

# Growth and Sustainability Trend in Seafood Sector: A Strategic Approach to Sectoral Transformation in Odisha

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**Abstract:** Given that Odisha is a coastal state, the seafood industry is one of its most promising industries. With 8.16 lakh MT of fish produced in 2019–20, Odisha is the fourth-largest fish-producing state in India, according to the Information & Public Relations report from 2021. It made about 6% of all the fish that was produced in India. A large number of business establishments participate in this broad industry by processing seafood, exporting it to overseas markets and generating foreign exchange for the state. At this critical juncture, the sector cannot afford to ignore practices that prioritize environmental, economic, and social sustainability in order to enhance capacity building and make efficient use of land. Thus, the importance of sustainability is realized. Sustainable seafood is produced by fisheries and aquaculture businesses that reduce their negative effects on the environment, provide safe and equitable working conditions, and promote economic gains and livelihoods along the whole supply chain. The current study intends to investigate the growth trends of the seafood sector in the state in order to comprehend the business outcome and various challenges faced by companies operating in Odisha. For that reason, ten business establishments in Odisha are taken into account. The study's goal is to investigate how the state's seafood industry is changing through a strategic approach that includes SWOT analysis, growth trend analysis, and actions taken to achieve sustainability. Primary data, which was gathered via questionnaires and interviews, as well as secondary data, were utilized and interpreted in the present research work.

**Key Words:** Growth trend, Seafood sector, Sectoral transformation, Sustainability.

## I. INTRODUCTION

The importance of the fisheries sector in India is well known as a direct and indirect source of income for more than six million people, a main driver of the coastal economy, and a major foreign cash earner. The transformation from a largely artisanal to a highly organised fishing business has been remarkable. India is the world's second-largest seafood producer, with over 7000 edible species on the market. Sustainable fishing

is crucial to ensuring sustainable fish stocks, minimizing environmental impact and allowing effective fisheries management by preventing illegal fishing and cutting out destructive fishing practices. In this context, eco-labelling is increasingly being adopted to maintain the productivity and economic value of fisheries, while providing incentives for improved fisheries management and the conservation of marine biodiversity. In this context a general question pops up and that is what about seafood could be "sustainable"? Has this term—like so many others used in the environmental movement—been used only to justify excessive consumption? Here, we'll look at the seafood industry's environmental issues and possible fixes. Paying close attention to unsustainable practices, such as overfishing, the unintentional capture of marine animals in fishing nets, and water pollution from poorly managed fish farms, is necessary for sustainable fishing. It also requires environmental and economic justice for the communities that depend on the fishing industry. So, the aim of this present research work is to study the sectoral transformation of Odisha's sea food sector in terms of its growth trend and sustainable practices.

## II. LITERATURE REVIEW

Today, the importance of utilizing fisheries and aquaculture resources responsibly is widely recognized as several fish stocks started collapsing globally in the late '80s. Almost 90% of global marine fish stocks are now fully exploited or overfished owing to rising populations, higher incomes, and greater awareness of seafood's health benefits. According to the data computed by the World Bank, the situation is worst in low-income and middle-income countries, where weak regulation and enforcement have produced above-average declines in fish stocks. It notes that illegal fishing constitutes 20% of the global catch. This situation needs to change as fisheries are crucial to global food security and nutrition. This is where the question of sustainability becomes crucial for the industry.

Food from the sea has been crucial for human survival for over 150,000 years (Marean et al. 2007) and has helped to shape human evolution (Crawford and Broadhurst 2012). Seafood plays a particularly important role in food and nutrition security through its high concentrations of bioavailable minerals and vitamins, essential fatty acids and animal protein (Hicks et al. 2019; Thilsted et al. 2016). For many countries, including some Small Island Developing States, seafood contributes, or exceeds, 50% of total animal protein intake (FAO 2018). Seafood is also vital for the almost 30 million coastal Indigenous peoples who consume nearly four times more seafood per capita than the global average, and 15 times more per capita than non-Indigenous peoples in their respective countries (Cisneros-Montemayor et al. 2016). However, terrestrial bias remains evident in debates on food and nutrition security (Béné et al. 2015) and on mechanisms to end hunger (see for example Nature 2020). Promotion of seafood as an important component of a healthy and sustainable diet (Bennett et al. 2018; Bogard et al. 2019a; Farmery et al. 2017; HLPE 2014b), due to its nutritional profile and

comparatively favorable environmental footprint (Hoegh-Guldberg et al. 2019; IPCC 2019; Willett et al. 2019), is helping to overcome this bias. Food from the sea can make an important contribution to improved food outcomes, however, careful management of marine and terrestrial resource use in combination with efforts to ensure efficient and equitable distribution of resources, products and benefits, will be required (Österblom et al. 2020). Conversely, reducing the supply of seafood will potentially contribute to malnutrition and hunger, as well as lead to potentially negative environmental impacts related to replacing seafood with food produced on land (Barange 2019; Golden et al. 2016).

