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Growth of fisheries sector in Jammu & Kashmir

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Abstract

An attempt was made in this article to examine the growth of fisheries sector of the state employing time series data from 1980-81 to 2015-16, collected from published records of FAO Stat and Digest of Statistics, Go JK. The results revealed that fish production in the state has increased significantly over the years though their production has shown an undesirable decline in Kashmir Province. Although government has played an important role in the form of state and centrally sponsored schemes but as yet this sector has contributed less than 2 per cent to agricultural economy. The contribution of this sector to the state economy is meagre. Based upon findings, a few policy suggestions emerge out of this study.

Keywords: Fish, fisheries sector, growth, GNP, J&K

Introduction

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. Fisheries sector in the state has witnessed a significant growth with over three-fold increase in fish production in the state. The development of fish-culture in private domain has given commercial orientation to this economic activity. The economic potential of fish farming in its niche rural areas was expected to augmenting income, generating employment and ensuring food and nutritional security of fish farmers even during 1980s' (Randhir, 1984) [6]. However, fishes are natural and living components of water eco-system (Paria, 2003) [5] and their dependence on natural resources, such as water and its interactions with various components of environment play a vital role in determining the aquaculture production (Jhingran, 1991) [3]. Any deterioration in their habitat will be serious felt in terms of performance of fisheries sector. Several scholars (Ayyappan *et al.*, 2009; Kumar *et al.*, 2008) [1, 4] have indicated that markets are the crucial driving forces to sustain the fish production in future along with technological interventions and infrastructure. In this background, it is imperative to examine into the structural changes in this sector in J&K.

Methodology

The time series data on fish caught for a period of 1970-71 to 2015-16 was collected from FAO Stat and published records of Digest of Statistics, Directorate of Economics & Statistics, GoJK. The growth rates in fish production and net domestic product from fisheries sector were estimated by employing following growth function.

Compound growth rates (%) in fish production/net domestic product were estimated for different periods by employing exponential function of following structural form:

$$Y_t = AB^t V^t \quad \text{----- (I)}$$

Where, Y_t is fish production/net domestic product in the year (t), A is the Intercept indicating Y in the base period (t=0), B is the regression coefficient indicating the extent to which fish production/net domestic product changes with respect to per cent change in time, t is time in years (1,2,3,...) and V^t is the error term.

The function (I) was estimated separately for each variable in log linear form by using ordinary least square (OLS) procedure. Later the compound growth rates (CGR) were worked out by the following formula:

$$CGR = (\text{antiLn}B - 1) \times 100$$

$$\text{Standard error (SE)} = (100 B / \text{Ln}10^e) \times \text{SQRT} \left(\frac{\sum \text{Ln}Y^2 - (\sum \text{Ln}Y)^2 / N - \text{Ln}B(\sum t \text{Ln}Y - \sum t \sum \text{Ln}Y / N)}{(N-2)(\sum t^2 - (\sum t)^2 / N)} \right)$$

The calculated growth rates were then tested for their significance by using t-statistics, the t-values of the growth rates were obtained by dividing compound growth rates with corresponding standard error as:

$$t_{\text{cal}} = \text{CGR} / \text{SE}$$

Results & Discussion

Fish catch in the state has touched over 2 lakh quintal in 2015-16 from just 0.6 lakh quintals in 1970-71. The share of state fish production in Indian production is meagre and is under 0.5 per cent. The states’ share of in Indian fish production has declined from about 0.39 per cent during the 1980-81 to 0.21 per cent in 2015-16 implying lower pace of growth in states’ fish production compared to Indian production. It emphasizes upon creation of infrastructure and efficient utilization of available production resources.

