

FISHERIES SECTOR IN JAMMU AND KASHMIR - GROWTH AND PERSPECTIVES

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ABSTRACT

Fish and fishing business is an important sector of many nations of the world from the standpoint of income and employment generation. Fisheries is a growing sector in Jammu & Kashmir economy which has been registering consistent growth during the past decades. Fisheries sector is considered as an emerging venture which possesses a potential to contribute to states' economy in Jammu & Kashmir (J&K) state. The 27781 Km. length of rivers/streams facilitates farming of more than 2.01 lakh quintals of fish. The present study is an attempt to examine the growth of fisheries sector of the union territory of Jammu and Kashmir employing time series data from 2001-02 to 2015-16, collected from various official sources. The results revealed that fish production in the union territory of Jammu and Kashmir has increased remarkably over the years but their production in Kashmir Province has shown an undesirable decline. Among the different species, only trout species displayed remarkable compound growth rate of 9.25 percent while as mirror carp and country fish exhibited negative compound growth rate during the reference period. share of fisheries sector to primary sectors contribution NSDP has increased marginally from 1.84 percent during phase I to 2.14 percent during phase III, which implies that there was about 0.30 percentage points increase in its share.

Keyword: *Contribution, Fisheries Sector, Growth, J&K, NSDP, Production*

1. INTRODUCTION

Fish and fishing business is an important sector of many nations of the world from the standpoint of income and employment generation. Fishing plays an important role in supporting livelihood worldwide and also forms an important source of diet for over one billion people (Husain et. al 2016)¹. Fisheries sector is a sunrise sector of our economy. Its role in increasing food supply, generating job opportunities, raising nutritional level and earning foreign exchange has been important. Growing urbanization, globalization and rapidly changing social structures have had a major impact on the fisheries structure in the country. Fisheries and aquaculture has emerged as an important commercial activity from its traditional role as subsistence supplementary activity (Govt. of India, 2004)². Fishing as an occupation is being practised in India since time immemorial and has been regarded as a supplementary enterprise of the fishermen community on the subsistence level with little external input. Fisheries sector, however, has a strategic role in food security, international trade and employment generation. With the changing

consumption pattern, emerging market forces and technological developments, it has assumed added importance in India and is undergoing a rapid transformation (Govt. of India, 2004)³.

India is the second largest producer of fish and also the second largest producer of fresh water fish in the world. Fish production in India has touched 107.95 lakh tonnes (35.8 lakh tonnes for marine and 72.10 lakh tonnes for inland fisheries) in 2015-16 from 41.57 lakh tonnes (24.47 lakh tonnes for marine and 17.10 lakh tones for inland fisheries) in 1991-92 (Govt. of India, 2017). The share of India in global fish production has grown gradually, from about 2.6 per cent during 4.62 per cent in 2000-01 to 6 percent during 2016 (FAO, 2017)⁴.

Fisheries is a growing sector in Jammu & Kashmir economy which has been registering consistent growth during the past decades. Fish as food is especially important for every segment of the population providing a cost-effective and easily reached source of protein and essential micronutrients (Syeed et.al, 2018)⁵. Fisheries sector is considered as an emerging venture which possesses a potential to contribute to states'

economy in Jammu & Kashmir (J&K) state. Its role in supplementing nutrients and food demand, and generating employment cannot be denied. Modernization and growing economic status of population coupled with changes in the social structures have had a major impact on the fisheries structure in the state (Baba, et.al, 2019)⁶.

The total number of fishing license – holders in Jammu and Kashmir in the year 2001-02 was around 11787. It is presently estimated at 15247. The 27781 Km. length of rivers/streams facilitates farming of more than 2.01 lakh quintals of fish (Govt. of J&K, 2017)⁷. As against this, the State has only 0.07 lakh hectares under reservoir area. There is a big gap between the demand and supply of fish. Fish is a valuable element of diet of the local people throughout the year. There are 1248 lakes including water bodies and water is spread into 39921.8 hectares of area which gives an indication of the potential for fisheries in the State (Husain et. al 2016)⁸. In this background, it is imperative to examine growth and perspectives of fisheries sector in Jammu and Kashmir

2.OBJECTIVES OF THE STUDY

The main objectives of the present study are as under:

- To analysis the growth of fisheries sector in terms of its production.
- To analysis the contribution of fisheries sector to net state domestic period in Jammu and Kashmir.