Seafood is predominantly sourced through the wild harvest of a broad range of plants and animals. Over 84 million tonnes of wild harvest seafood was landed from the ocean in 2018 (FAO 2020c). In developing countries, approximately half the catch is produced by the small-scale fisheries (SSF) sub-sector (WorldFish 2018). Small-scale fishers typically operate close to shore with relatively simple gear and catch fish for subsistence or local markets. SSF involve a diverse group of men and women and are embedded in local economies, traditions and values (FAO 2015). They are particularly important for livelihoods and income generation, supporting 88% of fish workers globally (FAO 2018). The global availability of seafood has increased as a result of sustained growth in aquaculture production. While aquaculture now accounts for 46% of total seafood produced (FAO 2020c), the majority of growth has occurred through freshwater production, as mariculture<sup>Footnote2</sup> production has not accelerated at the same pace (Tacon et al. 2011). It is estimated that production of food from the sea can increase substantially (Costello et al. 2020; Cottier-Cook et al. 2016; Gentry et al. 2017; Schubel and Thompson 2019; World Bank 2013) through a combination of improved management of wild harvesting and increased growth of mariculture. While increasing production will further raise the global availability of seafood, it will not automatically lead to improved food outcomes, particularly for people affected by food insecurity and malnutrition who may have limited access to seafood resources (Belton et al. 2020; FAO 2009).

The way in which seafood is produced, distributed and consumed is changing rapidly with ecosystem change and ocean regulation, the influence of corporations and evolving consumer demand, as well as the growing focus on the importance of seafood for meeting nutritional needs. Optimizing the role of the ocean in sustainably feeding the world's population has been identified as one of the key challenges for the United Nations 'Decade of Ocean Science for Sustainable Development' 2021–2030. Meeting this challenge in the coming decade, for a projected 8.6 billion people with varied physical and financial access to seafood, cultural food practices, and food preferences, will require coherent, integrated and flexible solutions that consider the inter-sectoral and cross-national nature of food systems (Bai et al. 2016; Sachs et al. 2019). It will also need to consider the range of trade-offs between food production and other uses of marine space and resources (Cohen et al. 2019; Farmery et al. 2021).

Taking a food systems approach, which considers the way in which food is produced, processed, delivered and consumed, as well as how these elements intersect with human health, the environment, economics and society (HLPE 2014a; Imagine a world 2020), is important given the historical lack of attention to the ways different people will gain, lose, or be excluded from access to fish resources, or to fish as a food commodity (Belton et al. 2020; HLPE 2014b; Tezzo et al. 2020). This paper examines the anticipated global trends for seafood systems, or seafood within the broader food system (based on our definition of seafood), over the next ten years and identifies key pathways that could shift the current trajectory to a more sustainable 2030, consistent with the UN's Sustainable Development Goals, predominantly SDG2 (Zero hunger), SDG3 (Good health and wellbeing), SDG12 (responsible consumption and production) and SDG14 (Life below water). This paper aims to support the alignment of seafood production and consumption with goals to transform food systems toward healthy diets that both nurture human health and support environmental sustainability (Willett et al. 2019). We firstly identify and describe key 'drivers' that influence seafood systems now and will continue to do so over the next decade. We use these drivers to construct a future scenario based on current trajectories reported in the literature (Business-as-usual 2030). We then present a more sustainable future scenario that strives towards achieving the SDGs as far as technically possible (More sustainable 2030) and descriptive pathways and actions that can be undertaken to achieve this more sustainable future. The two future scenarios are described through three fictional, yet evidence-based, narratives, to demonstrate how the anticipated futures might be experienced by people in different social, geographical and economic situations.

### III. RESEARCH GAP & RATIONALE OF THE STUDY

In the above section, a wide range of research works are studied. Many focuses on seafood industry and application of Govt. guidelines in them whereas some highlight the impact of seafood sector output on GDP and economic development of the nation. But, limited studies emphasize on sustainability practices adopted and implemented in seafood sectors. In case of studies in the state, the numbers are really negligible. Keeping these gaps in consideration, the research gap for the present work is sectoral transformation in seafood industry in Odisha in terms of growth and sustainability. So, the objectives are set accordingly.

