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Abstract:

Fisheries and aquaculture sector is considered as a sunrise sector in Indian economy and it has witnessed a magnificent growth from 0.75 MT to 10.79 MT which is around 950 per cent that constitute eleven fold increase of fish production during the last six decade. India achieved the status of 2nd largest country in the production of fisheries in 2018-19. Therefore, there is need to analyse the growth of this sector during last few years. The objective of the study is to analyse the year wise growth of fishery sector from 2012-13 to 2018-19 in India. The growth of top 10 states were also analysed during this period. The study concluded that this sector is growing in Coastal as well as Non-Coastal States. Andhra is highest growing state among top 10 states with the CAGR of 16% and Odisha is second highest growing State. Non Coastal States like Chhattisgarh, Bihar and Utter Pradesh are also growing with the CAGR of 11%, 7% and 6% respectively.

Keywords: Fisheries, Aquaculture, CAGR, Coastal, Production

Introduction

The fisheries and aquaculture sector is recognized as a sunrise industry in the Indian economy and has experienced exceptional growth from 0.75 MT to 10.79 MT, or almost 950 percent, which represents an eleven-fold increase in fish production over the past six decades. India is contributing for around 5.68% of the world's fish production, which in 2016–17 reached about 10.79 million tonnes. The fact that India is the second-largest nation in the world for fisheries output and that it is regarded as a significant source of wealth and jobs encourages the development of several ancillary industries. Along with being an important source of wholesome food, it also generates foreign exchange. India accounts for more as well. More than 10% of the world's fish species are found in India. Particularly, freshwater aquaculture increased about tenfold in the past three decades, from 0.37 million tonnes in 1980 to 4.03 million tonnes in 2010 and more than 14.5 million people depends on fishing-related industries. India contains a huge expanse of water bodies, including a 7,517 km coastline, 195.210 km of extensive rivers (including 14 major rivers), 44 medium rivers, and a large number of small rivers and streams. In addition, pond and tank resources are covered by 23,36 million hectares of land (Kumar et al., 2016). This is the main reason the country's aquaculture sectors have been growing rapidly and effectively.

Fish intake is highest in the coastal state of Kerala, where it averages 22.7 kg per person, and lowest in the alpine state of Himachal Pradesh, where it averages 0.03 kilogram per person.

The vegetarian portion of the Indian population, which makes up around 40% of the total population, rarely eats fish, while the remaining 60% do. Fish consumption is lower among rural and lower-income families than it is among urban or higher-income ones.

Review of Literature:

Garlock, T., Asche, F., Anderson, J., Bjørndal, T., Kumar, G., Lorenzen, K., ... & Tveterås, R. (2020). analysed the proportion of global production that is mostly produced in Asia, which constitutes about 89% of all output worldwide. They also came to the conclusion that some non-Asian nations are experiencing faster production growth than the major Asian producers. Even though, there are several nations that have substantial inland and coastal water resources for raising seafood but the aquaculture revolution is not yet taking place. The most surprising finding in the late 1970s was that only developed countries were among the top producers of modern aquaculture in large portion because this sector requires a lot of knowledge. However, developing nations continue to be significant since their demand and technological spillover open up new business prospects.

Hasan, M. R. (2017) Concluded that production from feed-dependent aquaculture increased from 12.2 million tonnes to 50.7 million tonnes during the period 1995-2015, which is more than four times over previous period. The main reason behind increased production is use of intensification of production method. The use of aquatic species/species groups such as shrimp, carps, tilapias, , and salmonids with established aquaculture technologies provided market opportunities for increasing of production and driving production efficiency.

Hardy, R. W., & Tacon, A. G. (2002).Concluded Prior to the middle of the 1950s, the world's annual production of fish meal increased from approximately 1 million tonnes in 1950 to 2 million tonnes in 1960. Over the subsequent 20 years, production increased sharply in numerous nations, reaching 6-7 million tonnes annually in Chile, Peru, Iceland, Norway, and Denmark. With an increase in global fish meal supply and quality due to technological advancements in production techniques, fish meal which was initially almost solely for use in terrestrial livestock feeds now emerged as the top source of protein in animal feeds (poultry, swine, cattle).

