



## “Impact of Fisheries in Bihar”

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### ABSTRACT

Fisheries is a vital part of the social and economic growth of Bihar, India. It has a significant impact on the livelihoods of the people, food security and economic development. The state has a wide range of aquatic resources such as rivers, reservoirs ponds, tanks and more. Despite the challenges of infrastructure, water pollution and lack of technological interventions, the sector has been growing steadily in recent years. The government has promoted aquaculture, established fish hatcheries and provided financial support to fishermen. Modern fishing techniques, better fish breeds and valueadded processing methods have

improved the productivity and profitability of fishermen. However, more investment is needed in infrastructure,

Research and capacity building to tap into the full potential of the state's fisheries resources and overcome the existing challenges. To ensure the sustainability and long-term success of the sector, sustainable management practices, conservation measures and institutional support are necessary.

## INTRODUCTION

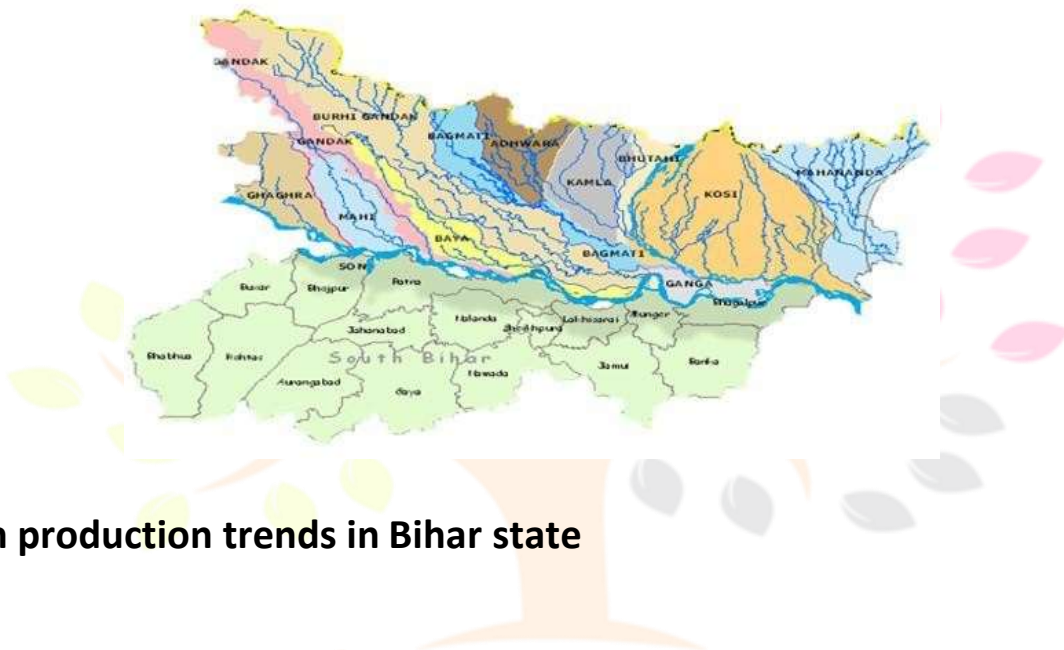
Bihar, situated in the eastern region of India, is home to a diverse aquatic ecosystem that is home to a variety of fish species. This ecosystem is made up of rivers, reservoirs and ponds, and tanks. Fishing plays an important role in the social and economic development of the state, as it provides food security, employment, income generation, and rural development to millions of people. The state's population is mainly engaged in agriculture and related activities, but fishing provides an alternative source of livelihood to millions of people, especially those living in rural areas. The state's geographical diversity, including the Ganges, the Gandak, the Sone, and its tributaries, as well as numerous natural and artificial water bodies, provides immense possibilities for the development of capture fishing and aquaculture in the state. The state's fishing sector has been growing steadily over the years, due to government initiatives, technological advances, and an ever-growing demand for fishing and fish products.