### IV. OBJECTIVES OF THE STUDY

The objectives of the study are as follows

- a. To understand of Seafood processing practiced in the state.
- b. To find out the skill and sustainability measures adopted in this sector in Odisha
- c. To conduct a SWOT analysis of the seafood sector in the state.
- d. To study the growth trend and interpret the result.

## V. SEAFOOD INDUSTRY & ODISHA

Odisha is immensely contributing to the fisheries development in the country with its huge fisheries resources which includes 480 km of marine coastline, 4.18 lakh hectares of brackish water bodies and 6.86 lakh hectares of inland water bodies including rivers, ponds, tanks and reservoirs. Odisha is the 4th largest fish producing states in India with 8.73 lakh metric tons of fish produced during 2020-21 contributing to 2.33% of the state economy. Over last 5 years, Fisheries sector has grown at an average annual growth rate of about 13% in Odisha. Especially the inland fisheries sector has shown a spectacular growth, which is one of the best in the food and agriculture sector. A Competitive Analysis is a strategy that involves researching major competitors to gain insight into their products, sales, and marketing tactics. Implementing stronger business strategy, warding off competitors, and capturing market share are just a few benefits of conducting a competitive market analysis. Odisha has 480 kilometres of coastline and is one of the most important states in terms of fisheries development. Cuttack established a "Pond Culture Division" in 1949. The state fisheries department is working hard to increase productivity and production capacity. Tiger Prawn, Brown Shrimp, and a few fish species are being processed in Odisha. In brackish water, a species named "L. vannamei" that is largely found in Latin America is being cultured.

Odisha's production is likely to expand in the next years. Bhubaneswar is one of the country's most prominent seafood processing hubs, with roughly 39 cold and chilled storage facilities.

In the cluster, there are 43 registered exporters, of which 26 are active. In total, there are 21 processing plants processing plant in the cluster and 16 of these are active throughout the year; remaining 5 units undertake processing only during peak season. About 10 merchant exports exist in the cluster, who utilizes processing facilities of other exporters to carry out their business. A major concentration of processing plants is located in Patia industrial area and Mancheswar industrial estate with six plants in each area. About three processing plants are located in Paradip and one processing plant is located on outskirts of Bhubaneshwar towards Berhampur.

In the cluster, there are 21 processing plants, 16 of which are operational all year; the remaining 5 units process exclusively during peak season. In the cluster, there are about ten merchant exporters who use the processing facilities of other exporters to do their business. With six units in each location, the Patia industrial area and Mancheswar industrial estate have the highest concentration of processing plants. In Paradip, there are about three processing plants, and one processing factory is on the outskirts of Bhubaneshwar, near Berhampur. The overall yearly turnover of the Odisha seafood cluster is expected to be Rs 2,070 crores, with exports accounting for the majority of the revenue. The cluster is well-known for exporting shrimp to countries across five

continents, including Japan United States and, Southeast Asian countries such as Thailand, Vietnam. Four processing plants in the cluster are exporting to European Union. Shrimps production is in excess of 90% in the cluster and only about 10% of total production is other fish species. The raw material i.e. fish is the single major cost for processing industry and accounts for about 70% of total input cost. Other major costs include labour, packaging and transport and energy (figure). The yield of the plant is related to the recovery from raw fish/ shrimp. The shrimp is the major product and production of headless shrimp (blocks made in plate/blast freezer) has a recovery of about 65-70%. The individually quick frozen" (IQF) shrimp is completely shell-less (mainly exported to European Union) and its recovery is about 55%. Energy 2% Labour 15% Packing and transport 13% Raw material 70% Input cost components Product types and production capacities The cluster has 16 active processing units.

## VI. RESEARCH METHODOLOGY

### 6.1 Research Design

The present research work is divided into three segments. First section deals with coining the background thought of the present study in form of research gap and scope of the study. For this purpose, various school of thoughts are examined carefully and objectives are framed. Second part of the study deals with SWOT analysis of sea-food sector in the state, analyzing the big players and their practices, growth trend and various sustainable measures adopted as well as implemented by them. Last or third part of the present research work concentrates on interpreting the result in form of findings and studying the managerial implications of the findings. The paper concludes with a positive note that states the present state of sea-food industry in the state and the transformation they have gone through by practicing various sustainable measures.

### 6.2 Sample size and location of the study

The location of the present study is three coastal areas and capital of Odisha. They are Kendrapara, Paradeep, Balasore and Bhubaneswar (capital). Ten seafood business houses are approached for this reason. On the basis of annual turnover these ten companies are selected (Table 1). They are as follows.