Naylor, R. L., Hardy, R. W., Bureau, D. P., Chiu, A., Elliott, M., Farrell, A. P. & Nichols, P. D. (2009). There is still much debate on the impact of aquaculture on forage fisheries. This article examines the use of fishmeal and fish oil in commercial aquafeeds, highlighting trends that show decreased inclusion rates but growing overall use due to rising aquaculture production and demand for fish with high levels of long-chain omega-3 fatty acids. In the aquaculture industry as a whole, the ratio of inputs from wild fisheries to outputs from farmed fish has decreased to 0.63, yet it is still as high as 5.0 for Atlantic salmon. Depending on relative costs and consumer acceptance, many plant- and animal-based substitutes are now employed or accessible for industrial aquafeeds. The future of using single-cell organisms to replace fish oil looks bright. The transition to alternate feedstocks might speed up with the right. To ensure that aquaculture is setting the way for assisting the ocean rather than depleting it, the move towards alternate feedstuffs might be sped up with the right economic and regulatory incentives.

De Jong, J. (2017). Highlighted the aquaculture production in India is significant and is expected to increase in the future. The aquaculture industry in Andhra Pradesh is expanding. There are also very significant business opportunities in the state for feed additives, processing equipment, quality testing equipment, storage, and transportation. Future state production will rise in Gujarat, West Bengal, and Odisha. This state's aquaculture industry is the most well-organized, making it potentially simpler for foreign businesses to enter.

Gupta, K. (2019). According to analysis, between 2004–05 and 2017–18, fish production and fish farming area both increased at a CAGR of 9.6% and 5.1%, respectively, while fish seed production increased at a CAGR of 16.183%. However, the GSDP from the fish sector increased at a noticeable rate of 21.288 percent, which is higher than the growth rates of the agricultural and overall GSDPs (13.315 percent and s. (15.720 per cent). Additionally, it is found that during the period under examination, the elasticity of the agriculture GSDP and the overall GSDP with regard to the fisheries GSDP were, respectively, 0.617 and 0.700. Based on these findings, it can be concluded that the Haryana government should prioritise the improvement of fisheries sector in this State.

Kumar, B. G., Datta, K. K., & Joshi, P. K. (2010). An analysis of growth rates for several states between 1990–1981 and 2003–2004 revealed that fish output increased significantly in all states with the exception of Karnataka and Madhya Pradesh. In certain states, including Andhra Pradesh, Karnataka, Kerala, Maharashtra, Orissa, and West Bengal, it was observed that inland fisheries were growing faster than coastal ones. However in Gujarat and Tamil Nadu, it was discovered that the increase in marine fisheries was bigger than the increase in inland fisheries.

Maurya, A. K., Upadhyay, A. D., Prasad, L., & Khan, S. (2018) The state's fisheries resources, fish production trends, and their interrelationships were examined in this study. Only 48.97% of the state's total aquaculture resources were used for fish production, according to the report, while the remaining 41.03% were left unused. It suggests that fish production may expand horizontally. Additionally, the average annual growth rate (AAGR) for the production of fish and fish seed from 2001–2002 to 2016–17 was 7.67% and 7.56%, respectively.

Dastagiri and Mruthyunjaya (2003) attempted to examine the supply and demand for fish in India. They discovered a continually rising fish production, from 7.5 lakh tonnes in 1950–1951 to 56.6 lakh tonnes in 1999–2000. Up to 1990–1991, Marine fisheries continued to be the dominant contributor. Due to a policy change in favour of inland agriculture, notably aquaculture, the share of inland fisheries expanded dramatically and reached 50% in 1999–2000. According to the findings of the supply-demand gap, India would produce 4.48 million tonnes of surplus fish in 2020. Therefore, export promotion and marketing strategies need to be followed more aggressively in order to take advantage of the surplus quality control of both input and output and to take into account the dynamic nature of the export markets. Consequently, a quick literary review. So, a brief look at literature demonstrates that India lacks studies on this industry. This fact inspired the current study, which aims to provide a descriptive analysis of the nation's fishing industry.

Objectives:

1. To analyse the year wise growth of fishing and aquaculture in India.
2. To analyse the state wise growth of top 10 states in fishing and aquaculture during the year 2018-2019 in India.
3. To analyse the share of fishing and aquaculture of top 10 states in India during 2018-2019.

Research Methodology

Research is based on secondary data on output of Fisheries and Aquaculture sector. Commercial fishing in ocean, coastal, and inland waters, as well as tackling, catching, and gathering fish from irrigation, rivers, lakes, canals, tanks, fields, and inundated tracts, are the activities which are covered in this sector. Inland waters and artificial ponds are also included in subsistence fishing. Fisheries and aquaculture also includes the collection of seaweed, shells, pearls, sponges, and other goods related to the ocean and coastal waters. Furthermore included in the fishing industry are the processes of salting and sun-drying fish. For analysis, secondary data was collected from various sources like economic review, Annual Survey of Industries, Central Statistical Organisation and Journals. The Compound Annual Growth Rate (CAGR) and Growth over previous year were used as technique for the interpretation of data. The result was depicted through charts and tables. Percentage method was applied to show the share of output among different states.

