



Analyzing the economic benefits of sustainable fisheries management

**Dr. Lalit Sachdeva^{1*}; Dr. Parvinder Kaur Chhabda²;
Dr. Chand Tandon³; Dr. Sunaina Sardana⁴**

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Abstract

A significant portion of the state's economically disadvantaged people depends on the fishing industry for both their livelihood and food security, making it one of the state's major food producing sectors. Its importance has grown in recent years, and it has made a significant contribution to the State and national economy in terms of foreign exchange profits, rural employment creation, and nutritional security and livelihood. There are three sub-sectors of fisheries: freshwater, brackish water, and marine. In addition to providing wholesome food for all of humanity, fishing has historically been a significant source of income for both coastal and inland fishing communities. Over the past three decades, one of the fastest-growing food production systems in India has been fisheries and aquaculture, which are thriving economic sectors. They have made a huge, albeit understated, contribution to the agricultural (4.6%) and national (1.3%) economies, to livelihood and nutritional security, to the creation of jobs for 11 million people, and to foreign exchange revenues (more than Rs. 8000 crores). The primary obstacle that most fisherman face when trying to raise money is their incapacity to provide loan security. Security is crucial even when receiving financial aid from government banks.

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1*- Associate Professor, Department of Management, Kalinga University, Raipur, India.

Email: ku.lalitsachdeva@kalingauniversity.ac.in, ORCID: <https://orcid.org/0009-0002-2214-282X>

2- Assistant Professor, Department of Management, Kalinga University, Raipur, India.

Email: ku.parvindarkaurchhabda@kalingauniversity.ac.in, ORCID: <https://orcid.org/0009-0006-9775-7254>

3- Professor, Department of PGDM Finance, New Delhi Institute of Management, New Delhi, India.

Email: chand.tandon@ndimdelhi.org, ORCID: <https://orcid.org/0009-0005-7505-8463>

4- Professor, Department of PGDM Finance, New Delhi Institute of Management, New Delhi, India.

Email: sunaina.sardana@ndimdelhi.org, ORCID: <https://orcid.org/0009-0002-1373-0187>

*Corresponding author

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Introduction

One of the most significant food sources for humans is fish. The fishing industry is in a unique position to guarantee national food security because it is the sole industry that provides affordable and high-quality animal protein to the public, especially to the less fortunate segments of society. In a number of nations, particularly India, it is also a significant source of foreign exchange (Evans, Cherrett and Pems, 2011). The regional and national economies are further strengthened and diversified by the possible forward and backward links created by the building of boats, fishing harbors, fish processing, etc. Over 30,000 different species of fish exist. Due to their widespread habitat, fishes have a wide range of names and behaviors. Ten million tonnes of fish can be produced annually from the anticipated inland and marine fishery resources. Given the extent of resources available, fisheries development can significantly boost fish productivity and, consequently, national income (Liu *et al.*, 2023). The ability of fisheries resources to serve as a substitute for outland resources makes them crucial for development. Only 1 to 8 percent of the fish that are now available along the

eastern and western coasts are being captured, according to estimates from the Indian Ocean Expedition. It is feasible to raise fish catches by ten times, from the current 2.9 million tonnes from the sea to over 30 million tonnes annually, if modern fishing techniques are used. Indeed, this would have a significant effect on our foreign exchange revenues, the nutritional standards of the populace, and the living conditions of our impoverished fishermen. Given the expanded jurisdiction over 320 lanes of sea from the coast line, the development of fisheries is consistently given high emphasis (Schuhbauer and Sumaila, 2016). The initiative to mechanize fishing boats and joint ventures and to reduce excise taxes on diesel used by marine fisheries mechanized craft. Major and minor ports are providing berthing and landing facilities for fishing vessels in order to take advantage of marine fish resources. At the minor areas, fishing harbors that can accommodate small and medium-sized fishing vessels are being created (Asche *et al.*, 2018). At the main ports, fishing harbors have been constructed to accommodate medium- and large-sized deep-sea fishing vessels. Sustainable aquaculture and economical are shown in figure 1.

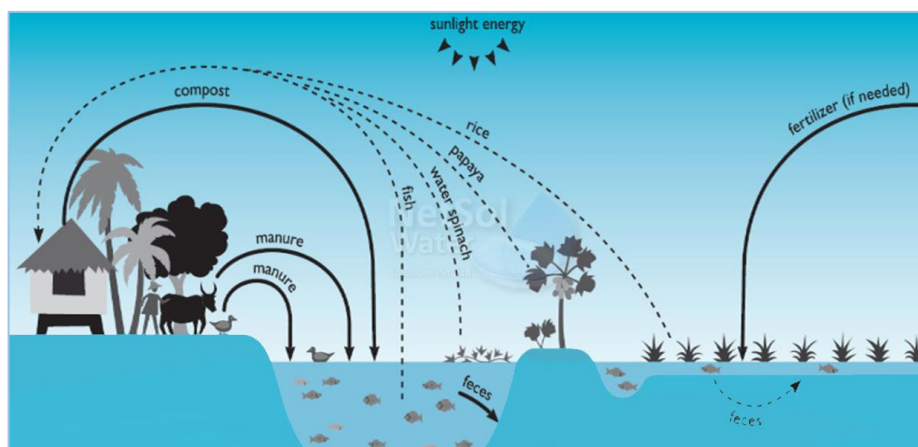


Figure 1: Sustainable aquaculture and economical.