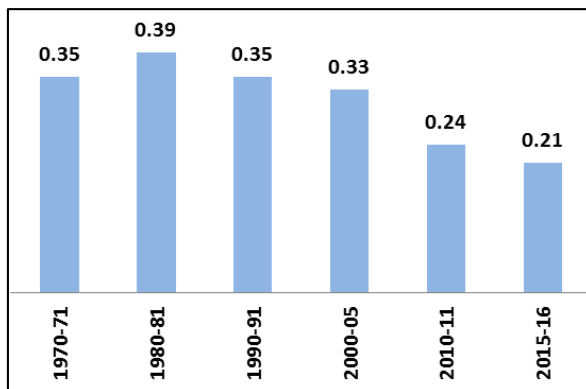


Fig 1: Share of J&K in Indian fish production (%)

Since 1980-81, J&K has made a significant stride in the fish production which has increased from 0.95 to 2.0 lakh tonnes from 1980-81 to 2015-16 though their production has shown more increase in Kashmir Division. With exception of mirror carp and country fish, the production of all the fish species have shown an increase over the years with in Kashmir Province of the state since early 2000s’ (Table 1). The fish production has been steadily increasing in the province upto 2010-11 but it has remained almost stagnant between 1998-99

to 2010-11 and later surprisingly that there has been a decline of fish production in Kashmir (Figure 2) which may be due to the degradation of fish habitat.

The growth rate estimates for the fish production in the state revealed that it had a significant growth from 1980-2015 though the growth was more pronounced in Jammu Province of the state. The trout has exhibited a significant desirable trend towards. The lower growth in mirror carp and country fish needs an immediate attention of policy makers.

Table 1: Fish caught in Jammu & Kashmir (quintals)

Year	Kashmir				Jammu	State
	Trout	Mirror carp	Country fish	Total		
1980-81	79	62712	29914	92705	2713	95418
1990-91	62	82558	35391	118011	17000	135011
2000-01	792	114323	41295	156410	28257	184667
2010-11	1950	117413	43395	162758	34242	197000
2015-16	2980	101104	36670	137774	63026	200800
CGR (%)	12.11*	1.79*	0.93*	1.59*	7.55*	2.31*
	(0.67)	(0.20)	(0.13)	(0.17)	(0.54)	(0.15)

Figures within brackets denotes standard errors,

*Significance at 5 per cent or better levels

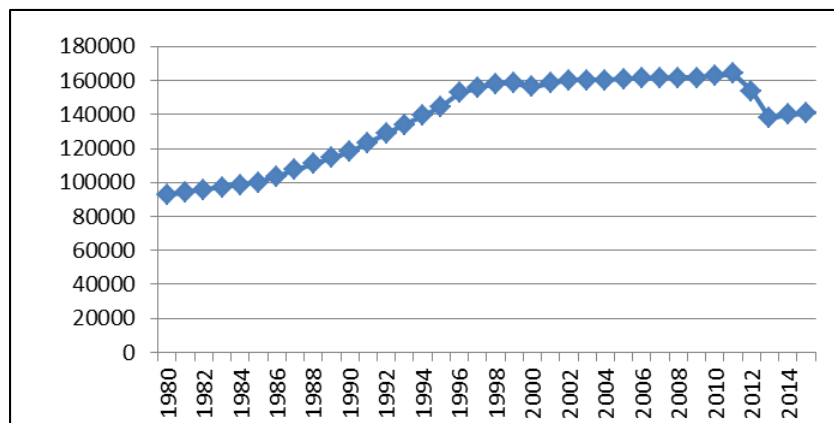


Fig 2: Fish production in Kashmir Province, J&K

The production of *Schizothorax richardsonii*, an indigenous fish specie to Kashmir went down from 2.5 thousand quintals (1980-81) to just 0.6 thousand quintals (2012-13). Their decline was more pronounced in Dal lake compared to fresh water Wular lake and their declines was due to stocking with exotic species, eutrophication of their habitats and widespread encroachment.