Result and Discussion

Growth of Agriculture and Allied Sector over previous Year

Growth of Agriculture and Fisheries Sector over previous Year		
YEAR	Fishing and Aquaculture	Growth
2011-12	80	
2012-13	84	5
2013-14	90	7.14
2014-15	97	7.78
2015-16	107	10.31
2016-17	118	10.28
2017-18	136	15.25
2018-19	148	8.82
CAGR	8%	

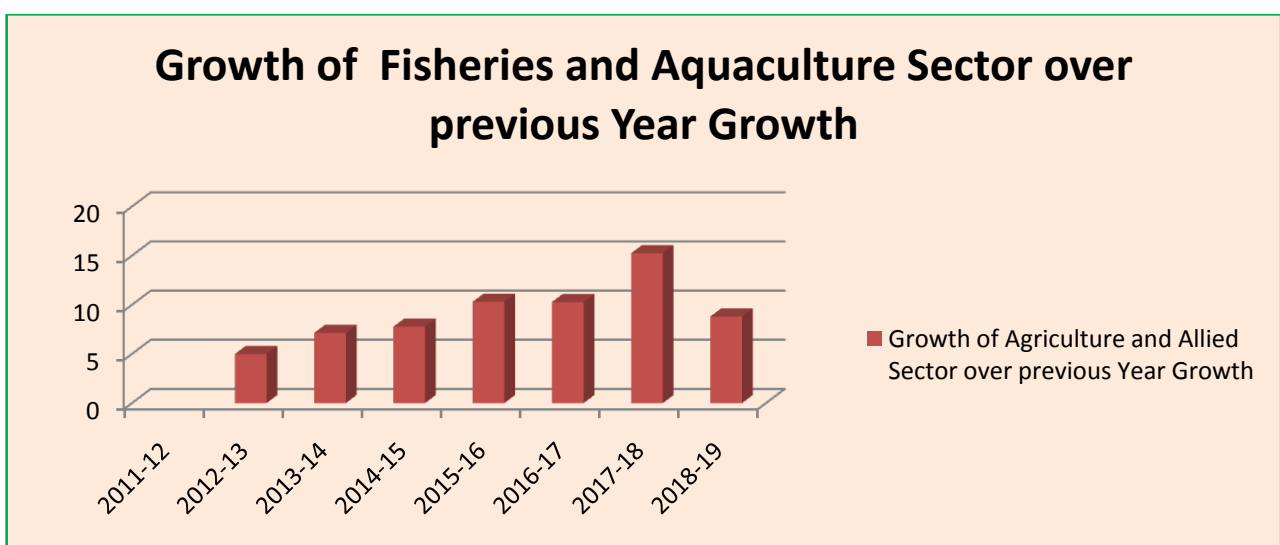


Table-1 and Figure-1 shows that output of Fishing and aquaculture has been increased from Rs.80 thousand crore in 2011-12 to 148 thousand crore in 2018-19. Analysis of growth over previous year shows that growth rate is positive and continuously increasing. Table and Charts-1 shows that growth rate of output in Fishing and aquaculture sector was 5% in 2012-13 whereas it is increased to 7.14% in very next year i.e. in 2013-14. After that it is further increased to 7.78% in 2014-15 and jumped in two digit growth of 10.31% in very next year. In 2016-17 growth rate shows some decline and decreased to 10.28% whereas it again jumped to 15.25% in 2017-18. It again come down to 8.82 % in 2018-19. The figure concludes that Growth rate of Fishing and aquaculture sector increased from 5 % in 2012-13 to 15.25% in 2017-18 which is almost three times. The sector is growing with eight percent CAGR.