Materials and Methods

One of the nation's main industries based on natural resources is fishing. In addition to giving the populace access to affordable protein foods, this industry employs a sizable portion of the workforce in both interior and coastal areas. The industry also contributes significantly to employment in the marketing, processing, and ancillary industries. For this industry to continue to contribute to the national economy—specifically, to the supply of food, jobs, earnings, foreign exchange earnings, regional development, public income, recreation, etc.—it must continue to operate (Parlee *et al.*, 2021). These individuals operate small boats, coastal craft, and oceangoing fishing vessels, and a rising number of them work in inland fisheries. Nearly as many individuals are employed in allied fields, such as producing fishing gear or constructing fishing vessels. Fishery products are processed, packaged, sold, and distributed by them. Today, the fishing industry contributes significantly to the nation's foreign exchange earnings. Countries with excess capacity in small-scale fisheries, like India and Sri Lanka, can negotiate successful fisheries agreements with nations like Madagascar, Mozambique, Somalia, and the Seychelles (Tolentino-Zondervan and Zondervan, 2022). These agreements ought to acknowledge the significance of managing fisheries responsibly and include clauses pertaining to small-scale, non-destructive fishing methods. The several elements that lead to fishermen's unintentional deliberate crossing of borders must be acknowledged. The terrible drama that is currently a defining

characteristic of small-scale fishing vessels might be greatly reduced with a careful combination of compassion, acknowledgment of customary rights, and the creation of legal frameworks to allow for the formal movement of these vessels (Cámara and Santero-Sánchez, 2019). The current study was analyzed using both primary and secondary data. The books, journals, reports, and records of the ministries, agencies, and departments involved in the fishing sector were the sources of secondary data. In the study district, the survey approach was used to gather primary data. Evaluating the economic analysis of the fishing sector in the study area is the aim of the research. Therefore, the purpose of this study is to: a) analyze the fishing industry's economics; b) determine how the marine fishing sector generates jobs and revenue.⁷ c) fish production and marketing, and d) fishing communities' socioeconomic standing (Miret-Pastor, Peiró-Signes and Herrera-Racionero, 2014). The appropriate statistical methods, such as correlation, X² test, Anova, etc., were used to tabulate and analyze the acquired data. A pretested questionnaire was used to interview 240 sample respondents in total. The questionnaire asks about socioeconomic state, the creation of money and jobs, issues that the fishing villages confront, etc.

Numerical Results and Discussion

Due to changes in the state's expanding population's eating patterns, there is currently a greater need for fish. The inshore area's fish resources had been overfished. Additionally, fish catches in inshore areas are declining as a result of fish optimal levels being decreased by

skill and technology advancements as well as the adoption of sustainable methods. The Sri Lankan Navy's violations of norms and regulations and the absence of clearly defined maritime rights currently restrict the fishing community in Palk Bay. While reclaiming Kachatheevu Island, which was mistakenly given to Sri Lanka in

1974, is a long-term solution to this problem, daily issues must be resolved by holding talks between the fishing communities in both nations to guarantee the safety of the fishermen while they are out at sea. Arima growth of export value of fish and fish products in Tamil Nadu was shown in figure 2.

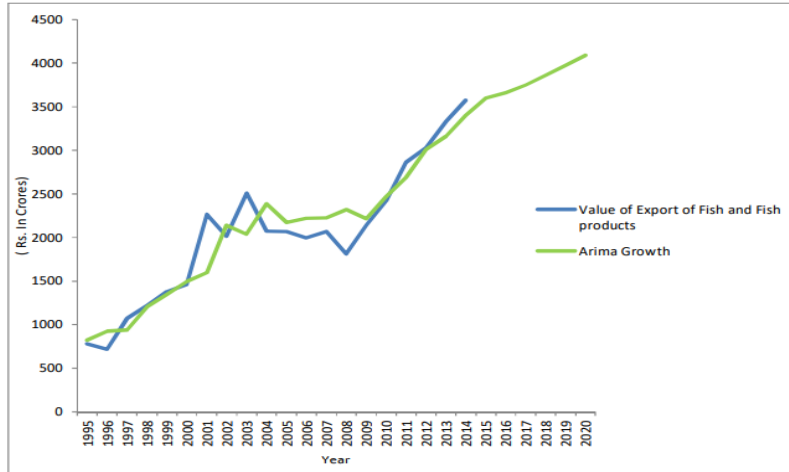


Figure 2: Arima growth of export value of fish and fish products in Tamil Nadu.