- MAGNUM Sea foods Limited
- Falcon Marine Exports Limited
- Sabri Food Products
- Hari Marine Private Limited
- Seagold Overseas Pvt ltd
- Sreeram Exports Pvt. Ltd
- Abba Kaba Overseas Pvt Ltd
- Saiomm Seafood Exports Limited
- TNP SeafoodsPvt. Ltd.

- Odisha Aqua Traders & Marine Exports Pvt. Ltd

Total 320 respondents are approached for collection of data. After filtering, the data size reduced to 270. So, the sample size of the study is 270.

### 6.3 Data

Both primary and secondary data has been used in the study. Documents, Manuals, Interviews, Questionnaires methods are adopted for that purpose. For robustness of data, special interviews were conducted with the Executive Directors and other top authorities of the above business entities. Along with it, questionnaires were given to the HR managers and the Quality Control managers. Documents and Office Manuals were used to collect the secondary data. Authorities are also approached to collect information regarding various CSR practices and sustainability measures practiced in the organizations. Financial Statements of the above companies are also studied for knowing the growth trends in recent pasts.

### 6.4 Data Analysis

#### 6.4.1. SWOT Analysis of sea food sector in Odisha

Before going for examining the growth trends and various sustainable measures adopted by sample companies, a SWOT analysis is done. Highlights of the analysis are as follows.

#### Strength

- High brand equity enjoyed
- State of the art infrastructure
- Availability of vast variety of Seafoods
- Huge investment capacity
- Biggest value supply chain in India
- Huge storage capacity
- Availability of fresh seafoods
- Available facilities such as online booking and delivery of goods

#### Weaknesses

- General perception: 'Low price = Low quality'
- Supply goes down because of Covid-19
- Heavy export tariffs
- There is no special marketing team

- Highly fragmented industry with low entry barriers as well as competition in the export market
- Dependence on government support in the form of export incentives

### Opportunities

- Scope in Indian to Exports seafoods
- More people these days prefer to visit big stores where they can find large variety.
- The global market for Seafood is projected to reach a revised size of US\$ 138.7 Billion by 2027.
- India is aiming to achieve Rs 1 lakh crore worth of exports from fisheries sector by 2024-25.
- The State had produced 8.73 lakh metric tonne of fish during 2020-21 which was around 2.33 percent of the State's economy.
- Over last five years, fisheries sector has grown at an average annual growth rate of about 13 percent in the State.
- Government Subsidies
- Tax Benefits
- Foreign Collaboration

### Threats

- Increasing Indian as well as Foreign Competitors
- To understand consumer preference criteria comparing with competitors.
- Natural Disasters and calamities
- Pandemics like COVID

The following table shows product line, turnover, growth rates of the sample companies.

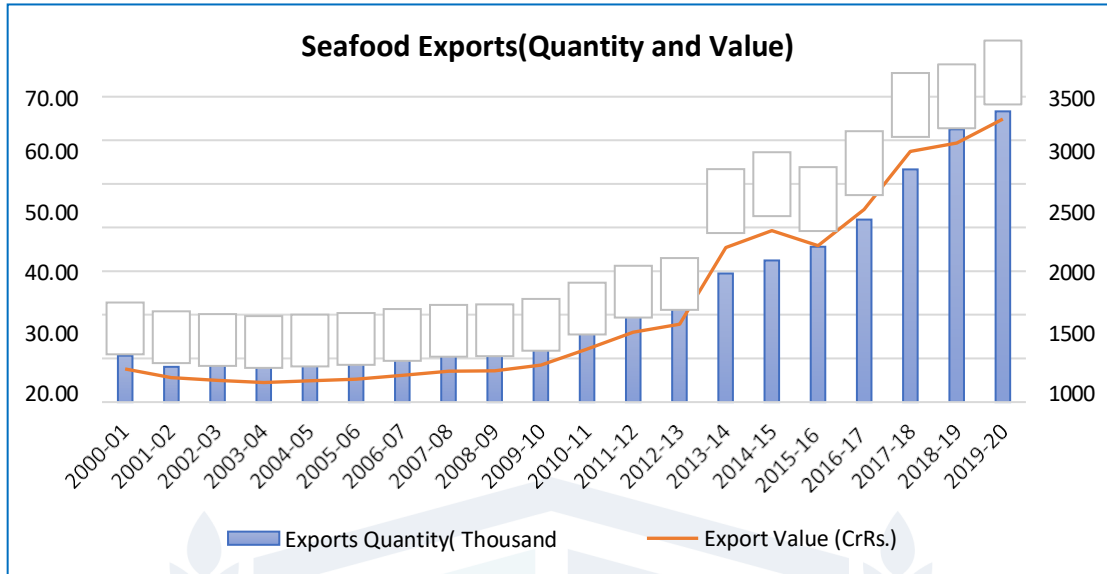
#### 6.4.2. An overview of Odisha's sea food industry in terms of growth, turnover and export trend