Comparative analyse of the share of fishing and aquaculture of top 10 states in India for the Year 2018-2019

STATE WISE VALUE OF OUTPUT(In Rs. Lakh)Top 10 States for the Year 2018-19		
State/U.Ts	Output (in Rs. Lakh)	% Share
Andhra Pradesh	5550786	37.52
West Bengal	2425268	16.39
Tamil Nadu	712913	4.82
Odisha	696408	4.71
Bihar	623205	4.21
Kerala	599135	4.05
Assam	596835	4.03
Chhattisgarh	567164	3.83
Gujarat	530026	3.58
Uttar Pradesh	469448	3.17
Total of Above	12771188	86.31
other	2023168	13.69
Total	14794356	100

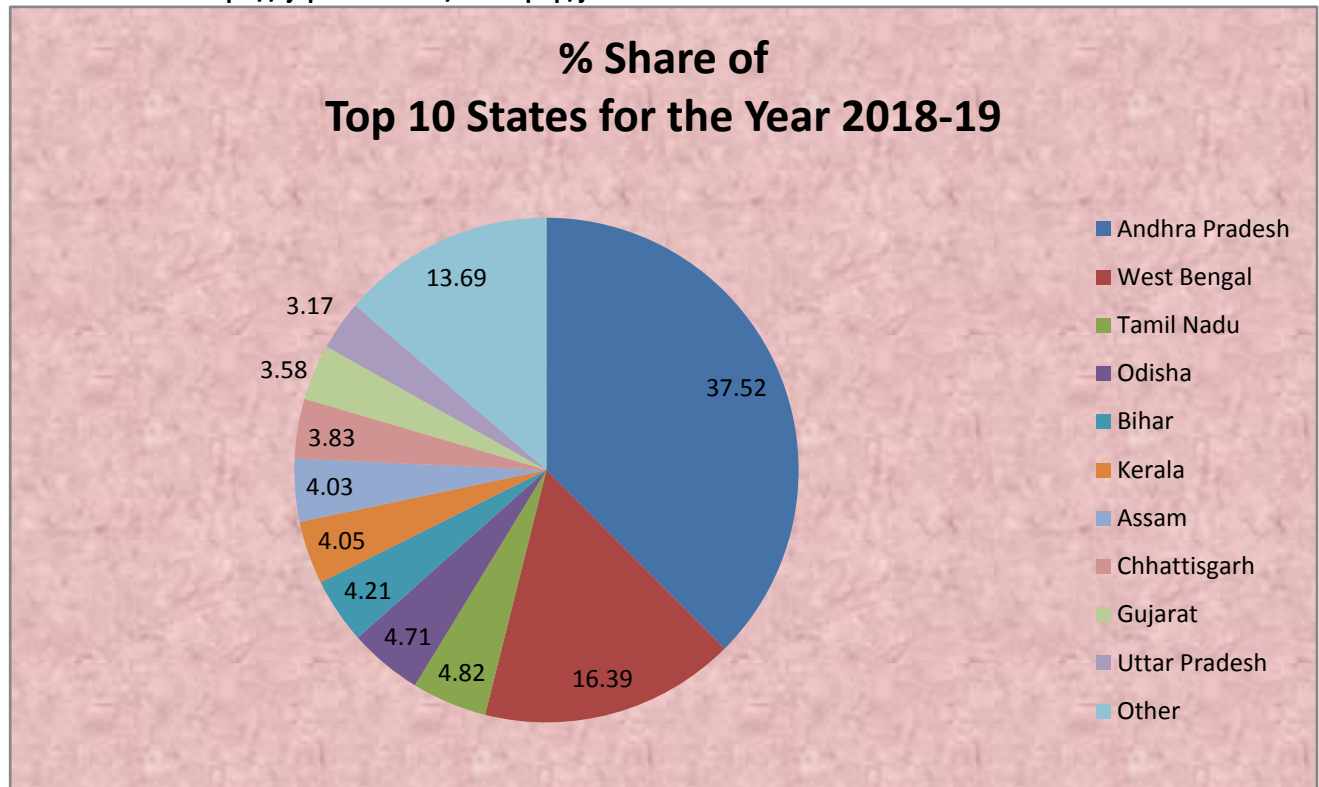


Table-2 and Figure-2 shows that output of Fishing and aquaculture. Andhra is having highest share of output followed by West Bengal. Tamil Nadu and Odisha in 2018-19. It is also found that these top ten States covered 86.31 % share of total output which shows that this sector is concentrated among few States.