# FISHERIES IN BIHAR

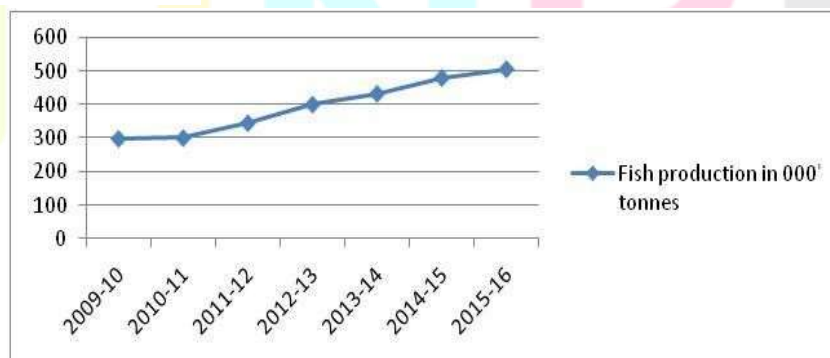
## ➤ Location of study

Bihar which is located in eastern part of India is the 13<sup>th</sup> largest state by its area. The inland fishery resources of the state include; rivers (Ganga, Gandak, Kosi, Bagmati, Kamala, Balan, BudhiGandak, Mahananda, Son, Punpun, Saryuetc.) and canals which cover a length of 3,200 km, reservoirs (7,200 ha), floodplain wetlands (5,000 ha), oxbow lakes (48,000 ha), chairs and ponds (65,000 ha). So there is immense possibility for small-scale fisheries development by using these resources efficiently.



## ➤ Fish production trends in Bihar state

The state's fish production is steadily increasing over the years. The total fish production in the state during 2009-10 was 297.4 Thousand Tonnes (TT) which is increased to 506.09 TT by the end of 2015-16. depicts the trend line of total fish production in the state during the period 2009-10 to 2015-16. heres a Fig shown below.



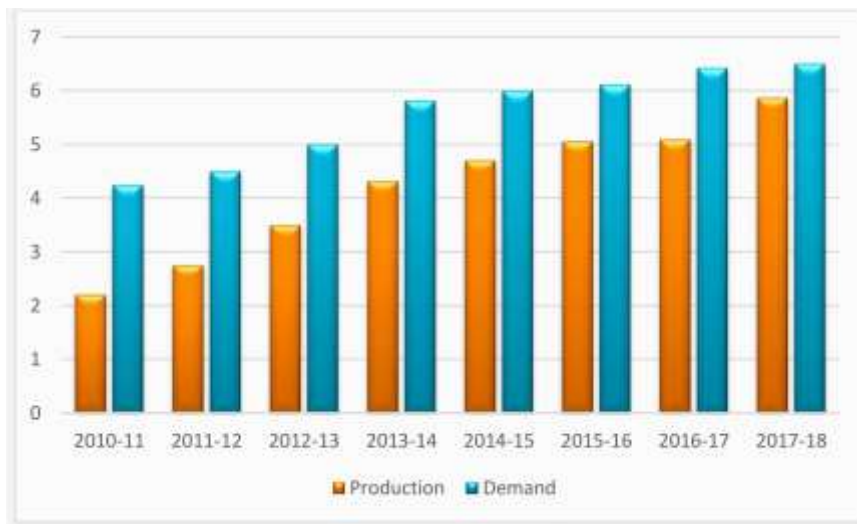
## ➤ MATERIALS AND METHODS

Primary data were collected through personal interviews with agruculturists and Directorate of Fisheries, Government of Bihar Patna, representing the ongoing fishing activities and available resources available in the state.

Before collecting actual data, several field visits were conducted, especially to fish ponds, Ox-bow lakes and fish markets to establish relationships with fish farmers, producers, sellers, buyers and other stakeholders. Various intermediaries are involved in the marketing of fish. Secondary sources of data on various variables were collected from appropriate government and non-government organizations such as the Ministry and Directorate of Fisheries, Government of Bihar and published data.

