). This issue is closely linked to marine spatial planning (MSP). It is a “public process of analyzing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic, and social objectives that are usually specified through a political process” (Ehler and Douvère, 2009). MSP provide answers to issues of loss of coastal space due to land grabbing by tourism stakeholders. Through the mapping of resources, MSP allocates marine space to different

uses, avoiding competition and conflicts among stakeholders.

Evidence from several countries has revealed instances of environmental degradation causing harm to ecosystem services such as food, water, wood, etc. and regulatory services such as flood protection, erosion control, etc. caused by ocean-based industry development (aquaculture, mega cities, destructive fishing, etc.). There is an urgent need to identify the sources and take appropriate action against the polluters. Women too have been marginalized because some of their supplementary income activities, such as fish drying, have been taken over by commercial enterprises. Empowerment of women through training and capacity building and protecting their supplementary income generation activities through the provision of credit and establishing market links are of paramount importance. Although not explicitly stated by stakeholders, the impact of the blue growth process on society and the culture could have been quite strong, because these impacts are disguised under the process of marginalization and lack of voice, a process in which the culture, values, beliefs, etc. of SSF are not recognized, affecting negatively the age-old cultural practices and social relationships, etc. The blue economy game brings outside players with more financial interests into the playing field who are likely to ignore local cultures in pursuing their interests.

As a critique of the blue growth initiative, the concept of 'Blue Degrowth' has been recently proposed, which is a multifaceted concept, critiquing the Blue Growth imperative, and bringing to the surface the struggles of communities against what is happening in the blue growth playing field. It aims to guide the political discussions around the seas and oceans, as well as to uncover and contest its failures, injustices, and negative impacts, at different ecological, political, and social levels (Ertör & Hadjimichael, 2020; Said & MacMillan, 2020). Social Innovation has also been cited as a strategy towards changing the blue economy game. It is considered "the process of developing effective concepts, strategies, solutions, or other ideas that can help solve challenging societal and/or environmental problems via collaborative action by a group of actors" (Eikeset *et al.*, 2018). Thus, social innovation might lead to changing the rules of the game of institutions, markets or the public sector, which could improve creativity and responsible

action towards a synthesis of social, economic and environmental goals (*ibid.*). All these initiatives attempt to correct a gamut of injustices that are emerging in the blue economy playing field.

CONCLUSION

The BOBR region is characterized by immense and diverse amounts of ocean resources such as offshore hydrocarbons like gas and oil, fish, corals, etc. having a high potential for generating employment, income and improved livelihoods. In respect of fisheries resources, tremendous increases in capture fisheries from 1980 onwards and aquaculture from 2000 onwards, have been recorded. Non-fisheries sectors such as shipping, renewable energy, oil and gas, coastal and marine tourism, bioprospecting, etc. are gathering momentum, with the big push given by the Blue Economy initiatives. However, all maritime-related activities including fisheries in the region require proper utilization and management for attaining social, economic and ecological goals. This is of particular importance due to the fact that in the Bay of Bengal Region, as in many maritime regions of the world, the problems of IUU fishing, marine pollution, ineffective marine regulation and the non-traditional security menace are commonplace. On the other hand, profound enthusiasm for the Blue Economy is evident in the Indian Ocean region through institutions of various multi-sectorial economic cooperation such as the Indian Ocean Rim Association (IORA) and Bay of Bengal Initiative for Multi-Sectoral and Economic Cooperation (BIMSTEC).

There has been a significant increase in both capture fisheries and aquaculture in all BOBR countries. Nevertheless, other than Indonesia, all other BOBR countries show a flattening of the capture fisheries growth curve indicating the inability of capture fisheries to further contribute to total fish production. This limited potential of capture fisheries would have provided a strong impetus for aquaculture production, which has increased at a fast pace after the year 2000. However, potential multiple blue benefits to the BOBR are likely to be challenged due to geopolitical difficulties, pollution and habitat loss, biodiversity degradation, destructive fishing, and climate change. Also, the lack of full implementation of legal instruments is a serious challenge to the realization of a Blue Economy.

Plastic pollution, solid waste pollution due to poor management of abandoned, lost, or otherwise discarded fishing gear (ALDFG) and the rapid and unplanned increase in aquaculture, especially shrimp culture are also becoming a great concern for coastal and marine pollution. As BOBR is rather active in respect of 'shipping', the region is being exposed to ever-increasing ship-generated pollution such as ballast water, oil pollution, sewage, noxious substances, scraps and air pollution. In addition, some countries in the BOBR, e.g., Bangladesh, are well known for ship scrapping, an extremely polluting industry, further worsening the marine pollution status. Furthermore, there are complaints that the benefits of blue growth have been unequally distributed and that small-scale fishers have been marginalized in the process. Contrary to Rawls's 'difference principle' (Rawls, 1971) what is observed is the fact that small-scale fishers have not been given equal opportunities to play the blue economy game and that they were not found in the blue economy playing field. Contrarily, a number of Blue Justice issues, such as dispossession and displacement, environmental degradation, loss of access to resources, pollution, gender equity, etc. have emerged threatening the livelihoods of small-scale fishers, including women, pushing them into the dumps of poverty. This is not what is expected of Blue Growth. All definitions of Blue Economy underline that it is about the use of ocean resources for economic growth, employment generation, and improved livelihoods while protecting or preserving the health of the ocean ecosystem. Yet, small-scale fisheries have not entered the blue economy equation as a core variable, which has been cited as the major reason for the emergence of Blue Justice as a concern in the Blue Economy game.

Among the many injustices caused to small-scale fisheries by the blue growth paradigm, governance failure needs to be taken up as a central issue needing unravelling. Epistemic injustice which excludes and silences people at the bottom, has relegated the small-scale fishers to the background. This needs to be resolved through training and capacity building so that these groups will get hold of the blue economy language and participate in the blue economy dialogue.

Decision-making in blue governance needs to be taken with the participation of all actors; industrialists, fishers, government, civil society,

academia, etc. Apart from inclusiveness, such participatory decision-making requires setting the stage right to facilitate effective interaction and equal opportunity for expressing concerns. This is the essence of interactive governance, where participants would deliberate upon their knowledge, experience, and aspirations and come to agreements acceptable to all. Interactive governance needs to be incorporated into the process of decision-making at all governance orders, which will not only bring to light the concerns of all actors but will also provide opportunities for learning from each other. This could also serve as an important platform for knowledge translation between the community and research and facilitate bringing research outcomes to the decision-making table.

As a final note, it needs to be emphasized that if the full potential of the blue economy is to be reaped by mankind, the process of governance has to be put on the right track. Decision-making at all governance orders needs to be made with the effective participation and interaction of all. The small-scale fishing communities can now benefit from the SSF Guidelines, which could help them to get hold of the blue economy language game. Not only SSF Guidelines, but innovative ideas from blue degrowth and social innovation paradigms could be brought into the governance process to finally transform the process of blue growth into an inclusive, participatory and sustainable blue economy.

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