Growth in Output of Aquaculture Fish in Top 10 States(In %)								
State/Uts	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	CAGR
Andhra Pradesh	13.68	14.07	13.21	37.08	26.45	33.12	15.33	19
West Bengal	1.06	5.33	2.21	3.54	1.23	2.64	5.01	3
Tamil Nadu	0.91	0.82	7.38	9.25	-7.3	9.57	3.93	3
Assam	4.33	6.69	4.81	2.84	4.39	6.37	1.43	4
Kerala	-1.04	5.04	5.32	-2.46	0	6.46	10.95	3
Bihar	16.16	8.04	10.99	5.65	0.43	15.47	2.43	7
Gujarat	0.22	4.38	5.47	1.23	1.89	8.28	2.08	3
Odisha	11.22	0.45	11.12	10.89	20.44	17.56	14.58	11
Chhattisgarh	1.96	11.48	10.25	8.96	10.08	21.33	20.52	10
Uttar Pradesh	4.66	3.28	6.41	2.13	22.36	1.79	5.35	6

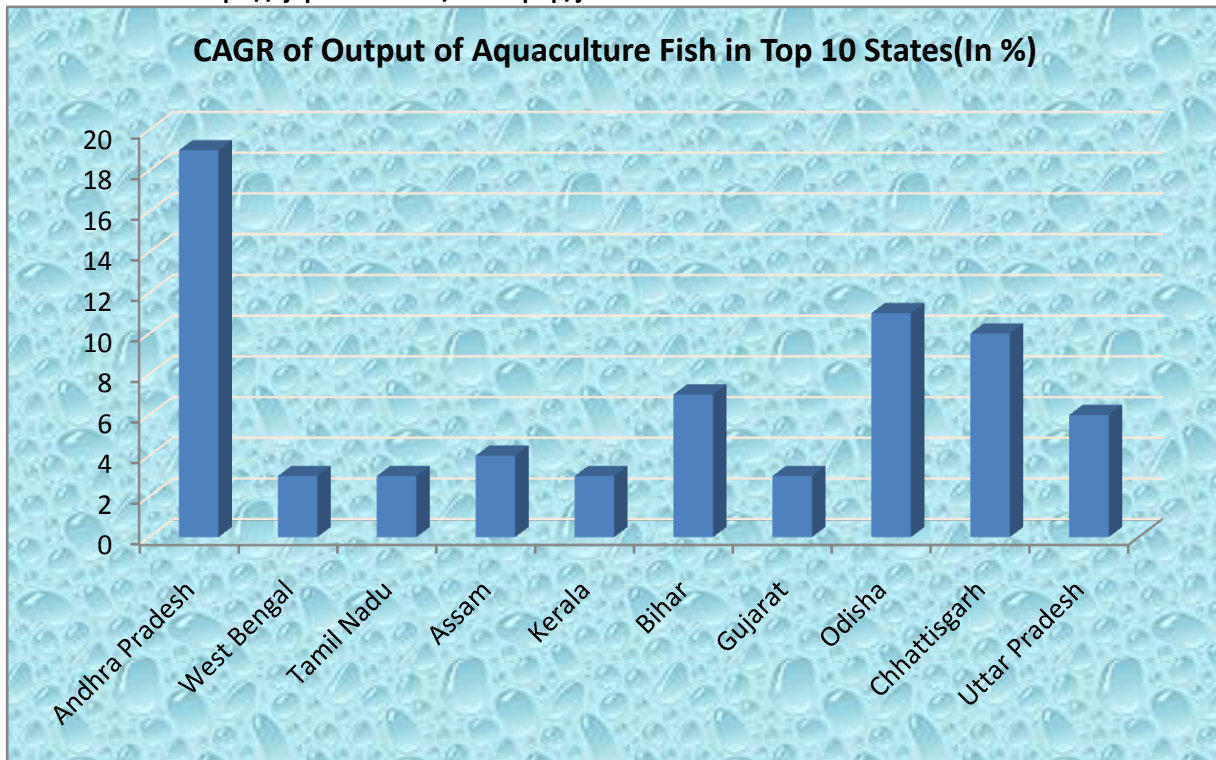


Table-3 shows that Andhra Pradesh is highest growing state with the CAGR of 19%. It is growing with double digit growth rate which has increased from 13.68% in 2012-13 to 33.12% in Year 2017-18. Analysis of growth over previous year shows that growth rate is positive in almost all states. Table shows that the states like Aandhra Pradesh, Odisha, and Chhhtisgarh are growing with double digit growth and they are having highest CAGR i.e.19%, 11%, 10% respectively.

Conclusion:

India is contributing for small part of the world's fish production. However, its contribution to national development is extremely important for the socioeconomic stability of the coastal region. The study concluded that this sector is growing in Coastal as well as Non-Coastal States. The expansion of the aquaculture sector over the past few decades has provided new hope for the improvement of fisheries and new options for fishermen who are struggling for their live hood. Although the government has taken various steps to promote this industry like establishment of separate ministry for this sector, but there is still much efforts to be done in order to create suitable policies to solve the problem of this sector.

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