### ➤ Fishery resources and potential

The fisheries resources of the State of Bihar can be divided into three categories: form-oriented fisheries resources, culture-based fisheries resources and capture fisheries resources. Bihar is blessed with rich natural resources to enhance freshwater aquaculture production. Although Bihar is a landlocked and agriculturally dominated state, the state has vast untapped inland water resources in the form of reservoirs, ponds, chours, mauns, reservoirs and rivers. profitable. Fish farming and has favorable agricultural climate conditions for aquaculture development. Despit e Bihar's abundant fisheries resources of about 3,200 hectares of rivers, 500,000 hectares of floodplain wetlands, 9,000 hectares of rainbow o r maun lakes, 25,000 hectares of reservoirs and 80,000 hectares of ponds and reservoirs, fish supplies remain missing. When considering aquaculture development, th e greatest potential lies in the aquaculture sector, provided that the required inputs per hectare per year are actively applied to achieve optimal and sustainable yields per hectare per year. ha. Bihar's major agricultural fishing potential lies in its ponds and reservoirs that stretch long and wide in all directions. A sound and well-planned development concept in this direct direction can lead to a large-scale increase in fish catch as well as employment generation in the rural areas of the state. According to a report by Ahmad (2001), lakes and ponds in Bihar have the potential to produce 0.183 million fish per year.. These remedies offer great potential to improve fish and shellfish production for domestic and international markets (Singh 2004). The rivers flowing through Bihar are important sources of wild fish and contribute significantly to the district's fisheries. These two resources have the potential to develop cage and pen farming.



Histogram showing comparison of year-wise status of production and demand of fish.

### ➤ Fishery production and demand

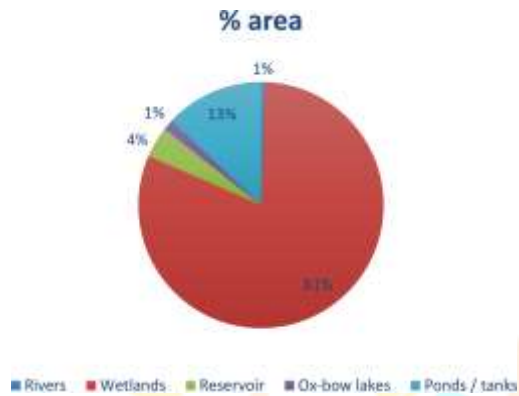
The global production of all aquatic organisms in 2002 was recorded as 132.98 million tones, of which 93.19 million tones came from capture fisheries and 30.79 million tones through aquaculture (Ayyappan and Pillai 2005). However Bihar instead of its vast aquatic resources, still lying far behind in this regard.

A steep rise in the annual fish production has been marked during the last one decade, it has increased from 2.5 lakh tones in 2010-11 to 4.32 lakh tones in 2013-14 and further up to 5.87 lakh tones in 2017-18.

### ➤ Development of Pond fish farming

Blessed with vast aquatic resources and having an extent of estimated water area, there is a great potential to develop fish pond in some of the district of Bihar state. The small and marginal agrifarmers have opportunities to convert their unused, fallow land into a fish pond of convenient size (0.1-0.5 ha) with a water depth of 1.25 m to 1.50 m for aquaculture. These ponds could be utilized for poly farming of fish and prawn. Since last two decades, freshwater aquaculture has evolved from a domestic activity to a small industrial activity in South Bihar. But still the fish farming practices are old and traditional as evidenced by the fact that most of the fish farmers stock only the Indian Major Carps (IMC) fish seed in the seasonal pond and harvest the fish without following any scientific fish culture practices after six months. Even altered non-scientific stocking densities and species ratio have been reported sometimes depending upon the availability of fish seed. In extreme survey report, it was found that the main farmed fish species in these areas were IMC (Rohu, Catla and Mrigal). Some exotic carps like Common Carp, Grass Carp and Silver Carp and some other group of fishes like *Pangassius* and *Rup Chanda* are also considered for farming due to their known traditional fish culture technology, higher growth rate and good market price. The IMC is the main preferential fish food for a selective or elite class of piscivore community, while Singhi, Grass Carp and freshwater small prawn are also preferred secondarily. As far as, a trend in fish cultural practices in Bihar is concerned, it is predominated by either mono-farming or composite fish farming with IMC. Now this is high time to promote poly-fish farming of IMC and some suitable exotic carps along with freshwater prawn (Prasad and Singh 2006). There is also enormous scope to encourage integrated fish farming involving poultry, piggery, cattle, horticulture, paddy cum fish culture. Besides the Euryalferox (Makhana) cum fish farming in central Bihar has also immense potential for contributing