3.DATABASE AND METHODOLOGY

The present study is based on secondary data. The time series data on fish production and Contribution of primary sector and fisheries sector to NSDP have been collected for a period of 15 years i.e. between 2001-02 and 2015-16. The data have been collected from various official sources like Economic Survey – Jammu and Kashmir, Digest of Statistics – Jammu and Kashmir, Directorate of Fisheries, Jammu and Kashmir and Directorate of Economics & Statistics, J&K. Further various published research papers, books, periodicals, reports, magazines, newspapers, and websites have also been used for the study. The statistical techniques used in this study are Average, Standard Deviation, coefficient of Vatriation, Percentage and Compound Growth Rate.

a) Average

$$A = \frac{1}{n} \times \sum_{i=0}^n X_i$$

Where, A = average

n = the number of terms

X_i = value of each individual item in the list of numbers being averaged

b) Standard Deviation

Standard deviation is calculated by applying the following method.

$$\sigma = \sqrt{\frac{\sum X^2}{N}}$$

Where, σ = Standard Deviation

$$x^2 = (x - \bar{X})$$

N = Number of observations

c) Co - efficient of Variation

The coefficient of variation represents the ratio of the standard deviation to the mean and is expressed in the following form

$$CV = \frac{\text{Standard Deviation}}{\text{Mean}} \times 100$$

d) Compound Growth Rate

To calculate the compound growth rates (CGR) of fish production, contribution of primary sector and fisheries sector to NSDP, the following exponential trend equation has been used due to higher R2 value on thevariables.

$$Y = ab^t$$

Where,

Y = the variable for which growth rate is calculated,

t = time variable taking the values 1, 2, 3, , n,

a = intercept,

b = the regression co-efficient of ‘Y’ on t.

The above exponential equation can be expressed in terms of log form as follows:

$$\text{Log}Y = \text{Log}a + t\text{Log}b$$

The compound growth rates (CGR) were worked out by the following formula:

$$\text{CGR} = (\text{Antilog } b - 1) \times 100$$

4. DATA ANALYSIS AND INTERPRETATION

**Table 1.1: Fish caught (species-wise) in Jammu and Kashmir from 20001-02 to 2015-16
 (Quantity in quintals)**

| Year | Kashmir Province | | | | Jammu Province | State |
|---|-------------------------|----------------------------|---------------------------|----------------------------|---------------------------|--------------------------|
| | Trout | Mirror Carp | Country Fish | Total | Jammu Fish | |
| Phase I (2001-02 to 2005-06) | 1118.6 (0.70) | 116341.2 (72.69) | 42598.8 (26.61) | 160058.6 (84.18) | 30085.8 (15.82) | 190144.4 (100) |
| Phase II (2006-07 to 2010-11) | 1695 (1.05) | 117038 (72.33) | 43107.6 (26.64) | 161820.6 (83.67) | 31579.4 (16.33) | 193400 (100) |
| Phase III (2011-12 to 2015-16) | 2680 (1.83) | 105675 (72.03) | 38941.8 (26.55) | 146700.8 (73.21) | 53676 (26.79) | 200376.8 (100) |

Source: Computed by Author on the Basis of Data Obtained from Directorate of Fisheries, J & K

(Figures in parenthesis indicate percentage to total)

Table 1.1 presents phase wise (five years) average of fish production (species-wise) in Jammu and Kashmir from 20001-02 to 2015-16. It is obvious from the table that the total production of fish in the union territory has made a significant stride during the study period of 15 years, it increased from 190144.4 quintals to 200376.8 quintals. Total fish production in Kashmir province has decreased over the past 15 years, decreased from 160058.6 quintals during the phase I to 146700.8 during the phase III, but during the same

reference period total fish production in Jammu province has increased considerably, increased from 30085.8 quintals in phase I to 53676 quintals during phase III. The production of trout fish has increased from 1118.6 quintals in phase I to 2680 quintals during the III phase. During the same reference period the production of mirror carp and country fish has decreased from 116341.2 and 42598.8 quintals in phase I to 105675 and 38941.8 quintals during phase III respectively.

Analysing the percentage share of Kashmir/Jammu provinces and species –wise to total fish production during the study period, it is apparent from the analysis table that Kashmir province produces more fish as compared to Jammu province and mirror carp is the major species produced in the union territory but the percentage share of Kashmir province has declined immensely over the study period, its share decreased from 84.18 percent in phase I to 73.21 percent during the phase III, which implies that there was about 10.97 percentage points decrease in share of Kashmir province to total fish production of the state but the share of Jammu province increased from 15.82 percent in phase I to 26.79 percent during the phase III, which

implies that there was about 10.97 percentage points increase in share of Jammu province to total fish production of the union territory.