**Table 1: Company profiles, product line, turnover and growth rate**

Company Name	Company Type	Product Type	Turnover	Growth rate	Sustainability measures
MAGNUM Sea-foods Limited	Merchant exporter / route through exporter	Shrimp butterfly cut, skewer, whole shrimp, headless shrimp, black tiger	2400 cr.	22%	Yes
Falcon marine exports limited	aquaculture, real estate, steel, shrimp feed, retail chain	Shrimp butterfly cut, skewer, whole shrimp, headless shrimp, black tiger	2000 cr	19.5%	Yes
Sabri food products	Merchant exporter / route through exporter	Shrimps, fish, cephalopods	Rs. 100 - 500 crore	19%	Yes
Hari marine private limited	Wholesale trader / distributor	Black Tiger (Penaeus Monodon), White and Sea Tiger etc.	A.C - 9.00 cr, P.C - 8.75 cr	12%	Yes
Seagold overseas pvt ltd	manufacturer exporter	Fish, shrimp, squid, cuttlefish, frozen shrimps- hl blocks & ribbon fish	Rs. 5 - 10 crore	11.34%	Yes
Sreeragam exports pvt ltd	manufacturer exporter	Gambrooni sea foods, frozen sea foods, ceekey sea foods, frozen prawns	A.s.c - 50,000,000, p.c - 35,000,000	10.56%	Yes
Abba kaba overseas pvt ltd		Shrimp, frozen marine, vannamei, flower, sea, tiger, poovalan, Bamboo, Karrikadi	S.C -INR 3.00 cr, P.C - INR 2.21 cr	9%	Yes
Saiomm Sea food Exports Limited	Trading Company	Black Tiger Shrimp, Vannamei White Shrimp, Seawater Fish, Cephalopods	Authorized capital stands at Rs 100.0 lakhs , paid-up capital is Rs 70.17 lakhs	8.88%	Yes
Tnpseafoods pvt. Ltd.	Supplier, Distributor ,retailer, importer	Crustaceans, fishes, cephalopods	Uptors. 50 lakh	8.82%	Yes
Odisha aqua traders & marine exports pvt. Ltd	Route-through merchant exporter	Shrimp, frozen veg foods, lobsters	A.c - 5,000,000, p.c - 5,000,000	8.55%	Yes

\*Self Computd

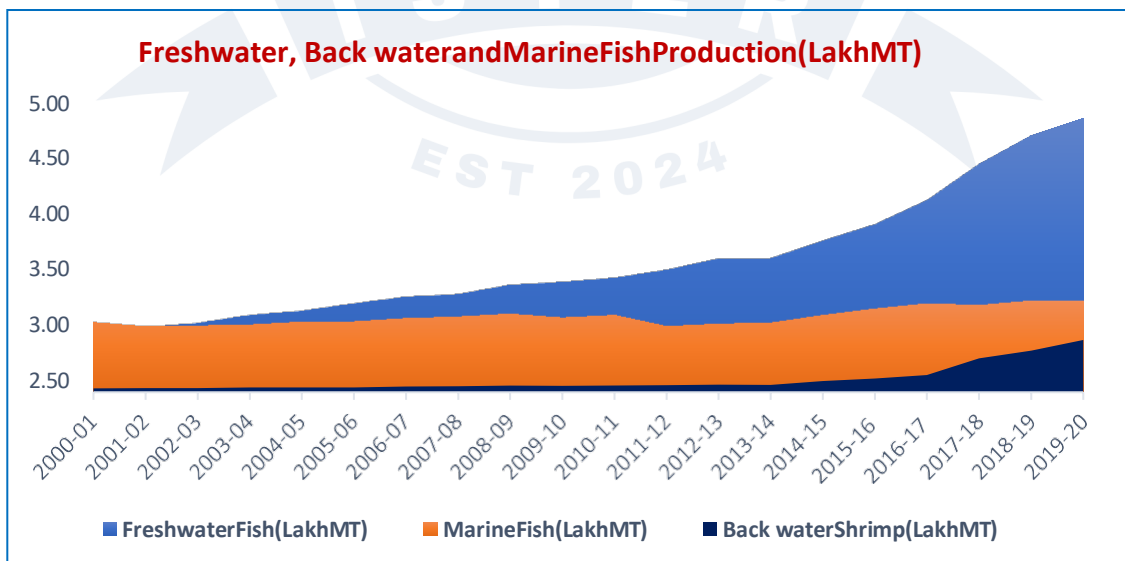
**Graph 1: Trend of sea food production in Odisha**



