

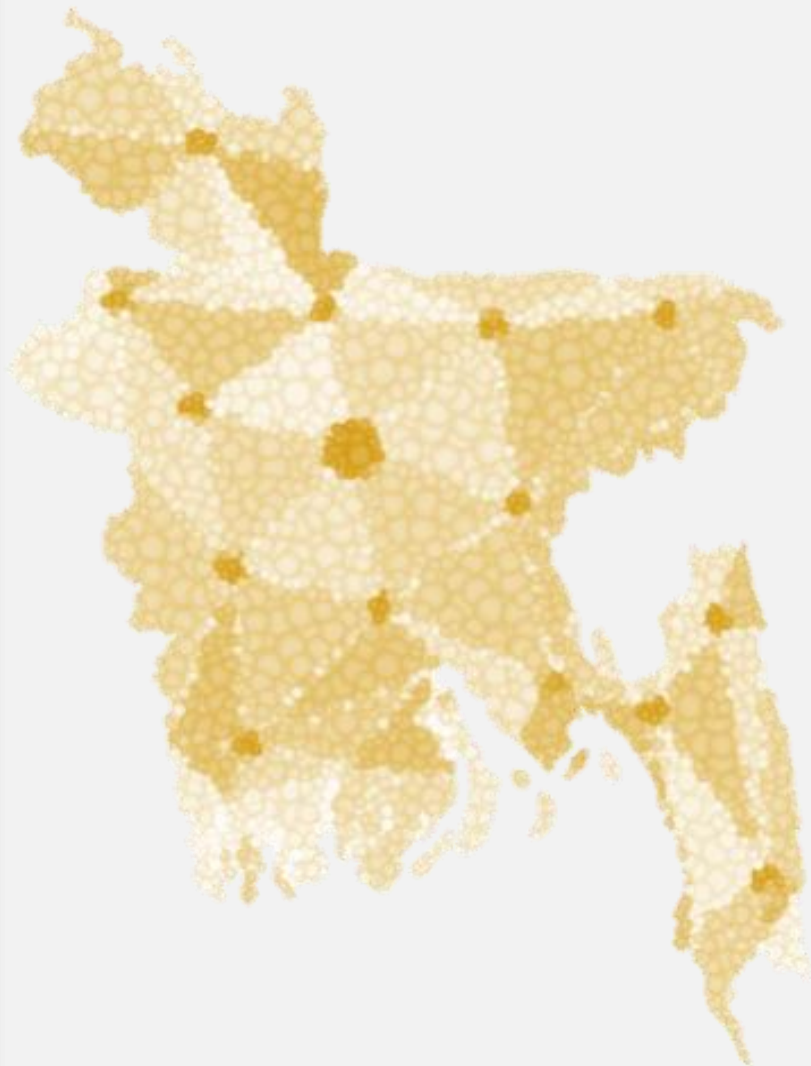
Working Paper 04

The Economy of the Fisheries Industry in Bangladesh

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Abstract

The fisheries industry in Bangladesh plays a pivotal role in the nation's economy, capitalizing on its extensive wetland resources and diverse fish species. This study delves into the evolution of fish production, export, and import trends over the past three decades, with a keen focus on their contribution to the GDP. Drawing from comprehensive literature reviews and data sourced from authoritative entities such as the Bangladesh Foreign Trade Institute, Bangladesh Fisheries Development Corporation, Ministry of Finance, Ministry of Fisheries and Livestock, World Bank, and Bangladesh Bureau of Statistics, our analysis reveals a consistent upward trajectory in fish production from FY1990-91 to FY2021-22. Notably, aquaculture has emerged as a key driver, offsetting the sluggish growth in wild capture fishery. Specifically, aquaculture production surged from 210,993 metric tons (MT) in FY1990-91 to an impressive 2,731,070 MT in FY2021-22, surpassing the quantity of wild capture production (1,321,631 MT) during the same period. The iconic Hilsha (*Tenualosa ilisha*) stands out as a crucial species contributing to Bangladesh's overall fish production. Furthermore, there has been a recent surge in the value of fishery exports. In FY2000-01, exports were valued at USD 376.71 million, which escalated to USD 601.59 million in FY2021-22. Conversely, fish imports declined from USD 40.89 million in FY2015-16 to USD 33.82 million in FY2022-23. This study underscores the critical significance of the fisheries sector within Bangladesh's economic landscape and advocates for strategic investments and focused attention to fully harness its potential for sustainable economic growth.

Keywords: Inland fisheries; Coastal and marine fisheries; Export and import; Legal issues; GDP; Bangladesh

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1. Introduction

Despite global uncertainties, Bangladesh has experienced remarkable growth driven by a demographic dividend, thriving RMG exports, resilient remittances, and stable macroeconomics. Emerging from extreme poverty in 1971, it achieved lower-middle-income status in 2015 and is set to exit the UN's LDC list in 2026 (WB, 2023). Poverty decreased from 11.8% in 2010 to 5.0% in 2022, accompanied by significant improvements in human development outcomes (WB, 2023). Amidst this progress, a burgeoning middle class (estimated at over 30 million) has spurred demand for high-quality agricultural products, particularly fish (US Department of Commerce, 2022). Consequently, both domestic production and consumption of fish have risen, positively impacting Bangladesh's fish industry. Furthermore, export opportunities are bolstering fish production expansion. Given the escalating local and global demand, the fisheries industry possesses the substantial potential to bolster the agricultural sector, thereby bolstering its diminishing share in the total GDP.

Bangladesh boasts extensive and diversified fisheries resources, broadly classified into inland fishing and marine fisheries (Shamsuzzaman, Islam, et al., 2017). Inland capture fisheries encompass diverse areas such as Beel, River, Estuary, Kaptai Lake, and Flood Plain. In contrast, inland culture fisheries include Pond, Ditch, Baor, Pen Culture, Cage Culture, Shrimp/Prawn Farm, and Seasonal Cultured Water Bodies (Shamsuzzaman et al., 2020). The inland fisheries sector spans an expansive 47.06 lakh hectares, a decrease from 2017, with inland capture occupying 38.61 lakh hectares and inland culture covering 8.45 lakh hectares (MoFL, 2023b). Conversely, marine capture fisheries extend across an area of approximately 118,813 km², encompassing 200 nautical miles of the Exclusive Economic Zone (EEZ) from the baseline (MoFL, 2023a).

Fish, the primary source of protein, contributes approximately 60% to Bangladesh's total animal protein intake (Rifat et al., 2023). Per capita fish consumption in the country stands at 75.50 grams, surpassing the daily protein demand of 63 grams (MoFL, 2023a, 2023b, pp. 2021–2022). Bangladesh achieved global prominence in fish production, ranking 3rd in inland fish production, 5th in aquaculture production, and 11th in marine fish production in 2018 (Shamsuzzaman et al., 2020). The nation has attained self-sufficiency in fish production, earning international recognition as one of the leading fish-producing countries (MoFL, 2023a, 2023b, pp. 2021–2022).

Fisheries and aquaculture constitute one of Bangladesh's major export sectors, significantly contributing to the nation's export earnings (Mamun & Kabir, 2023; Shamsuzzaman et al., 2020). The country actively engages in producing and exporting diverse fish varieties. In the fiscal year 2023, Bangladesh exported frozen and live fish, totaling USD 422.28 million (compared to USD 532.94 million in FY2021-22), indicating a 20.76% decline (EPB, 2023b). This decline can be attributed to an economic slowdown resulting from the Russia-Ukraine war and the lingering impacts of the COVID-19 pandemic (WB, 2022). Nevertheless, Bangladesh has set an ambitious target to produce 85 lakh tonnes of fish by 2041, exceeding the FY2021-22 production of 47.59 lakh tonnes by 1.8 times (EPB, 2023b; The Daily Star, 2023). Highlighting the global reach of its fisheries sector, Bangladesh exports various fish types to 52 countries (MoFL, 2023b), with major markets including the European Union (EU), the USA, and Japan (EPB, 2023a). Bangladesh imports live fish primarily from Thailand, Singapore, the USA, Sri Lanka, and the Netherlands (OEC, 2023). Despite short-term challenges, the long-term vision underscores Bangladesh's commitment to the sustained growth and global prominence of its fisheries and aquaculture industries (Shamsuzzaman et al., 2020).

The fisheries industry plays a significant role directly or indirectly in Bangladesh's economy, contributing to employment generation, poverty reduction, food security, animal protein supply, export earnings, and overall socioeconomic development (MoFL, 2023b). This sector provides employment and livelihoods for 12% of the total population, with 1.4 million being women. Approximately 270,000 households are dependent on marine fishery activities (MoFL, 2023a, 2023b; Shamsuzzaman et al., 2020). The Bangladesh government has committed to achieving sustainable development goals (SDGs) by 2030, with marine resources playing a pivotal role (M. M. Islam & Shamsuddoha, 2018; United Nations Bangladesh, 2023). Moreover, this industry has a high potential for the country's economic development, indicating a close

connection between agricultural and economic growth (Mohsin et al., 2015; Shamsuzzaman et al., 2020). In FY2022-23, the fisheries sector contributed approximately 2.41% to the total GDP and around 21.47% to the agricultural GDP (MoF, 2023). Over the last ten years, the average growth rate of this sector has been around 6.19% (MoF, 2023).