The share of trout species increased from 0.70 percent in phase I to 1.83 percent during the phase III, which implies that there was about 1.13 percentage points increase in share of trout fish to total fish production of the Kashmir province and the share of mirror carp and country fish decreased from 72.69 percent and 26.61 percent in phase I to 72.03 percent and 26.55 percent during the phase III, which implies that there was about 0.66 and 0.06 percentage points decrease in share of mirror carp and country fish to total fish production of the Kashmir province respectively.

Table 1.2: Variation and fluctuation of Fish caught (species-wise) in Jammu and Kashmir

| Particulars | Kashmir Province | | | | Jammu Province | State |
|---------------------------------|------------------|-------------|--------------|-----------|----------------|-----------|
| | Trout | Mirror Carp | Country Fish | Total | Jammu Fish | |
| Mean | 1831.20 | 113018.07 | 41549.40 | 156193.33 | 38447.07 | 194640.40 |
| Standard Deviation | 695.76 | 6715.64 | 2963.91 | 9408.80 | 13167.78 | 4688.21 |
| Coefficient of Variation | 37.99 | 5.94 | 7.13 | 6.02 | 34.25 | 2.41 |
| %age Share | 1.17 | 72.36 | 26.60 | 80.37 | 19.63 | 100.00 |
| CGR | 9.25 | -0.99 | -1.00 | -0.93 | 5.74 | 0.52 |

Source: Computed by Author on the Basis of Data Obtained from Directorate of Fisheries, J & K

The variations and fluctuations in fish production of Jammu and Kashmir from 20001-02 to 2015-16 is presented in table 1.2. It is obvious from the obtained table that average production of fish over the reference period is 194640.40 with standard deviation of 4688.21 with 41549.40 quintals in Kashmir with standard deviation of 9408.80 province and 38447.07 quintals in Jammu province with standard deviation of 13167.78. The coefficient of variation of aggregate fish production is 2.41 percent while as the coefficient of variation of fish production in Jammu province is 34.25 percent, which is very high as compared to total fish production which means that there are more variations in production of fish in Jammu province as compared to aggregate production and coefficient of variation of fish production in Kashmir province is 6.02 percent, which is too low

as compared to total fish production which means that there are less variations in production of fish in Kashmir province as compared to aggregate production.

The coefficient of variation of trout production is 37.99 percent, which is too higher than state level as well as highest among all species which means that there are highest variations in production of trout species as compared to aggregate production and other species while as the coefficient of variation of mirror carp and country fish is 5.94 percent and 7.13 percent respectively, which are lower than state level which means that there are low variations in production of mirror carp and country fish species as compared to aggregate production.

Analysing the percentage share of 15 years i.e. between 2001-02 and 2015-16, it is found that 80.37 percent of total production in the state is contributed by Kashmir Province and 19.63 percent is contributed by Jammu Province and mirror carp is the major fish species found in the Kashmir Province with 72.36 percent share to aggregate production followed by country fish (26.60 percent) and trout (1.17 percent).

The compound growth rate estimates for the fish production in the union territory of Jammu and Kashmir depicts that it had a marginal growth rate

of 0.52 percent between 2001-02 and 2015-16 though the Jammu province exhibited remarkable growth rate of 5.74 percent but Kashmir province displayed negative compound growth rate of 0.93 percent. Among the different species, only trout species displayed remarkable compound growth rate of 9.25 percent while as mirror carp and country fish exhibited negative compound growth rate during the reference period i.e. between 2001-02 and 2015-16. Therefore, the lower growth in mirror carp and country fish needs an immediate attention of policy makers

Table 1.3: Contribution of Primary Sector and fisheries Sector to State Economy at Current Prices

(Unit ₹ in Crore)

| Phase | Primary Sector | Fisheries | NSDP | Fisheries Contribution as %age of Primary Sector |
|--|---------------------------|--------------------------|----------------------------|--|
| Phase I (2001-02 to 2005-06) | 300692 (30.63) | 5530.94 (0.56) | 981775.802 (100) | (1.84) |
| Phase II (2006-07 to 2010-11) | 898925 (25.23) | 18716.6 (0.53) | 3562415.6 (100) | (2.08) |
| Phase III (2011-12 to 2015-16) | 1513122 (18.60) | 32338.8 (0.34) | 8134173.2 (100) | (2.14) |