Government initiatives & development schemes

A. Schemes for the growth of fisheries sector

- PM's package for creation of employment opportunities
- Fisheries training and extension
- National welfare scheme for fishermen
- Rashtriya Krishi Vikas Yojana (RKVY)
- Development of Inland Fisheries and Aquaculture

B. Infrastructural development

- Setting up of aquarium cum awareness centre
- Introduction of cage culture
- Creation of facilities for capacity building programmes
- Setting up of fish farms
- Hatcheries for breeding
- Trout Fish Farming Project Kokernag
- Mahseer Fisheries
- Reservoir Fisheries
- Angling infrastructure
- Trout feed mill at NFSF Manasbal Kashmir

Besides, about 1600 carp and trout units were encouraged under private domain, 01 Recreation Park as developed for trout fishing, and a number of farm huts were established and houses for fishermen were constructed for the overall development of fisheries sector of the state.

Fisheries sector and the state economy

Fisheries, one of the primary sectors of the state, contribute to the state net domestic product, nutritional security and employment generation. It constitutes a significantly major livelihood source for economically backward population of the state. In absolute terms the domestic product generated in fisheries sector has increased appreciably from Rs 4.7 crore in 1980-81 to Rs 361 crore in 2015-16 at current prices (Table 2). But it is surprising that the contribution of fisheries net domestic product (FSHNDP) to agricultural net domestic product (ANDP) has almost doubled since 1980-81 though it has remained stagnant at 1.9 per cent in recent decade. The contribution of this sector to state net domestic product has been less than half per cent and there is a need to enhance this proportion.

Table 2: Contribution of fisheries in state economy at current prices

Year	FSHNDP (Rs in cr.)	FSHNDP as % of	
		ANDP	SNDP
1980-81	4.7	1.0	0.4
1990-91	16.4	1.3	0.6
2000-01	103.1	2.2	0.7
2010-11	221.9	1.9	0.5
2015-16	360.7	1.9	0.4

Note: FSHNDP = Fisheries net domestic product, ANDP = Agricultural net domestic product & SNDP = State net domestic product

The FSHNDP has shown a significant growth in both the periods under consideration though its growth has slacked from first to second period (Table 3). 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 state. 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) [2].

Table 3: Growth of fisheries net domestic product (%)

Period	CGR
Period I (1980-81 to 1997-98)	7.28* (0.52)
Period II (1997-98 to 2015-16)	5.39* (0.38)

Figures within brackets denote standard errors,

*Denotes significance at 5 per cent or better levels

Reasons for decreasing pace of growth

- Degradation of water resources and loss of breeding grounds
- Introduction of exotic species and unbalanced stocking
- Unorganized markets & unregulated marketing practices
- Malpractices of fishermen
- Lack of glamour and strong social taboos
- Declining public investment in fisheries sector
- Outmigration of population from fisheries sector
- Disintegrated value chain
- Unscientific management of fisheries activities

Conclusion

Considering the potential and importance of the fisheries sector in the state, an attempt was made in this paper to analyze the growth of this sector. The study was based upon secondary time series data from 1980-81 to 2015-16, collected from published records of FAO Stat and Digest of Statistics, GoJK. The results revealed that fish production in the state has increased significantly over the years though their production has shown an undesirable decline in Kashmir Province. Although government has played an important role in the form of state and centrally sponsored schemes but as yet this sector has contributed less than 2 per cent to agricultural economy. The contribution of this sector to the state economy is meagre. Based upon findings, following policy suggestions emerge out of this study:

There is a need to explore out the reasons responsible for the negative growth in mirror carp and country fishes in recent decades to arrive at practical policy suggestion. Equally important is the balanced stock of local and exotic species. There is a need of an automation of activities in the fisheries. Further adoption of scientific recommendation in fish culture, and valued addition is of dire need. Preservation of water bodies and removal of encroachment should be given due emphasis in upcoming plans. Efforts are to be made to regulate fish marketing in the state. In consideration of an important role of public investment on growth of fisheries sector of the state, its intensity should be increased in the state.

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