As most inland capture fisheries face heavy pressure and are considered fully exploited or overexploited, aquaculture becomes central to meeting the increasing fish demand with a growing population (Finegold, 2009; Shamsuzzaman et al., 2020). However, conducting an economic assessment of the fisheries sector becomes imperative for the sustainable production of fisheries resources. This assessment should address the optimization of resource exploitation, equitable distribution, efficient marketing of fish and fish products, and the evolution of alternative management strategies. The depletion of inland open water fisheries resources intensifies the urgency for an economic analysis that guides evidence-based decision-making and identifies the most efficient interventions in the fisheries sector.

This study assumes particular significance as it addresses a pressing problem within the fisheries industry and aligns with broader developmental goals. In the face of depleting inland fisheries, the imperative to extract higher value from these resources necessitates a comprehensive understanding of the economic landscape. The study aims to contribute significantly by providing insights that support evidence-based decision-making, facilitating the evolution of efficient intervention strategies, and ensuring the sustainable economic growth of the fisheries sector. Moreover, it positions itself as a pivotal study that uniquely bridges the gap between fisheries production and its economic importance, a dimension largely overlooked in existing literature (Ghose, 2014; Hasan et al., 2021; M. A. R. Hossain, 2014; Shamsuzzaman, Islam, et al., 2017; Shamsuzzaman et al., 2020).

The identified research gap underscores the necessity for a comprehensive investigation into the contribution of fish production and its economic importance, aligning with the overarching aim of this study. Consequently, the primary objectives of this research are to elucidate the economic trends concerning the fisheries sector's contribution to the country's economy and to derive meaningful conclusions that can inform policy and practice. By achieving these objectives, this study aspires to play a significant role in guiding policy decisions, promoting sustainable practices, and contributing to the realization of Sustainable Development Goals (SDGs) in Bangladesh.

The remainder of this study is organized as follows: The next section discusses the materials and methods. The results section, which includes production, export-import, contribution to GDP, and fisheries laws and policies, is explained in the subsequent section. Finally, the last section provides a conclusion.

2. Materials and Methods

The research for this study was conducted by meticulously gathering information from diverse secondary sources. The data collection process involved consulting scientific research and grey literature available in various formats, including peer-reviewed journals, periodicals, and government gazettes. An online database search was conducted using specific keywords such as 'Fisheries resources,' 'Inland and Marine fisheries,' 'Legal issues,' 'Export and Import,' 'LDC,' and 'SDGs' to retrieve relevant information. Additionally, visits to pertinent institute websites, such as the Bangladesh Foreign Trade Institute (BFTI), Bangladesh Fisheries Development Corporation (BFDC), Ministry of Finance (MoF), Ministry of Fisheries and Livestock (MoFL), US Department of Commerce, EPB, United Nations Bangladesh, World Bank (WB), and Bangladesh Bureau of Statistics (BBS), were instrumental in collecting comprehensive data.

The gathered data underwent analysis using MS Excel to discern patterns, trends, and insights. The analytical process involved a thorough review and synthesis of the collected information. The utilization of a diverse range of sources and methodologies enhances the robustness and reliability of the findings, providing a comprehensive understanding of the role of the fisheries industry in the Bangladesh economy.

3. Results

3.1 Fish Production in Bangladesh

3.1.1 Inland fisheries

The fisheries sector in Bangladesh is broadly divided into two major sectors: inland fisheries and marine fisheries (MoFL, 2023b, pp. 2021–2022). The inland fisheries are further divided into two subsectors: inland capture fishery and aquaculture fishery (MoFL, 2023b, pp. 2021–2022). The inland capture fishery includes five types of habitats, comprising approximately 853,863 hectares of rivers and estuaries, 177,700 hectares of the Sundarbans, 114,161 hectares of beels, 68,800 hectares of Kaptai Lake, and 2,646,248 hectares of the floodplain (haor) (see Table 1). The inland culture fishery consists of six types of habitats, covering an area of 410,683 hectares of ponds, 149,004 hectares of seasonal cultured water bodies, 5,671 hectares of baors, 262,980 hectares of shrimp/prawn farms, 9,353 hectares of crab production, 7,708 hectares of pen culture, and 17.5 hectares of cage culture (see Table 1). An analysis of time series data from FY2002-03 to FY2013-14 reveals a declining trend in the capture fishery habitat area, with a decrease of 0.16 million hectares, while the trend in culture fishery habitat area is increasing by 0.35 million hectares (Shamsuzzaman, Islam, et al., 2017). Moreover, in comparison to the data from FY2013-14, the capture fishery habitat area in FY2021-22 shows a decrease of 0.049 million hectares, whereas the culture fishery habitat area increased by 0.06 million hectares (see Table 1). Figure 1 illustrates the district-wise magnitude of captured fish production for FY2021-22.

The fish production has significantly increased over the last 30 years in Bangladesh. In FY1990-91, the total fish production was 895,925 MT (Capture 654,387 MT, Culture 210,993 MT, and Marine 241,538 MT), which increased to 2,440,011 MT in FY2006-07 (Capture 976,604 MT, Culture 975,969 MT, and Marine 487,438 MT) (Table 2). The total fish production in Bangladesh further increased to 4,758,731 MT in FY2021-22. Out of this, 1,321,631 MT (27.77%) originated from inland open waters, 2,731,070 MT (57.39%) from inland closed waters, and 706,030 MT (14.84%) from marine fisheries (see Tables 1 and 2). However, the average annual growth rate from FY1990-91 to FY2021-22 was 5.76%. The annual growth rate of the overall fish production in Bangladesh showed a decrease from 6.27% in FY1991-92, 4.79% in FY2006-07, and 2.98% in FY2021-22 (Figure 2).

Table 1. Marine and freshwater fish production and area in Bangladesh (MoFL, 2023b, pp. 2021–2022)

Types of Fisheries	Fisheries Sector	Water Area (Hectare)	Production (Metric Ton)	% Of Production
Inland Open water (Capture)	River and Estuary	853,863	342,545	7.20
	Sundarbans	177,700	24,259	0.51
	Beel	114,161	105,573	2.22
	Kaptai Lake	68,800	17,937	0.38
	Floodplain	2,646,248	831,317	17.47
Capture Total		3,860,772	1,321,631	27.77
Inland Closed Water (Culture)	Pond	410,683	2,166,715	45.53
	Seasonal cultured water body	149,004	231,692	4.87
	Baor	5,671	11,685	0.25
	Shrimp/Prawn Farm	262,980	287,497	6.04
	Crab	9,353	13,397	0.28
	Pen Culture	7,708	5,063	0.11
	Cage Culture	1.75 lakh cu. Meter	5,021	0.11
Culture Total		845,399	2,731,070	57.39
Inland Fisheries Total		4,706,171	4,052,701	85.16
Marine Fisheries	Industrial (Trawl) fishing	11,381,300	137,170	2.88
	Artisanal fishing		568,860	11.95
Marine Fisheries Total			706,030	14.84
Total Production			4,758,731	