a major chunk in GDP. The integrated fish farming of air breathing fishes and aquachest nut is another emerging area that needs to be addressed properly. The vast resources of flood plain in terms of mauns, chaur, beels and taals along the Ganga basin offers a tremendous scope for the fisheries development along with the way of socio-economic development of the region. Kaushal and Sikka (2004) reported fish yield from these wetlands is low ( $100-200 \text{ kg ha}^{-1} \text{ yr}^{-1}$ ) in spite of high production potential ( $1000-2000 \text{ kg ha}^{-1} \text{ yr}^{-1}$ ). So, there is an emergent need to develop strategies for the best possible utilization of these aquatic resources.



Pi chart showing the area/stretch of different water bodies in Bihar.

### ➤ Bihar fisheries policy[2008]

In spite of having vast fishery resources, it has been observed a gap between demand and supply(43%). Considering the available water resources and the gap between demand and supply of fish,a comprehensive fisheries and aquaculture policy has been made. The policy aims at increase the fish production to the extent to secure food and nutrition security as well as rural livelihood. The highlights of the policy are as follows:

- Improve the data collection techniques so that true picture of state fish production and consumption can be assessed.
- For the development of aquaculture,improved aquaculture practices can be adopted in the ponds with less than 10 ha which are large in number but have low productivity.
- For the development of fisheries sector, various water bodies such as ox-bow lakes, floodplain wetlands etc. can also be effectively utilized.The floodplain wetlands can be managed more effectively by community collective management.
- The leasing policy which is applicable to reservoirs must give priority to those people who are displaced or affected and traditional fishers. The lease amount which is collected from the cooperatives, associations and SHGs are used as a means of rehabilitation to these people. If the affected people are not found or absent, reservoir can be leased out to the unemployed youth, private entrepreneurs, public undertakings, etc. through open auction. Lease period will be ten years.
- Conservation of Aquatic Biodiversity
- Marketing and value addition
- Human Resource Development
- Extension service delivery and support system

## ➤ **Cost of fish production in Bihar**

The Bihar government is providing a bumper subsidy to those starting fish farming business under the Reservoir Fisheries Development Scheme.

The government's Department of Animal Resources and Fisheries provides a subsidy of 70% of the unit price to beneficiaries of all classes. The remaining amount will be borne by the beneficiary through a bank loan or personal fund. The government has fixed the cost of fry harvesting unit at Rs 60,000 per hectare, Rs 3 lakh per cage and Rs 10.50 lakh per cage in the reservoir. A 70% subsidy will be paid to all beneficiaries towards these costs.

## ➤ **Fishes found in Bihar**

Some of the major fish species found in Bihar include Rohu, Catla, Mrigal, Silver carp, Grass carp, Common carp, Tilapia, Magur (catfish), and Pangasius.

## ➤ **Bihar Becomes Self-Sufficient in Fish Production**

As of November 22, 2023, according to information received from the media, Bihar is now almost self-sufficient in fish production. Currently, the state produces 7.62 lakh tonnes of fish per year, against the demand of 8.02 lakh tonnes of fish. The state currently has a per capita fish consumption of 6,464 kg per year. Katla fish is the top choice of Biharis. Rohu is second and Mrigal (Naini) is third.

Catla fish production in Bihar is 164,189 thousand tons. Rohu's production is 154,794 thousand tons and Mrigal's is 107,586 thousand tons.

Pangasius, carp, silver carp and grass carp are also produced on a large scale. Each person of Bihar eats 6,464 kg of fish every year.