*\*Source: Annual report of Odisha Fisheries Sector*

With 8.16 lakh MT of fish produced in 2019–20, Odisha is the fourth-largest fish-producing state in India. It made about 6% of all the fish that was produced in India. Over the past 20 years, Odisha's total fish production has increased threefold, with a Compound Annual Growth Rate (CAGR) of 6.22% (from 2.60 Lakh MT in 2000-01 to 8.16 lakh MT in 2019-20). Concurrently, the value of fish produced has grown twelve times, from Rs. 1,046 Crores in 2000–01 to Rs. 12,749 Crores in 2019–20; this amounts to 2.39% of the state GDP. The last five years, from 2015–16 to 2019–20, have seen the best growth in the fisheries industry, with fish production rising sharply with CAGR of 11.87%. Following graph shows production of sea foods in the state in last 20 years.

**Graph 2: Volume of different sea foods production in the state**



*\*Source: Annual report of Odisha Fisheries Sector*

The above graph shows a comparison between fresh water, back water and marine fish production, where it is clearly visible that sea food production is highest till 2015. Fresh water fish production has the highest growth rate (because of various Govt. schemes) and back water shrimp production is just gaining its ground. Still sea food sector has a lion's share in the fish market and the following table supports it where export in last 20 years is studied.

**Table 2: Trend of sea food export from Odisha**

Year	Qty.in MTs	Value (Rs. In Crore)	Value In millionUS\$	Value In million Euro
2011-12	21,078	792.76	125.83	113.25
2012-13	23,691	908.48	144.20	129.78
2013-14	30,980	1,817.07	300.39	280.00
2014-15	34,767	2,069.17	342.27	311.49
2015-16	35,612	1,791.81	270.18	237.41
2016-17	41,828	2,204.70	332.35	279.17
2017-18	53,344	3,100.00	411.09	368.25
2018-19	62,513	3,100.00	423.82	349.40
2019-20	66,000	3,243.00	443.38	365.52

*\*Source: Annual report of Odisha Fisheries Sector*

The above table highlights a ten-fold jump in sea food export value in last 20 years. Seafood exports contributed to 6.81% of the total state export revenue. Similarly, the quantity of seafood export has increased by 650% from 10.64 thousand MT to 66.65 thousand MT during the same period.

#### 6.4.3. Achieving Sustainable Development & Goals in state Fisheries:

There are several key strategies that can be implemented to achieve SDGs which includes: Culture fisheries. Implementing sustainable aquaculture practices using environmentally friendly techniques such as recirculatory systems, integrated multi-trophic aquaculture, and organic and biodynamic aquaculture some objectives are fulfilled. The practices are in terms of following forms.

- Diversifying the species of fish and shellfish grown in aquaculture operations to reduce the risk of disease and improve overall productivity.
- Encouraging the use of renewable energy sources, such as solar or wind power, in aquaculture operations
- Developing mari-culture to increase the efficiency and sustainability of aquaculture operations
- Ensuring responsible fish farming using responsible feeding practices, minimizing the use of antibiotics and chemicals, and ensuring the health of farmed fish

- Promoting transparency and traceability by implementing traceability systems to ensure that farmed fish can be traced back to the farm of origin, and providing transparent information about the origins and sustainability of farmed fish to consumers
- Developing sustainable feed sources using sustainable feed ingredients, such as plant-based proteins, and minimizing the use of fishmeal and fish oil in feed

### **Sustainable Development Growths (SDG) in fisheries:**

The fisheries sector has shown tremendous growth over the years when compared to other food-producing sectors with a production of 178.5 million metric tonnes (FAO, 2020). This increase in production is highly correlated with the livelihood of millions of people who depend on the sector for food, nutrition, and income. But the increase in population coupled with the increase in demand for fish and fish products has driven out the overexploitation of resources. With the fast expansion of the fishing industry that has increased the fishing pressure, leading to over fishing followed by juvenile fishing, and by catch discards. According to the FAO, the percentage of marine fish stocks that are biologically sustainable has decreased from 90% in 1974 to 65.8% in 2017, while stocks fished at biologically unsustainable levels has increased, indicating the degree of exploitation. Overexploitation of fisheries resources, indiscriminate fishing due to open access and free rider mechanism, weak regulations, inadequate infrastructure and habitat destruction are the major constraints and challenges of achieving SDGs (Sustainable Development Growth) in fisheries. The SDGs proposed are highly interlinked when it comes to the fisheries sector and hence a coordinated effort is necessary to achieve sustainable development in fisheries which in turn have a significant synergic effect on achieving the SDGs.