Despite the ongoing increase in demand for fish products, marine fish market chains generally face unsanitary conditions, inadequate fish handling, and significant waste in terms of lost revenue and product. It is typical for up to 15% of the harvest to be lost as a result of low quality. In order to improve quality and costs, small-scale fishermen frequently

lack access to more effective marketing strategies and auxiliary facilities (ice, cold storage, etc.). More initiatives could be started to provide a suitable process infrastructure facility for the marine industry. Below figure 3 displays the Simple growth of marine fish catches by non-mechanized boats in Tamil Nadu.

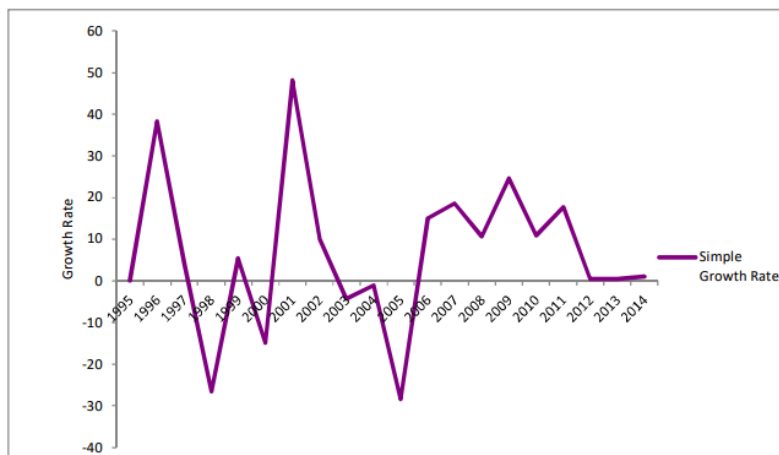


Figure 3: Simple growth of marine fish catches by non-mechanized boats in Tamil Nadu

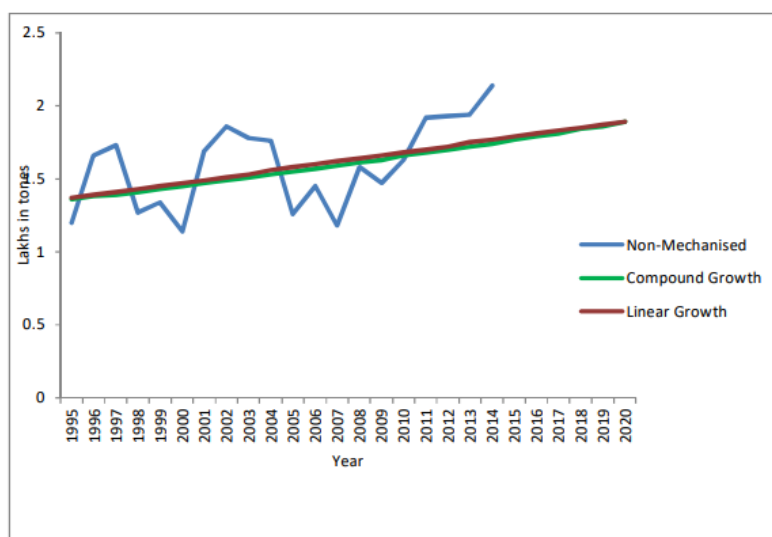


Figure 4: Linear and compound growth of marine fish catches by non-mechanized boats in Tamil Nadu.

Figure 4 displays the Linear and compound growth of marine fish catches by non-mechanized boats in Tamil Nadu. Both the biotic and biotic conditions of the oceans limit the richness of marine floral and faunal species and the export of fish and fish products. Latitude, depth, salinity, and nutrients are the four main elements that determine the distribution and abundance of life in the seas. The distribution and quantity of species that result from the seas' primary variables impact how resources are harvested.

Conclusions

Agriculture and the fishing industry are grouped together in the economic classification of activities. The kindness or niggardliness of nature dictates its existence. The fisheries industry has increased its operational area in Tamil Nadu's water resources throughout the years by advancing the technologies used in fishing operations. As a result, there is a chance to access fisheries that were previously unavailable early. As the population grows, there is a rise in the amount of fish consumed per person.

This clearly necessitates expanding and strengthening the employment situation in the fishing industry. The rise of allied activities including the catching, preserving, processing, and marketing of fish and other sea products is another factor contributing to the growth in employment opportunities. Because it boosts the economy and provides much-needed foreign cash through fisheries exports, particularly to industrialized nations, the fishing industry's reputation is improved. However, there is cause for concern regarding its contribution to the Net State Domestic Product.

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