Source: Computed by Author on the Basis of Data Obtained from Directorate of Fisheries, J & K

(Figures in parenthesis indicate percentage to total)

Fisheries is one of the primary sectors of the state, contributes to the GSDP, nutritional security and employment generation. The phase wise (five years) average of contribution of primary sector and fisheries sector to net state domestic product from 2001-02 to 2015-16 at current prices is presented in table 1.3. It is apparent from the obtained results that in absolute terms the net state domestic product generated by primary sector and fisheries sector has increased remarkably from ₹ 300692 crore ₹ 5530.94 crore during phase I to ₹ 1513122 crore and ₹ 32338.8 crore during phase III respectively. It is surprising that the percentage share of primary sector and fisheries sector NSDP has declined from 30.63

percent and 0.56 percent during phase I to 18.60 percent and 0.34 percent during phase III respectively but the percentage share of fisheries sector to primary sectors contribution NSDP has increased marginally from 1.84 percent during phase I to 2.14 percent during phase III, which implies that there was about 0.30 percentage points increase in its share. The decreasing pace of growth of fisheries sector in the state seems to be consistent with decline in fish production in Kashmir Province of the union territory. Further the declining growth of fisheries sector may be due to the fact that this sector receives less public attention than it deserves in terms of investment and creation of infrastructure (Baba et al., 2015)⁹.

Table 1.4: Variation and fluctuation of Contribution of Primary Sector and fisheries Sector to State Economy at Current Prices in Jammu and Kashmir

| Particulars | Primary Sector | Fisheries | NSDP |
|--------------------------|----------------|-----------|-------------|
| Mean | 904246.2 | 18862.11 | 4226121.534 |
| Standard Deviation | 580134.9 | 12195.49 | 3249287.02 |
| Coefficient of Variation | 64.16 | 64.66 | 76.88 |
| %age Share | 21.40 | 0.45 | 100 |
| CGR | 39.80 | 47.14 | 54.39 |

Source: Computed by Author on the Basis of Data Obtained from Directorate of Fisheries, J & K

The variations and fluctuations in contribution of primary sector and fisheries sector to state economy at current prices in Jammu and Kashmir from 2001-02 to 2015-16 is presented in table 1.4. It is obvious from the obtained results that average contribution of primary sector to NSDP over the reference period is ₹ 904246.2 crore with standard deviation of 580134.9 and coefficient of variation of 64.16 percent while as the average contribution of fisheries sector to NSDP over the reference period is ₹ 18862.11 crore with standard deviation of 12195.49 and coefficient of variation of 64.66 percent, which implies that there is no difference in coefficient of variation between primary and fishery sectors contribution to NSDP and it can be inferred that there is no difference in their variation over the study period. The average percentage share of primary sector and fisheries sector to NSDP over the reference period is recorded to be 21.40 percent and 0.45 percent respectively.

The compound growth rate estimates for the contribution of primary sector and fisheries sector to NSDP in the union territory of Jammu and Kashmir had recorded remarkable growth rate of 39.80 percent and 47.14 percent between 2001-02 and 2015-16 respectively, but it is important to note that the compound growth rate of fisheries sector is higher than the compound growth rate of primary sector which highlights its growth and importance in the economy of Jammu and Kashmir.

5.CONCLUSION

Fish and fishing business is an important sector of many nations of the world from the standpoint of

income and employment generation. Fisheries is a growing sector in Jammu & Kashmir economy which has been registering consistent growth during the past decades. Fisheries sector is considered as an emerging venture which possesses a potential to contribute to states' economy in Jammu & Kashmir (J&K) state. The results revealed that fish production in J&K has increased during the study period of 15 years but total fish production in Kashmir province has decreased while as total fish production in Jammu province has increased considerably. During the same reference period the production of mirror carp and country fish has decreased. It is apparent from the study that Kashmir province produces more fish as compared to Jammu province and mirror carp is the major species produced in the union territory. The compound growth rate estimates for the contribution of primary sector and fisheries sector to NSDP had recorded remarkable growth rate of 39.80 percent and 47.14 percent between 2001-02 and 2015-16 respectively, but it is important to note that the compound growth rate of fisheries sector is higher than the compound growth rate of primary sector which highlights its growth and importance in the economy of Jammu and Kashmir.

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