Currently, 37,0545 thousand tonnes of fish are sent to other states from across the state, while 38,462 thousand tonnes of fish come to Bihar from other states. < every year the state produces exported 80.4113 thousand tons of silver carp, 96.49262 thousand tons of grass carp, 92.66252 thousand tons of common carp, 45.8596 thousand tons of catfish and 52.8796 thousand tons of pangasius. Besides, the output of other types of fish reaches 48.5901 thousand tons per year.

Bihar is currently in the top 4 leading states in the country in terms of fish output. Sheikhpura district has the highest contribution to fish farming in Bihar. With financial support from the government, Shekhpura district supplies fresh fish to districts like Jamui, Nalanda, Nawada, Lakhisarai, Patna, Begusarai etc.

## **RECOMMENDATIONS**

- A transparent leasing policy and supporting rules should be framed and enforced strictly at ground level in order to use available natural water resources efficiently.
- In order to increase the productivity of natural water bodies such as Reservoirs, Rivers and wetlands culture-based capture fisheries may be promoted.
- Popularisation of different aquaculture practices and supportive extension activities are needed for the development of aquaculture in the state.
- There is a need to establish a greater number of hatcheries in order to produce quality fish seed and ensure supply throughout year.
- Development of marketing and storage facilities in rural areas is required to reduce the loss of produce and ensures the quality of product.
- Creation of facilities for the preparation of value- added products may help in increase the consumption and also generates employment opportunities.

# CONCLUSION

Small-scale inland fisheries is considered as an important income source for landless people particularly in the land locked areas like the state Bihar. This sector is making a significant contribution to food and nutritional security. In spite of having potential water resources and endless state government effort in the form of framing schemes and acts, development in this sector has not met the expectations. The climate change, overexploitation, pollution of natural water bodies and exploitation of fishers by dominant personalities and some of government officials are found to be major constraints for the development of small-scale inland fisheries. This sector found to be less competitive compared to large-scale fisheries sector. The small-scale fisheries largely depended on subsidies given by the government. But subsidies have negative effects on sustainability of small-scale fisheries sector hence the same can be diverted towards development of basic infrastructure such as marketing, processing, storage facilities etc. that are essential for making this sector more competitive. Creating awareness among fishers and fish farmers about state fisheries policy and fisheries bill may increase the number of beneficiaries. Transparent leasing policy, popularising different aquaculture practices, extension services for promoting culture-based capture fisheries, creation of marketing and storage facilities etc. are equally important in order to make the sector more competitive and profitable for the people who depend on it.

# REFERENCES

- Narayanan, S., 2016. Inland fisheries, food security and poverty eradication: A case study of Bihar and West Bengal.
- Jadhav, A., 2018. Undefined Small-Scale Fisheries in India: Challenging Simplifications and Highlighting Diversity and Value. In *Social Wellbeing and the Values of Small-scale Fisheries* (pp. 147-173). Springer, Cham.
- Kurien, J., 2015. Voluntary guidelines for securing sustainable small-scale fisheries in the context of food security and poverty eradication: summary.
- Islam, D. and Berkes, F., 2016. Can small-scale commercial and subsistence fisheries co-exist? Lessons from an indigenous community in northern Manitoba, Canada. *Maritime Studies*, 15(1), p.1.
- Schuhbauer, A., Chuenpagdee, R., Cheung, W.W., Greer, K. and Sumaila, U.R., 2017. How subsidies affect the economic viability of small-scale fisheries. *Marine Policy*, 82, pp.114-121.
- Béné, C., Hersoug, B. and Allison, E.H., 2010. Not by rent alone: analyzing the pro-poor functions of small-scale fisheries in developing countries. *Development Policy Review*, 28(3), pp.325-358. [www.bih.nic.in](http://www.bih.nic.in) (online, accessed on 17/07/2018)
- Handbook on Fisheries Statistics, 2014. Government of India, Ministry of Agriculture, Department of Animal Husbandry, Dairying & Fisheries, Krishi Bhavan, New Delhi. p.1-2.
- Kumar, R., 2013. An Economic Analysis of Floodplains (Chaur) Fisheries in Samastipur District of Bihar, Unpublished M. F. Sc dissertation, ICAR-Central Institute of Fisheries Education.