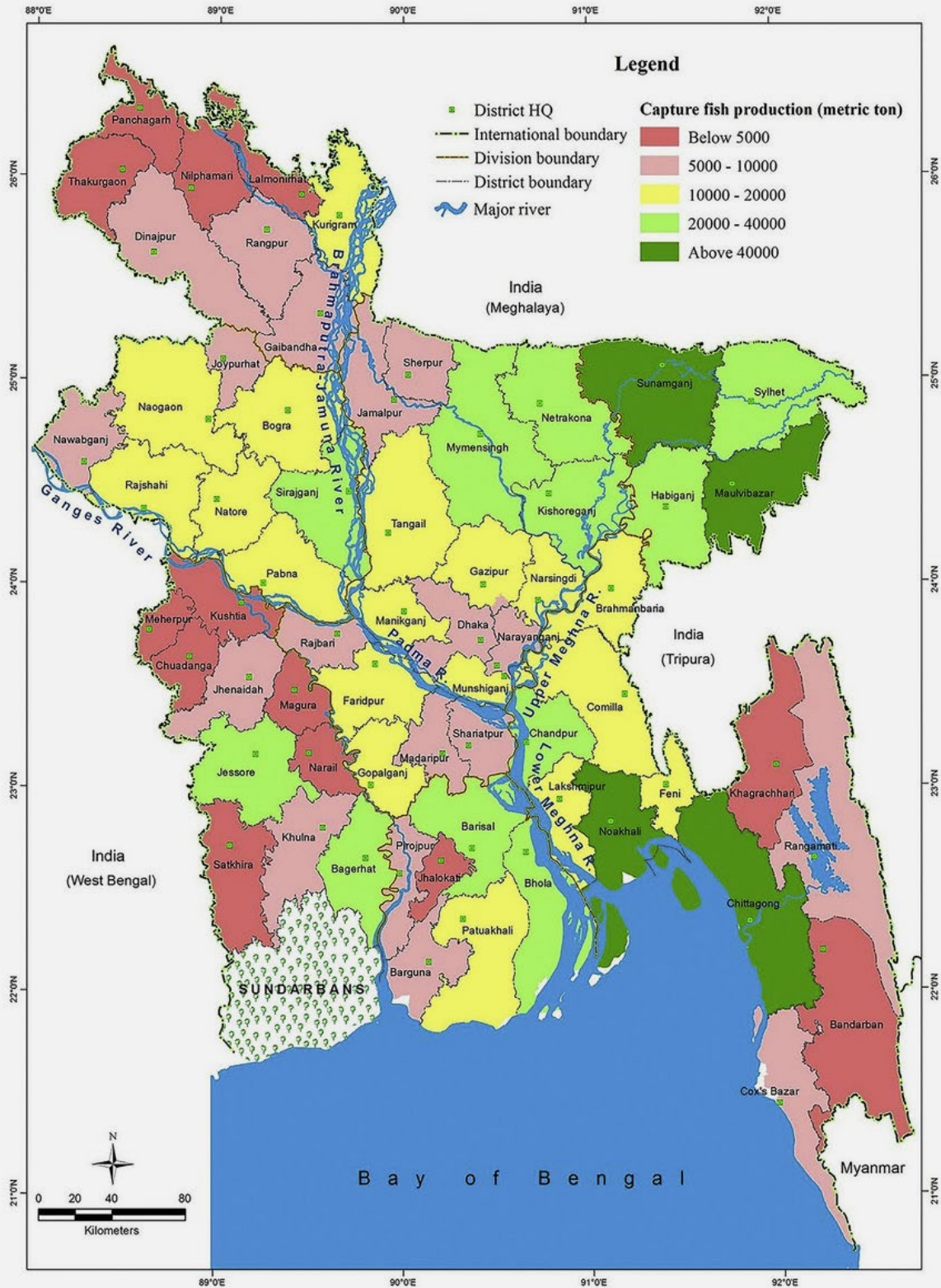


Figure 1. District-wise inland open water (capture) fisheries production (MoFL, 2023b, pp. 2021–2022).

Inland open-water fisheries remain a significant contributor to total fish production, amounting to 4,052,701 MT in FY2021-22. The average growth of inland open-water fish production was 3.88%. However, their share has declined from 8.20% in FY1991-92 to 5.13% in FY2006-07 and further to 1.57% in FY2021-22 (Figure 1). In contrast, inland closed-water fisheries have also experienced a decreasing growth rate, which decreased from 8% in FY1991-92 to 6.11% in FY2006-07 and further decreased to 3.50% in FY2021-22 (Figure 1). The mean growth rate was 11.90% from FY1991-92 to FY2021-22, which is significantly higher compared to capture and marine growth (Figure 1). Meanwhile, the year-to-year growth follows an increasing trend, from 1.63% growth in FY1991-92 to 3.50% in FY2021-22 (Figure 1). The average yield (annual fish harvest per hectare in metric tons) in open inland waters declined from FY2000-01 but improved sharply thereafter; however, it declined again from FY2011-12 and started to improve from FY2014-15 (Table 2). Pen and cage culture represent two novel approaches to fish culture in Bangladesh, each contributing 0.11% to the total fish production in FY2021-22 (Table 1). These innovative methods have the potential to significantly enhance fish production in Bangladesh (Shamsuzzaman, Islam, et al., 2017).

A comprehensive study reveals that Bangladesh is home to a rich array of marine fish species, with a total of 260 indigenous species and 475 marine species inhabiting its waters. Additionally, the country boasts 12 exotic fish species that have been meticulously documented by the Department of Fisheries (DoF) in their recent report (DoF, 2023). Among the diverse piscine inhabitants, several major carp species play a significant role in the local market. These include the Catla catla, Labeo rohita, Cirrhinus cirrhosus, and Labeo calbasu. In addition to these native carp, Bangladesh also hosts exotic carp varieties such as the silver carp (*Hypophthalmichthys molitrix*), grass carp (*Ctenopharyngodon idella*), and common carp (*Cyprinus carpio*), which contribute to the country's vibrant fish trade (MoFL, 2023b, pp. 2021–2022). Small indigenous fish species, numbering around 40-50, thrive in Bangladeshi waters. These diminutive fish species typically reach a maximum length of 25 cm (Shamsuzzaman, Islam, et al., 2017). Notable representatives from this category include the Puntius ticto, Heteropneustes fossilis, Clarias batrachus, Oreochromis mossambicus, Anabas testudineus, and Puntius sarana (MoFL, 2023b, pp. 2021–2022). However, a concerning trend has emerged: many of these indigenous species are now classified as endangered or critically endangered, as reported by the International Union for Conservation of Nature (IUCN) in 2000. In terms of annual fish production, carp species take the lead, contributing 35% to the total output (combining freshwater and marine fisheries). Following closely are pangas (8.54%) and tilapia (8.56%) (MoFL, 2023b, pp. 2021–2022).

Despite these challenges, Bangladesh's inland water resources hold immense potential for the development of freshwater capture and culture fisheries, as highlighted by Hossain (2014). The significance of inland capture fisheries cannot be overstated, particularly for rural areas where fish supply and employment opportunities are intertwined (Shamsuzzaman, Islam, et al., 2017). Harvested fishery products from inland waters include various catfish species (Boal, Air, Silon, Rita), snakehead fish (Shol, Gazar, Taki), other carp varieties (Kalibaus, Bata, Ghania), and live fish such as Koi, Singhi, and Magur. A detailed breakdown of species-wise annual fish production in both inland and marine fisheries from 2007 to 2022 is in Table 3.

Aquaculture, which involves farming fish and other aquatic organisms, is characterized by interventions to enhance production and establish private ownership over the intervened stock (Beveridge & Little, 2002). It involves the cultivation of aquatic organisms under controlled conditions throughout part or all of their lifecycle. The development of aquaculture has the potential to meet future food demands and alleviate pressure on natural resources (USDA, 2023). The total area of Inland closed water (culture) fishery bodies, including coastal shrimp farms, is 0.85 million hectares (MoFL, 2023b, pp. 2021–2022). The overall pond area in Bangladesh is 410,683 hectares, and oxbow lakes (baors) cover 5,671 hectares (MoFL, 2023b, pp. 2021–2022). Among the various segments of the fisheries sub-sector, inland aquaculture has generally experienced the most rapid growth. This growth is attributed to the adoption of new technologies such as

pen culture, cage culture, new species, and the intensification and improvement of pond farming, particularly in pond aquaculture across the country over the past years (MoFL, 2023b, pp. 2021–2022) (Table 2 and Figure 3). Currently ranking fifth in global aquaculture production, aquaculture in Bangladesh now supplies more than half of the fish for direct human consumption and is poised for further growth (MoFL, 2023b, pp. 2021–2022). The aquaculture industry significantly contributes to the economy with its increasing production capacity and abundant export opportunities. Over the last three decades, the growth rate of fisheries production has increased sixfold, while aquaculture has more than doubled (MoFL, 2023b, pp. 2021–2022). The expansion of aquaculture is likely to ensure food security and create employment opportunities (E-Jahan et al., 2010).

In Bangladesh, two types of aquaculture practices are prevalent: freshwater and coastal aquaculture. There is no practice of marine aquaculture in the country, and no marine or coastal fin fishes are farmed. Freshwater aquaculture primarily involves pond farming of carp (both indigenous and exotic), catfish (Pangas), tilapia, and several other domesticated fish, albeit on a lesser scale (Table 4). Coastal aquaculture predominantly consists of shrimp and prawn farming in gheras (coastal ponds or enclosures). The trend in aquaculture production is highlighted in Table 2. Aquaculture production systems in Bangladesh primarily include extensive and improved methods, with some instances of semi-intensive and intensive systems, although the latter are rare (Hossain, 2014). As of 2022, the unit area aquaculture productions (MT/ha) are 5.28, 1.55, 2.06, and 1.09 for ponds, seasonal water bodies, baors (*oxbow lakes*), and shrimp gheras, respectively (MoFL, 2023b, pp. 2021–2022). Inland pond culture serves as the foundation of aquaculture in Bangladesh, contributing approximately 79% to the total recorded aquaculture production. This sector is predominantly occupied by carps (both indigenous and exotic), catfish (Pangas), and tilapia (Table 3). Notably, Bangladesh holds the fourth position globally and the third in Asia for Tilapia production (MoF, 2023). Despite this, the aquaculture sector accounted for 57.39% of the total fish production in 2021–2022 (Table 1). Pond aquaculture, mainly practiced in closed-water fisheries in Bangladesh, contributed 45.53% (2,166,715 MT) to the total fish production in 2021–2022. In the coastal regions of Bangladesh, the main cultured species in brackish water include the giant tiger prawn (*Penaeus monodon*) and the giant river prawn (*Macrobrachium rosenbergii*) (Azim et al., 2003).