### **SDG in Fisheries: Indian Scenario**

When compared to other food-producing sectors in India, the fisheries sector plays a significant part in the country's economic growth and continues to grow at remarkable rate. India is the 2nd largest producer of fishing the world contributing about 6.3% of the global fish production and 16th largest maritime country. The sector has shown impressive growth with an average annual growth rate of 10.88% and provides employment to millions of people directly and many more indirectly.

Despite the increase in fisheries and aqua-culture production in India, sustainable development of the sector is a major concern as the country ranked 117 with a score (percentage) of 61.92 out of 193 countries in SDG index 2020. The marine fisheries sector of the country is facing serious challenges in attaining SDG targets which includes over exploitation, Illegal, Unreported and Unregulated (IUU) fishing, pollution, bycatch discards, juvenile fishing, climate change, destruction of marine ecosystem, socio-economic conflicts and low catch per unit effort majorly. While the inland sector faces underutilization of resources, lack of infrastructure,

destruction and fragmentation of aquatic ecosystems, aquatic pollution, impoundment and channelization of water bodies, soil erosion, and modification of river, lake, and floodplain hydrological features, poor policies and management strategies.

The culture sector is troubled with disease outbreaks, climate change, natural calamities, and increased competition on resources and factors of production. As underlined in the 17th SDG, it is vital for India to accomplish SDGs in fisheries through a collaborative cooperation between international organizations, fisheries departments, research institutes, and other stakeholders bringing out the Blue Revolution through sustainable and responsible development. The launch of Pradhan Mantri Matsya Sampada Yojana (PMMSY), a flagship scheme for the development of the fisheries sector as part of the Aatma Nirbhar Bharat Package with an estimated investment of Rs.20,050 crores for implementation over a 5-year period from financial year 2020-25 in all States/Union Territories will have the potential to catalyze the blue revolution and SDGs in fisheries. Because 42 percent of the PMMSY's total estimated investment is intended for the establishment and upgrade of fisheries infrastructure facilities, which is the need of the hour, the program is expected to deliver sustainable development to the fisheries sector through comprehensive infrastructure development.

## VII. FINDINGS & CONCLUSION

The government of Odisha introduced the "Odisha Fisheries Policy 2015" in September 2015 with the goal of "being a pioneer in aquaculture development and fisheries extension for ensuring food security, livelihood, the welfare of fishers, and employment generation" in order to promote the integrated development of the fisheries sector and fish farmers. The Policy intends to address issues related to the social and environmental implications of the use, protection, and promotion of nutrition security in a sustainable manner; the security of the fisher community's livelihood; gaps in the legal and regulatory framework and their enforcement; administrative structure and procedures; and financing mechanisms, including subsidies, technology, and extension support. The Odisha Agriculture Policy, SAMRUDDHI - 2020, included additional updates and revisions to this fisheries policy.

The "Blue Label Certification" from the Marine Stewardship Council (MSC) attests to the use of sustainable fishing techniques in Indian fisheries. Ashtamudi Lake's fishery has earned this accreditation. India's current 4% global seafood export share could increase with such an endeavor. Traceability and sustainability are related as well. International buyers and distributors are curious about the product's origin. The Pradhan Mantri Matsya Sampada Yojana (PMMSY), created by the government, aims to increase sustainability and traceability from "catch to consumer." Furthermore, the government has launched programs to support innovative methods for freshwater and saltwater species. Fishermen in the states have also embraced cage

culture as a technology to maximize the use of the water resources that are available. Fixed and floating cages are used for this purpose. Lastly, incorporation of good catching practices such as hook and line need to be promoted in the country among the fishing community.