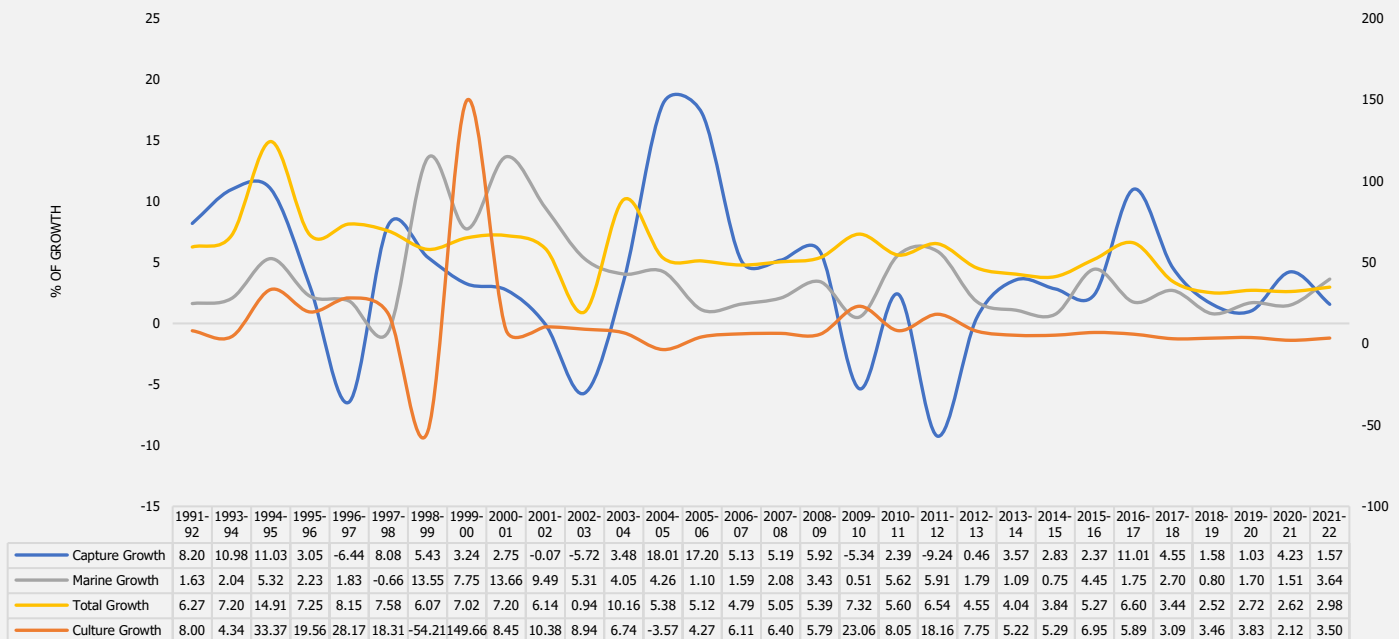


Figure 2. Year-to-year growth rate of fish production in Bangladesh (1991-92 to 2021-22)

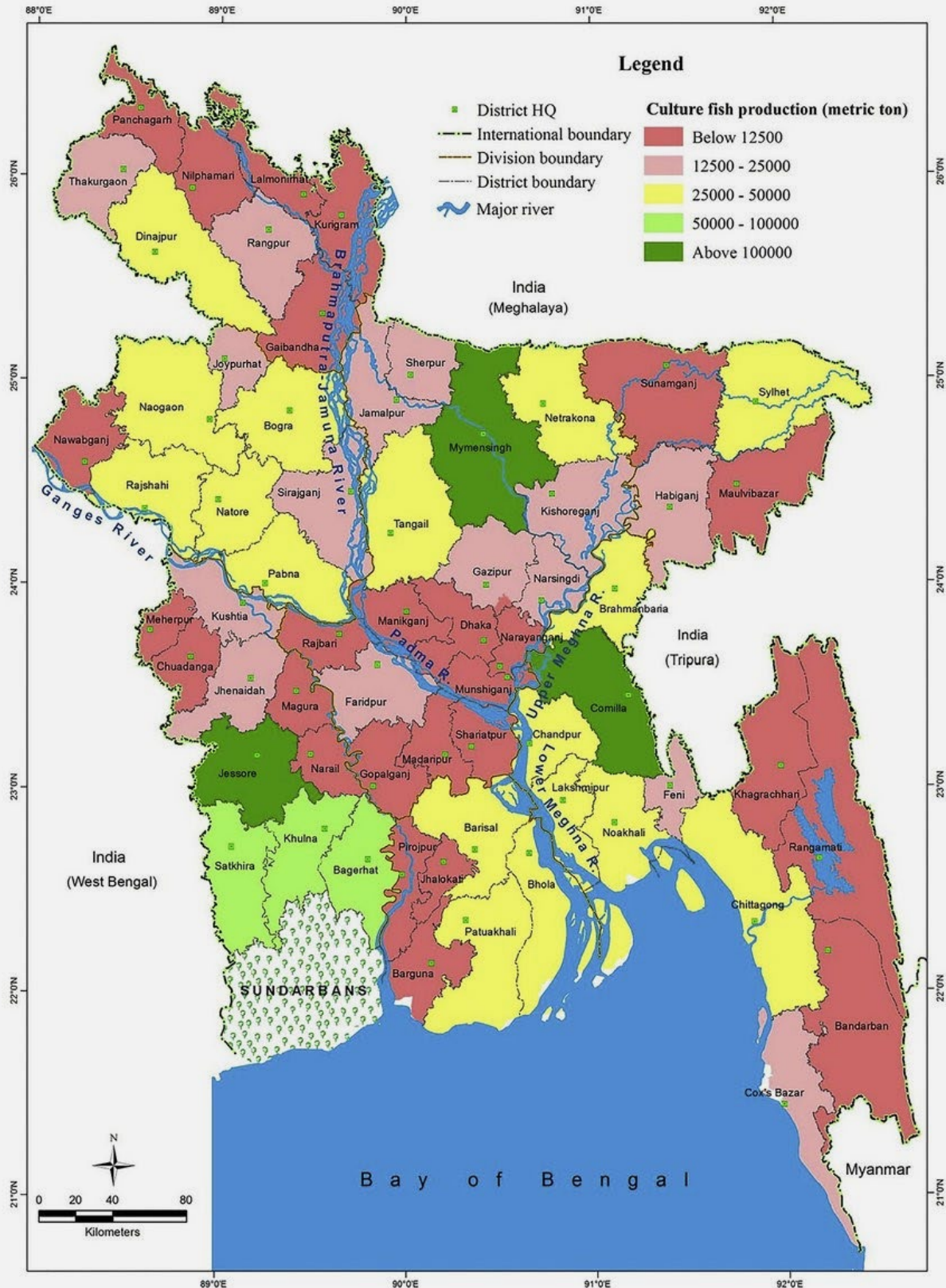


Figure 3. District-wise Inland closed water (culture) fisheries production (MoFL, 2023b; Shamsuzzaman, Islam, et al., 2017)

3.1.2 Marine fisheries

Bangladesh's coastal and marine environment, characterized by a warm tropical climate, high rainfall, and nutrient enrichment from the land, has fostered one of the world's most productive ecosystems (Hossain, 2001; Islam, 2003). The exploration, exploitation, and management of living and non-living resources in the Bay of Bengal hold significant potential for contributing to Bangladesh's economy. This potential has been further reinforced by recent legal decisions, such as the International Tribunal for the Law of the Sea (ITLOS) ruling on the Bangladesh-Myanmar maritime boundary in 2012 and the Arbitral Tribunal of the United Nations Convention on the Law of the Sea (UNCLOS) decision on the India-Bangladesh maritime boundary in 2014. These rulings have established sovereign rights over an area exceeding 118,813 km² of territorial sea, 200 nautical miles (NM) of Exclusive Economic Zone (EEZ), and all living and non-living resources under the continental shelf up to 354 nautical miles from the Chittagong coast (Figure 4) (Shamsuzzaman, Islam, et al., 2017). Currently, an area of 32,440 km², extending from the coastline to a depth of 40 m in the Bay, is accessible to approximately 67,669 unlicensed fishing boats, with around 51% being non-motorized (Shamsuzzaman, Xiangmin, et al., 2017). In Bangladeshi marine waters, fish resources are harvested across three tiers: (1) up to 40 m in depth from the coastline, where conventional fishing boats operate; (2) from 40 m to 200 m in depth, where mid-water trawlers operate; and (3) from 200 m in depth to the end of the EEZ, where long-liner trawlers are active (Islam et al., 2017). The government permits only 242 trawlers for fishing in these regions (Shamsuzzaman, Islam, et al., 2017).

Bangladesh's coastal and marine zone constitutes a dynamic and diverse region where land, ocean, and atmosphere interact, exhibiting unique mangrove influences and higher productivity. These ecosystems play a crucial role in providing a diverse range of fishery resources, essential for sustaining the livelihoods of marginalized communities (MoEFCC, 2023). Marine fisheries, in particular, significantly contribute to the country's economy, accounting for about 14.84% of the total fisheries production (Table 1). Over the past 17 years, the entire fish group in marine fisheries has experienced notable changes in production. Species such as Sardine, Sea catfish, Jewfish, Indian salmon, sharks, and other marine fish have shown a gradual increase. Moreover, the inclusion of tuna and tuna-like fish and crabs has been observed in the time series data from 2007-08 to 2021-22 (Table 5) within the marine and coastal species. A comprehensive survey has identified 475 fish species, including 373 species of fish, 21 species of sharks and rays, 24 species of shrimps, 21 species of crabs, 3 species of lobsters, 1 species of mantis, 4 species of octopus, 5 species of squids, and 5 species of cuttlefish (MoEFCC, 2023).

3.2 Hilsa Production

Hilsa (*Tenualosa ilisha*), designated as Bangladesh's national fish and a Geographical Indicator (GI), holds significant importance in the country's fisheries sector (Shamsuzzaman et al., 2020). According to the Bangladesh Fisheries Research Institute (BFRI), Bangladesh is projected to account for approximately 75% of the global Hilsa production by 2023 (Dhaka Tribune, 2023). Hilsa contributes to around 12% of the nation's total fish production, standing out as the predominant single species in terms of fish production and constituting 1% of the national GDP (BFRI, 2023). About 65% of Bangladesh's total catch of Hilsa currently originates from the marine environment. Hilsa production has increased in Bangladesh over the last thirty years (Shamsuzzaman et al., 2020). Presently, about 65% of Bangladesh's Hilsa catch is sourced from marine environments. Over the past three decades, Hilsa production in Bangladesh has seen a notable increase (Shamsuzzaman et al., 2020). Table 5 illustrates this growth, indicating that in FY2007-08, Hilsa production totaled 196,744 metric tons (MTs), with subsequent years witnessing a steady rise, reaching 200,100 MTs and 202,951 MTs in the following fiscal years, culminating in 321,871 MTs in FY2021-2022. However, minor declines in production were observed in FY2010-11 (198,574 MTs) and FY2015-16 (251,815 MTs). The average growth rate of Hilsa production during this period stands at 5.07%. It is estimated that the livelihoods of around 0.5 million traditional Hilsa fishers, accounting for 38% of total

capture fisheries employment, directly rely on Hilsa catch (Shamsuzzaman et al., 2020). Moreover, more than 450,000 fishers are directly involved in Hilsa-related activities such as transportation, marketing, net and boat making, and export (Shamsuzzaman et al., 2020).

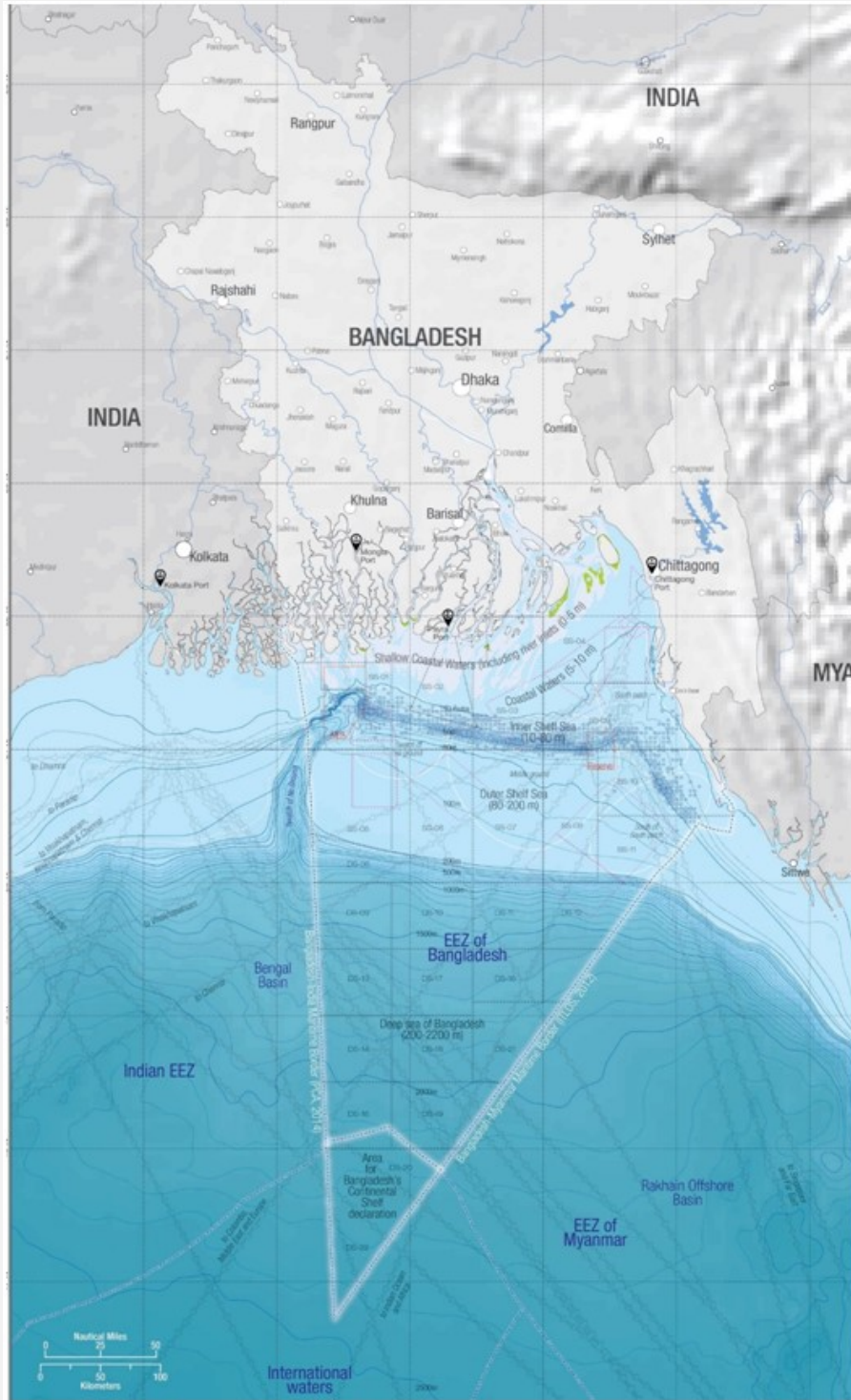


Figure 4. Maritime area of Bangladesh (Shamsuzzaman, Islam, et al., 2017)

Table 2. The production of Inland open water (capture), Inland closed water (culture), and marine fisheries in Bangladesh over the last 31 years (1990-91 to 2021-22) (MoFL, 2023b, pp. 2021–2022).

	Quantity in Metric Tons (MT)										
	1990-91	1991-92	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02
A. Inland Fisheries	654,387	707,605	770,162	908,218	988,238	1,055,764	1,190,774	912,620	1,327,588	1,401,560	1,475,039
(a) Inland Open water (Capture)	443,394	479,742	532,419	591,145	609,151	569,900	615,962	649,418	670,468	688,920	688,435
1. River and Estuary	135,355	124,843	138,746	152,782	165,637	159,660	156,894	151,309	154,335	150,129	143,592
2. Sundarbans	6,651	6,297	6,939	6,951	7,265	9,225	7,031	11,134	11,648	12,035	12,345
3. Beel	47,913	49,201	53,019	58,298	60,768	32,798	67,825	69,850	72,825	74,527	76,101
4. Kaptai Lake	4,392	4,216	4,142	5,556	6,148	5,764	5,932	6,689	6,852	7,051	7,247
5. Floodplain	249,083	295,185	329,573	367,558	369,333	362,453	378,280	410,436	424,808	445,178	449,150
(b) Inland Closed Water (Culture)	210,993	227,863	237,743	317,073	379,087	485,864	574,812	263,202	657,120	712,640	786,604
1. Pond & Ditch	181,018	195,034	202,167	267,282	307,974	403,830	483,416	199,590	561,050	615,825	685,107
2. Seasonal Culture	...	...	...	...	...	...	...	...	...	...	...
3. Baor	1,544	2,682	1,803	2,460	2,764	3,014	3,378	3,536	3,622	3,801	3,892
4. Shrimp/Prawn Farm	28,431	30,147	33,773	47,331	68,349	79,020	88,018	60,076	92,448	93,014	97,605
5. Crab	...	...	...	...	...	...	...	...	...	...	...
6. Pen Culture	...	...	...	...	...	...	...	...	...	...	...
7. Cage Culture	...	...	...	...	...	...	...	...	...	...	...
B. Marine Fisheries	241,538	245,474	250,492	263,808	269,702	274,644	272,818	309,797	333,799	379,407	415,420
1. Industrial (Trawl) fishing	8,760	9,623	12,227	11,715	11,959	13,504	15,273	15,818	16,304	23,901	25,165
2. Artisanal fishing	232,778	235,851	238,265	252,093	257,743	261,140	257,545	293,979	317,495	355,506	390,255
Total	895,925	953,079	1,020,654	1,172,026	1,257,940	1,330,408	1,463,592	1,222,417	1,661,387	1,780,967	1,890,459
Annual Growth Rate of Production	5	6	7	8	7	8	8	6	7	7	6

Table A2. (Continued)