## REFERENCE

- [1] Annual Report, Odisha Fisheries Department, 2020-2021. [https://odishafisheries.nic.in:8443/upload/files/04\\_26\\_24pm91876187b881c3a81cd48f9085420fe5.pdf](https://odishafisheries.nic.in:8443/upload/files/04_26_24pm91876187b881c3a81cd48f9085420fe5.pdf)
- [2] Bai X et al (2016) Plausible and desirable futures in the Anthropocene: a new research agenda. *Glob Environ Chang* 39:351–362
- [3] Barange M (2019) Global fishing sustainability challenges and successes. In Paper presented at the International Symposium on Fisheries Sustainability, Rome, 12 December 2019
- [4] Belton B, Reardon T, Zilberman D (2020) Sustainable commoditization of seafood. *Nat Sustain* 3(9):677–684
- [5] Béné C, Barange M, Subasinghe R, Pinstруп-Andersen P, Merino G, Hemre G-I, Williams M (2015) Feeding 9 billion by 2050: putting fish back on the menu. *Food Sec* 7:1–14. <https://doi.org/10.1007/s12571-015-0427-z>
- [6] Bennett A et al (2021) Recognize fish as food in policy discourse and development funding. *Ambio*. <https://doi.org/10.1007/s13280-020-01451-4>
- [7] Bennett A, Patil P, Kleisner K, Rader D, JohnViridin J, Basurto X (2018) Contribution of fisheries to food and nutrition security: current knowledge, policy, and research.
- [8] Bennett EM et al (2016) Bright spots: seeds of a good anthropocene. *Front Ecol Environ* 14:441–448
- [9] Blanchard JL et al (2017) Linked sustainability challenges and trade-offs among fisheries, aquaculture and agriculture. *Nat EcolEvol* 1:1240
- [10] Bogard JR, Farmery A, Little D, Fulton EA, Cook M (2019a) Will fish be part of future healthy and sustainable diets? *Lancet Planet Health* 3:e159–e160
- [11] Bogard JR, Farmery AK, Baird DL, Hendrie GA, Zhou S (2019b) Linking production and consumption: the role for fish and seafood in a healthy and sustainable Australian diet. *Nutrients* 11:1766
- [12] Cisneros-Montemayor AM, Pauly D, Weatherdon LV, Ota Y (2016) A global estimate of seafood consumption by coastal Indigenous peoples. *PLoS ONE* 11:e0166681
- [13] Cohen P et al (2019) Securing a just space for small-scale fisheries in the blue economy. *Front Mar Sci* 6:171
- [14] Cohen PJ, Foale SJ (2013) Sustaining small-scale fisheries with periodically harvested marine reserves. *Mar Policy* 37:278–287
- [15] Costello C et al (2020) The future of food from the sea. *Nature*. <https://doi.org/10.1038/s41586-020-2616-y>
- [16] Costello C et al (2016) Global fishery prospects under contrasting management regimes. *ProcNatlAcadSci* 113:5125–5129. <https://doi.org/10.1073/pnas.1520420113>
- [17] Cottier-Cook E et al. (2016) Safeguarding the future of the global seaweed aquaculture industry united nations university (inweh) and scottish association for marine science policy Brief:12
- [18] Crawford MA, Broadhurst CL (2012) The role of docosaehaenoic and the marine food web as determinants of evolution and hominid brain development: the challenge for human sustainability. *Nutr Health* 21:17–39

- [19] Farmery AK et al (2021) Blind spots in visions of a “blue economy” could undermine the ocean’s contribution to eliminating hunger and malnutrition. *One Earth* 4:28–38
- [20] Farmery AK, Gardner C, Jennings S, Green BS, Watson RA (2017) Assessing the inclusion of seafood in the sustainable diet literature. *Fish Fish* 18:607–618
- [21] Gentry RR et al (2017) Mapping the global potential for marine aquaculture. *Na EcolEvol* 1:1317
- [22] Gephart JA et al (2020) Scenarios for global aquaculture and its role in human nutrition. *Rev Fish SciAquac* 29(1):122–138
- [23] Hoegh-Guldberg O et al (2019) The ocean as a solution to climate change: five opportunities for action. World Resources Institute, Washington, DC
- [24] Marean CW et al (2007) Early human use of marine resources and pigment in South Africa during the middle pleistocene. *Nature* 449:905. <https://doi.org/10.1038/nature06204>
- [25] Österblom H, Jouffray J-B, Folke C, Rockström J (2017) Emergence of a global science–business initiative for ocean stewardship. *Proc Nat AcadSci* 114:9038–9043
- [26] Österblom H, Wabnitz CCC, Tladi D (2020) Towards ocean equity. World Resources Institute, Washington, DC
- [27] Schubel JR, Thompson K (2019) Farming the sea: the only way to meet humanity’s future food needs. *GeoHealth* 3:238–244. <https://doi.org/10.1029/2019gh000204>
- [28] Tacon AGJ, Hasan M, Metian M (2011) Demand and supply of feed ingredients for farmed fish and crustaceans. Rome, Italy
- [29] Taylor MD et al (2017) Fisheries enhancement and restoration in a changing world. Elsevier
- [30] Taylor SFW, Roberts MJ, Milligan B, Newadi R (2019) Measurement and implications of marine food security in the Western Indian Ocean: an impending crisis? *Food Secur* 11:1395–1415. <https://doi.org/10.1007/s12571-019-00971-6>