	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
A. Inland Fisheries	1,505,993	1,586,406	1,674,679	1,848,735	1,952,573	2,065,723	2,186,726	2,381,916	2,515,354	2683162
(a) Inland Open water (Capture)	649,040	671,654	792,588	928,948	976,604	1,027,250	1,088,083	1,029,937	1,054,585	957095
1. River and Estuary	137,848	137,337	139,798	137,859	136,958	136,812	138,160	141,148	144,566	145,613
2. Sundarbans	13,884	15,242	15,724	16,423	17,751	18,151	18,462	20,437	22,451	21,610
3. Beel	75,460	74,328	74,925	76,365	75,137	77,524	79,200	79,209	81,564	85,208
4. Kaptai Lake	7,025	7,238	7,379	7,548	8,085	8,248	8,590	7,336	8,980	8,537
5. Floodplain	414,823	437,509	554,762	690,753	738,673	786,515	843,671	781,807	797,024	696,127
(b) Inland Closed Water (Culture)	856,953	914,752	882,091	919,787	975,969	1,038,473	1,098,643	1,351,979	1,460,769	1726067
1. Pond & Ditch	752,051	795,810	756,993	759,628	811,954	866,049	912,178	1,140,484	1,219,736	1,392,412
2. Seasonal Culture	...	...	...	27,738	30,157	32,931	35,842	46,902	51,230	132,163
3. Baor	4,098	4,282	4,388	4,498	4,698	4,778	5,038	8,727	4,864	5,186
4. Shrimp/Prawn Farm	100,804	114,660	120,710	127,923	129,160	134,715	145,585	155,866	184,939	196,306
5. Crab	...	...	...	...	...	...	...	...	...	...
6. Pen Culture	...	...	...	...	...	...	...	...	...	...
7. Cage Culture	...	...	...	...	...	...	...	...	...	...
B. Marine Fisheries	437,494	455,207	474,597	479,810	487,438	497,573	514,644	517,282	546,333	578620
1. Industrial (Trawl) fishing	27,954	32,606	34,114	34,084	35,391	34,159	35,429	34,182	41,665	73,386
2. Artisanal fishing	409,540	422,601	440,483	445,726	452,047	463,414	479,215	483,100	504,668	505,234
Total	1,943,487	2,041,613	2,149,276	2,328,545	2,440,011	2,563,296	2,701,370	2,899,198	3,061,687	3261782
Annual Growth Rate of Production	6	5	5	5	5	5	5	7	6	7

Table B2. (Continued)

	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
A. Inland Fisheries	2,821,266	2,952,730	3,084,399	3,251,796	3,496,958	3,621,954	3,724,310	3,832,267	3,939,989	4,052,701
(a) Inland Open water (Capture)	961,458	995,805	1,023,991	1,048,242	1,163,606	1,216,539	1,235,709	1,248,401	1,301,244	1,321,631
1. River and Estuary	147,264	167,373	174,878	178,458	271,639	320,598	325,478	331,793	337,051	342,545
2. Sundarbans	15,945	18,366	17,580	16,870	18,086	18,225	18,282	21,007	21,544	24,259
3. Beel	87,902	88,911	92,678	95,453	98,117	99,197	99,890	103,104	104,871	105,573
4. Kaptai Lake	9,017	8,179	8,645	9,589	9,982	10,152	10,578	12,696	12,345	17,937
5. Floodplain	701,330	712,976	730,210	747,872	765,782	768,367	781,481	779,801	825,433	831,317
(b) Inland Closed Water (Culture)	1,859,808	1,956,925	2,060,408	2,203,554	2,333,352	2,405,415	2,488,601	2,583,866	2,638,745	2,731,070
1. Pond & Ditch	1,446,594	1,526,160	1,613,240	1,719,783	1,833,118	1,900,298	1,974,632	2,046,258	2,090,787	2,166,715
2. Seasonal Culture	200,833	193,303	201,280	207,658	215,547	216,353	217,340	225,948	226,608	231,692
3. Baor	6,146	6,514	7,267	7,729	8,002	8,072	10,343	10,969	11,319	11,685
4. Shrimp/Prawn Farm	206,235	216,447	223,582	239,798	246,406	254,367	258,039	270,114	278,417	287,497
5. Crab	...	...	...	13,160	14,421	11,787	12,084	12,562	12,337	13,397
6. Pen Culture	...	13,054	13,070	13,364	13,368	11,015	12,361	13,425	14,282	15,063
7. Cage Culture	...	1,447	1,969	2,062	2,490	3,523	3,802	4,590	4,995	5,021
B. Marine Fisheries	588,988	595,385	599,846	626,528	637,476	654,687	659,911	671,104	681,239	706,030
1. Industrial (Trawl) fishing	73,030	76,885	84,846	105,348	108,479	120,087	107,236	115,354	119,121	137,170
2. Artisanal fishing	515,958	518,500	515,000	521,180	528,997	534,600	552,675	555,750	562,118	568,860
Total	3,410,254	3,548,115	3,684,245	3,878,324	4,134,434	4,276,641	4,384,221	4,503,371	4,621,228	4,758,731
Annual Growth Rate of Production	5	4	4	5	7	3	3	3	3	3

Table 3. Species-wise Captured Fishery Production in Metric Tons (2007-2022) (MoFL, 2023b, pp. 2021-2022)

Species	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022
Major carp	547,652	617,761	692,597	753,572	777,005	731,662	728,695	755,074	750,880	811,588	846,397	875,624	962,049	975,531	1,013,812
Other Carp	9,339	11,155	64,359	55,021	60,356	54,130	80,138	80,997	80,647	100,730	111,373	116,130	125,565	129,237	133,465
Exotic Carp	333,452	305,938	376,006	265,375	299,494	402,490	389,642	363,737	357,933	409,801	454,078	476,761	503,224	516,969	528,788
Cat Fish	...	...	...	...	...	...	371,068	406,818	504,674	510,097	453,383	458,307	405,059	402,298	406,185
Snake Head	110,460	122,093	113,989	117,577	89,351	53,305	60,282	69,305	70,106	72,991	73,358	75,147	74,368	78,468	79,313
Live Fish	75,286	77,113	101,368	94,000	95,063	102,651	115,185	133,512	136,113	127,120	144,007	152,241	160,068	166,204	176,682
Tilapia	...	...	...	...	...	...	298,062	347,801	377,346	370,017	381,215	390,559	371,263	392,095	407,359
Other Inland Fish	643,876	646,085	575,620	710,853	763,668	835,457	524,488	542,711	568,446	598,923	554,558	562,585	592,404	625,286	647,585

Table 4. Pond aquaculture production in Bangladesh from 2018 to 2022 (MoFL, 2023b, pp. 2021–2022)

Species Name	Quantity in Metric Tons (MT)				
	2018	2019	2020	2021	2022
Rui (<i>Labeo rohita</i>)	239,146	250,046	299,597	294,837	307,865
Catla (<i>Catla catla</i>)	157,571	165,244	180,674	184,692	195,630
Mrigal (<i>Cirrhinus cirrhosus</i>)	171,261	178,391	191,944	197,387	205,491
Kalibaus (<i>Labeo calbasu</i>)	31,065	33,176	36,564	36,774	38,276
Bata (<i>Labeo bata</i>)	37,277	39,400	43,912	46,441	48,738
Ghania (<i>Labeo gonius</i>)	14,110	14,668	15,424	15,704	14,523
Silver Carp (<i>Hypophthalmichthys molitrix</i>)	184,909	193,967	207,833	214,412	216,604
Grass Carp (<i>Ctenopharyngodon idella</i>)	44,783	47,699	50,801	51,945	57,397
Common Carp (<i>Cyprinus carpio</i>)	70,106	75,758	80,568	82,949	82,020
Other Exotic Carp	26,426	29,544	32,282	32,894	35,007
Pangas (<i>Pangasius pangasius</i>)	441,643	447,054	394,786	391,442	395,615
Boal/Ayre/Guizza Ayre (<i>Wallago attu</i> / <i>Sperata uor</i> / <i>Sperata seenghala</i>)	754	786	670	653	693
Shol/Gazar/Taki (<i>Channa striatus</i> / <i>C. marulius</i> / <i>C. punctatus</i>)	1,982	2,631	2,475	2,367	2,404
Koi (<i>Anabas testudineus</i>)	46,457	49,659	53,227	52,880	57,244
Shingi/Magur (<i>Heteropneustes fossilis</i> / <i>Clarias batrachus</i>)	27,331	31,245	35,805	38,195	43,520
Big Prawn	1,871	2,016	2,518	2,527	2,567
Small Prawn	4,351	4,358	2,699	3,009	3,179
Tilapia/Nilotica (<i>Oreochromis mossambicus</i> / <i>O. niloticus</i>)	316,286	320,963	297,114	315,887	329,316
Sarpunti (<i>Puntius sarana</i>)	43,799	47,041	48,525	49,955	52,062
Cuchia (<i>Monopterusuchia</i>)	...	...	556	406	251
Other Fish	39,170	40,986	68,284	75,431	78,313

Table 5. Most abundant marine and coastal species (MT) (MoFL, 2023b, pp. 2021–2022)

Local Name	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Hilsa/Ilish	196,744	200,100	202,951	198,574	225,325	232,037	252,575	257,626	251,815	278,948	284,500	290,316	304,566	313,593	321,871
Bombay Duck	36,980	58,263	58,464	60,750	62,817	71,745	51,673	53,950	58,545	69,230	75,085	68,101	70,749	71,922	82,660
Indian Salmon	1,040	7,733	7,733	4,521	3,030	2,445	1,960	1,020	895	775	487	295	177	163	199
Pomfret	16,728	46,643	50,245	40,478	39,537	29,693	23,355	11,437	10,593	10,686	11,899	11,004	10,023	9,214	11,480
Jew Fish	33,803	38,414	35,514	36,639	37,929	30,600	36,170	31,826	31,894	33,768	35,427	41,600	41,943	48,665	41,356
Catfish	20,534	16,515	16,722	17,193	19,700	8,594	9,719	9,476	8,695	8,424	9,455	11,455	13,610	12,199	14,566
Shark/Skate/Ray	4,767	3,933	4,794	4,205	3,865	5,017	5,648	5,093	4,622	4,495	3,974	4,274	3,373	8,228	7,017
Sardine	...	...	...	...	20,187	29,636	27,590	32,835	44,386	48,704	41,486	28,256	16,814	34,519	38,432

3.3 Export, Import, and Contribution to GDP

Bangladesh is a significant producer of fish for domestic consumption, ranking third among inland capture fish-producing countries (fisheriesindia.com, 2023). In addition to meeting domestic demands, Bangladesh exports fish, shrimp, and other fisheries products for earning foreign currency. Table 6 provides a comprehensive overview of Bangladesh's annual fish and fish product exports from FY2000-01 to FY2021-22. The data, presented in MT and million USD, reveals the quantities and values of various fish products, including frozen shrimp/prawn, live fish, frozen fish, chilled fish, dry fish, salted fish, crab-and-eel, shark fin/fish maws, and others. The table reveals fluctuations in export quantities and values over the years, providing insights into Bangladesh's dynamic fisheries sector. Over the period from FY2000-01 to FY2021-22, total export earnings and quantities substantially increased. In FY2000-01, total export earnings were USD 376.71 million, exporting 38,988 MT. This grew to USD 646.88 million in FY2010-11, exporting 96,469 MT. However, in FY2021-22, exports decreased to USD 601.59 million, exporting 74,043 MT, compared to the peak in FY2010-11.

A detailed examination of the period from FY2000-01 to FY2010-11 (period 1) reveals a consistent increase in both the total export quantity and earnings. Bangladesh predominantly exported frozen shrimp/prawns and frozen fish during this timeframe. The export growth of frozen fish exhibited a sustained increase from FY2000-01 to FY2010-11, but in the case of frozen shrimp/prawn, the growth is not sustainable, characterized by ups and downs in export earnings. Alongside these primary products, Bangladesh exported dry fish, salted fish, crab and kuchia, shark fin/fish maws, and other fishes. The yearly growth shows fluctuations; their individual contributions are insignificant compared to frozen shrimp/prawn and frozen fish. However, in this period, the total yearly mean quantity of exports was 64,563 MT, and the export amount was 442 million USD, with the mean export of frozen shrimp/prawn at 45,064 MT (USD 382 million) and frozen fish at 15,408 MT (USD 46 million). Notably, in the last fiscal year (FY2010-11) of this period, total exports surged to 96,469 MT compared to the previous fiscal year, and the export earnings were 646.88 million USD (Table 6).

In period 2 (FY2010-12 to FY2021-22), there is a discernible decreasing trend in both the total export quantity and earnings. In the final fiscal year of period two, exports and earnings experienced a decline to 74,043 MT and USD 601.59 million, respectively. Nevertheless, the total mean quantity exported amounted to 76,870 MT, and the earnings were USD 544 million, a significant increase compared to period 1. The overall gap between the two periods is approximately 12,307 MT, valued at USD 102 million. A detailed examination reveals that the average quantity of exported frozen shrimp/prawn decreased to 39,222 MT, which is 5,842 MT less than in period 1. Although the mean export earnings increased to USD 438 million, this is only USD 48 million higher than the previous period. In this period, the mean export of live fish notably increased to 6,257 MT (an increase of 6,089 MT), valued at USD 15 million (USD 14 million higher). The mean production of chilled, dry, and crab-and-eel fish saw significant increases compared to the first period. The mean export of chilled fish increased to USD 35 million (USD 29 million higher), dry fish to USD 5 million (USD 4 million higher), and crab-and-eel fish to USD 18 million (USD 16 million higher). Conversely, the mean exports for frozen and salted fish declined compared to the first period.

Table 6. Annual fish and fish products export from Bangladesh (FY2000-01 to FY2021-22) (MoFL, 2017, pp. 2016–2017, 2023b, pp. 2021–2022)

Quantity in MT (MT)
Value in Million USD

Year	Frozen Shrimp/prawn		Live Fish		Frozen Fish		Chilled Fish		Dry Fish		Salted Fish		Crab & Eel		Shark Fin/ Fish Maws		Others		Total	
	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value
2000-01	29,713	349.37	0	0.00	7,965	17.59	0	0.00	137	0.37	838	5.14	154	0.43	181	3.82	0	0.00	38,988	376.71
2001-02	30,209	252.01	0	0.00	9,864	23.91	0	0.00	517	1.45	293	1.66	336	1.23	263	4.71	0	0.00	41,482	284.97
2002-03	36,864	297.05	0	0.00	8,846	27.40	0	0.00	333	1.21	526	3.30	630	2.52	172	3.86	0	0.00	47,371	335.34
2003-04	42,943	364.82	0	0.00	10,229	34.27	0	0.00	472	0.70	377	0.23	116	0.24	4	0.26	0	0.00	54,141	400.52
2004-05	46,533	371.66	0	0.00	15,763	41.73	0	0.00	272	0.60	770	4.72	38	0.14	1	0.06	0	0.00	63,377	418.92
2005-06	49,317	402.27	57	0.07	17,429	43.85	0	0.00	150	0.33	591	2.96	1,107	1.93	78	0.12	100	0.16	68,829	451.68
2006-07	53,361	434.49	4	0.01	18,376	47.32	0	0.00	77	0.19	441	1.86	1,123	2.25	244	0.60	78	0.12	73,704	486.84
2007-08	49,907	417.48	10	0.02	23,515	72.22	0	0.00	210	0.39	658	3.93	439	0.71	266	0.27	294	0.06	75,299	495.08
2008-09	50,368	398.68	0	0.00	19,294	65.51	0	0.00	341	1.74	84	0.57	1,217	1.74	276	0.26	1,308	2.72	72,888	471.22
2009-10	51,599	417.06	1,783	1.91	21,464	66.22	0	0.00	622	3.62	0	0.00	692	1.50	955	1.83	528	0.56	77,643	492.70
2010-11	54,891	501.36	1	0.01	16,743	68.85	16,369	59.16	623	0.78	577	4.34	4,485	7.60	0	0.00	2,780	4.77	96,469	646.88
2011-12	48,007	460.20	0	0.01	15,513	50.09	19,026	65.83	996	1.19	411	3.47	5,767	12.11	0	0.00	2,758	1.79	92,479	594.68
2012-13	50,333	422.39	0	0.00	11,435	39.58	11,831	30.88	1,278	4.51	0	0.00	7,428	21.20	1	0.01	2,599	1.74	84,905	520.33
2013-14	47,635	529.94	0	0.00	11,677	43.37	5,021	11.46	2,634	3.82	261	2.79	7,707	21.20	0	0.00	2,393	2.04	77,328	614.62
2014-15	44,278	506.94	0	0.00	10,656	35.74	11,629	22.80	2,845	4.73	261	3.27	12,558	25.67	0	0.00	1,297	0.88	83,524	600.02
2015-16	40,726	459.81	12,454	23.55	11,133	34.98	7,428	20.89	2,229	3.85	249	2.69	106	0.91	0	0.00	1,013	0.56	75,338	547.23
2016-17	39,706	465.41	12,686	25.84	8,281	29.91	4,124	12.01	2,297	3.82	207	2.35	197	27.84	0	0.01	809	0.59	68,306	541.92
2017-18	36,168	429.60	11,246	24.68	8,265	33.65	8,890	26.16	3,144	5.19	214	3.24	189	1.81	1	0.01	819	0.60	68,936	524.96
2018-19	33,363	367.61	14,592	34.95	9,742	36.53	10,364	31.19	2,340	3.92	166	2.21	470	5.34	2,134	3.16	0	0.00	73,171	484.91
2019-20	30,036	347.83	11,827	29.99	10,009	37.95	11,907	35.77	4,141	6.39	139	1.82	590	6.82	2,296	3.47	0	0.00	70,945	470.05
2020-21	30,615	321.98	3,151	7.50	13,023	49.46	16,568	61.65	4,691	7.38	79	0.91	6,288	31.14	2,176	2.14	0	0.00	76,592	482.15
2021-22	30,571	421.39	2,872	14.71	8,797	40.68	17,330	63.93	3,302	5.61	34	0.31	7,730	45.64	3,408	9.32	0	0.00	74,043	601.59

Beyond its robust export sector, Bangladesh is a noteworthy participant in the global fish market through substantial imports of fish and fish products. In 2021, the country procured live fish valued at USD 287,000, securing its position as the 87th largest importer of live fish globally (OEC, 2023). Remarkably, live fish ranked as Bangladesh's 951st most imported product that year. Key source countries for live fish imports include Thailand (USD 229,000), Singapore (USD 24,700), the United States (USD 14,300), Sri Lanka (USD 6,040), and the Netherlands (USD 4,030) (OEC, 2023). Notably, from 2020 to 2021, Bangladesh experienced surges in live fish imports from Thailand (USD 86,000), the United States (USD 14,300), and the Netherlands (USD 4,030), as indicated by the fastest-growing markets (OEC, 2023).

Figure 5 illustrates Bangladesh's annual dynamics of fisheries product imports from FY2015-16 to FY2022-23. While the data reveals fluctuations in total fisheries product imports over the years, there was a significant decline in FY2022-23. This decline could be attributed to the simultaneous surge in domestic fish production and the imposition of import restrictions amid a currency crisis.

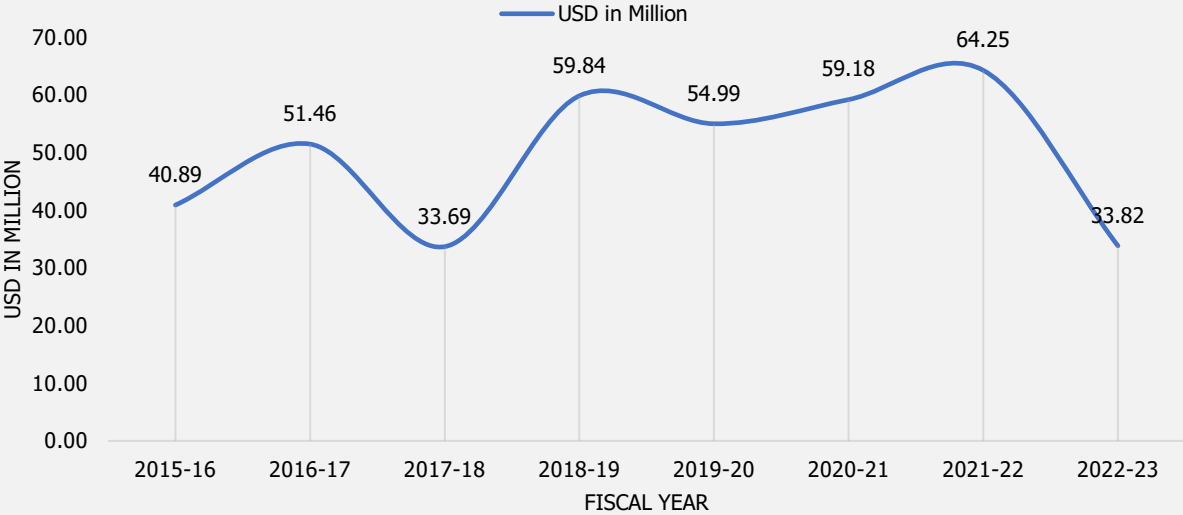


Figure 5. Imports of fisheries products in Bangladesh between FY2015-16 to FY2022-23

The agriculture, forestry, and fishing industries collectively contribute a substantial percentage to the national GDP, exceeding 11% over the last eight years, with the fishing industry accounting for over 2% (MoF, 2023). The sector's contribution to GDP has continuously declined from FY2015-16 to FY2022-23, ranging from 2.89% to 2.41% (Figure 6). This downward trend is attributed to the remarkable growth observed in the industrial and service sectors (MoF, 2023).

3.4 Fisheries Laws and Policies in Bangladesh

The legal landscape for Bangladesh's fisheries sector spans decades and is marked by historical regulations. In 1793, British rulers allocated lands to landlords for tax collection. Some pivotal laws persist with amendments, including the Private Fisheries Protection Act of 1889 from colonial times. During the Pakistani era, acts like the Protection and Conservation of Fish Act 1950 were enacted. Post-independence, enduring laws like the Fish and Fish Products (Inspection and Quality Control) Ordinance 1983 prevail alongside policies such as the 1998 National Fisheries Policy, which safeguards fish species and the environment. Detailed information is provided in Table 7.

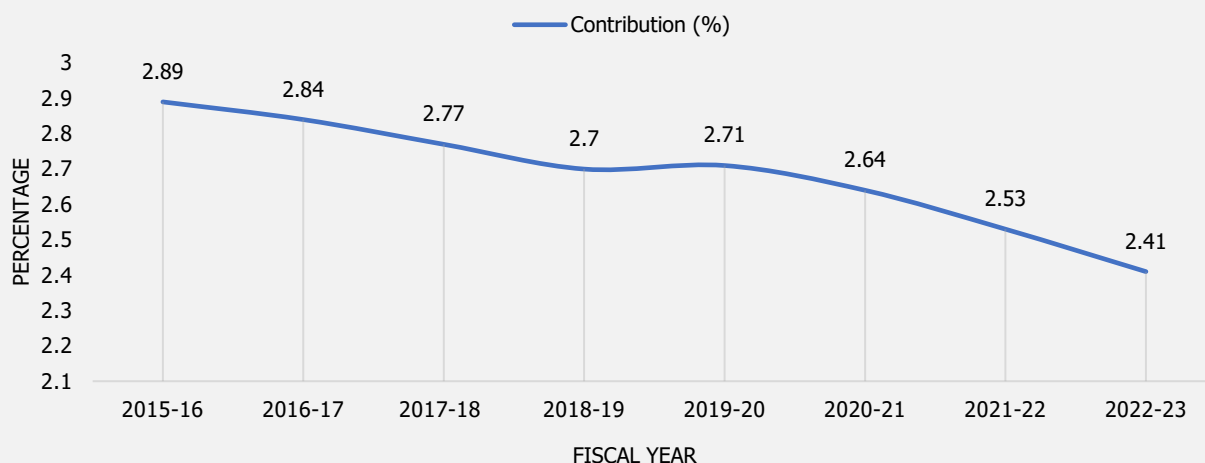


Figure 6. GDP Contribution Over the Last Eight Years at Constant Prices (Base Year: 2015-16) (MoF, 2023)

Table 7. Legal Framework for Fisheries in Bangladesh and Objectives

Fishing laws and policies	Objectives
Permanent Settlement Regulation, 1793	Under these regulations, large water bodies (Jalmahals) belong to direct control and management of the Zamindars, making every individual zamindar and talukdar the permanent and absolute proprietors of the land under their control.
The Private Fisheries Protection Act, 1889	This Act provides for the protection of private rights for fishing.
Pond Development Act, 1939	The purposes of the Act are for irrigation and pisciculture.
The Protection and Conservation of Fish Act, 1950	Conservation of fisheries resources as a whole. The text of the Act consists of 9 sections: Short title, extent, and commencement. Conservation of fisheries resources. The version of the Act consists of 9 parts: short title, size, and commencement. Conservation of fisheries resources. The text of the Act consists of 9 sections: short title, extent, and commencement.
The Protection and Conservation Fish Rules, 1985	Regulations on protection and conservation of fish. The text contains 11 articles about various measures of protection and preservation.
The Fish and Fish Product (Inspection and Quality Control) Ordinance, 1983	Quality control, fish, and shrimp, mainly targeting export.
Marine Fisheries Rules and Ordinance, 1983	Marine fisheries conservation & management.
National Fisheries Policy, 1998	Conservation, management, exploitation, marketing, quality control, and institutional development.
Territorial Waters and Maritime Zones Rules, 1977	Conservation, management, and development of marine fisheries. Preservation of marine fisheries.

The Fish Hatchery Act 2010 and Rules, 2011	Mitigate inbreeding and crossbreeding problems, and encourage hatchery and nursery owners to produce quality fish seeds in hatcheries.
Fish Feed and Animal Feed Act, 2010 National Shrimp Policy, 2014	Maintain the quality of the feed and feed ingredients. Flourish the shrimp industry, raise employment opportunities, alleviate poverty, increase export earnings, and meet the nutritional demands of the people.
National Fisheries Strategy, 2006	Emphasizes collaboration, linkages, and partnerships, reflecting current government concerns for poverty alleviation through more targeted activities.

Note: Detailed information is available in the provided sources (M. M. Islam et al., 2017; Shamsuzzaman et al., 2020; Shamsuzzaman, Islam, et al., 2017).

4. Conclusion

In the context of Bangladesh, the fisheries and aquaculture sector assume a pivotal role in mitigating protein deficiency and addressing malnutrition, while concurrently serving as a significant contributor to employment generation and foreign exchange earnings. This study provides a comprehensive overview of fisheries production and trade dynamics spanning the last decade in Bangladesh. Analysis reveals that the fishery resources within the country hold substantial potential for development, presenting an opportunity to bolster the national economy.

Despite the abundance of diverse fish resources in Bangladesh, fisheries production currently stands at a practical level. Notably, the nation faces constraints in accessing marine fisheries resources in the Bay of Bengal, and untapped potential in other marine resources remains unexploited on a commercial scale. This scenario underscores the imperative for strategic interventions to optimize resource utilization and capitalize on available opportunities.

The collaborative efforts of the government, relevant governmental departments, development partners, researchers, and non-governmental organizations emerge as crucial factors in orchestrating the comprehensive advancement of the fisheries sector. By fostering a coordinated approach and leveraging collective expertise, these stakeholders can contribute significantly to unlocking the full potential of Bangladesh's fisheries industry, thereby fostering sustainable economic growth and enhancing the overall well-being of the population.

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