

ANALYSIS THE RELATIONSHIP BETWEEN AQUACULTURE PRODUCTION AND POVERTY REDUCTION IN MADHYA PRADESH

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Abstract

There have been many studies in developing countries linking aquaculture production and poverty reduction. However, only a few of them have been conducted to examine the relationship between aquaculture and poverty, although there are three indicators, namely the percentage of poor people, the poverty gap and the severity of poverty.

The main objective of this paper is to show the relationship between aquaculture production and poverty reduction in Madhya Pradesh. Specifically, the synopsis aims to analyze how aquaculture production has a major impact on poverty reduction in Madhya Pradesh through three indicators of poverty, namely the percentage of poor people, the poverty gap, and the severity of poverty.

Keywords: *Poor, Aquaculture, MP, Production etc.*

Introduction

Fish have great importance in human life. It has been recognized as one of the important sources of diet apart from meat and chicken. It also provides essential nutrients such as oils, proteins and fats for the human body. According to the FAO, fish can provide between 50% and 60% of the daily protein required by adults in 150 grams of fish. In addition, Tacon and Matien (2013) argue that fish caught and farmed account for 16.6% of the animal protein of the global population, 20% of the average per capita consumption of animal protein for more than 3 billion people 10%, and 15% protein for at least 4.3 billion people.

More importantly, fish is a nutritious food for low-income people in developing countries. And, they are more dependent on it than people in developed countries (Kent 1997). Therefore, Kent argues that a reduction in the supply of fish has serious nutritional consequences not only for low-income communities but also for their economics will bring. Similarly, one billion people consume fish as their main source of protein (Jenschik et al. 2015). As the authors pointed out, in Asia and Africa, it has been found that fish, especially dried fish, is an important food in rural areas.

As mentioned above the supply of fish is important for consumption. However, the world population has been increasing over the years. International organizations such as the United Nations (UN) have estimated that about 7.3 billion people will live on Earth in 2015. The world population has increased by 1.4 billion from 1990 to 2013. It is estimated that by 2030, the number of people will reach 8.19 billion.

The Department of Fisheries is responsible for the development and conservation of fisheries in the state, for which the department is making continuous efforts through the available resources. 3.56 lakh hectare water area is available in the form of reservoir, pond and pond, in which 2.94 lakh hectare water area is included in the reservoir and 0.62 lakh hectare water area of rural pond and pond, out of which 3.49 lakh hectare water area has been brought under fish farming. In which 2.92 lakh hectare is of reservoir and 0.576 lakh hectare is of rural ponds and ponds. In the above water area, 12 reservoirs of 1.72 lakh hectare are under Madhya Pradesh Fisheries Federation and 45 reservoirs of 0.134 lakh hectares under the department and 2,640 irrigation reservoirs of 0.91 lakh hectares of average water area up to 1000 hectares are given to Panchayat Raj Institutions, Government of Madhya Pradesh, Fisheries Department, Ministry of Bhopal. Order no. 1548/2008/36 has been transferred with effect from 08.10.2008.

Review of Work

Much of this overall decline in poverty is due to an increase in rural wages. According to Hussain, Rehman, Nath and Choudhary (2013) real agricultural wages almost doubled during 2000-10. Similarly, Zhang et al. (2013) report an increase in real rural wages at an average of about 10% per annum from 2005 to 2010. He argues that this reflects a fundamental shift in the structure of the national economy, where "the surplus labor in rural areas is completely absorbed by the emerging non-agricultural sector, beginning the rise in wages; the "Lewis turning point". (Zhang et al., 2013, p. 2). These findings are broadly supported by the World Bank (2013), which indicates that total labor income from agriculture increased by only 1.7% per year from 2000 to 2005, it grew by 9.8% per year during 2005-10. However, the same analysis shows that most of the rural income growth in the latter half of the decade came from self-employment working on their own farms, while the income of rural daily wage workers increased at a more moderate rate (World Bank, 2013), although it should be noted that in practice most rural

households engage in both self- and wage employment (Sen, 2003). In contrast, the World Bank attributed this change to Given the effect of the 2008 food price hike, which stated that "a higher wage by increasing the wages of agricultural workers Food prices of commodities entered the economy" (World Bank, 2013, p. 27). Whatever the root cause of the increase in rural income from 2005 to 2010, the high income elasticity of demand for fish in Bangladesh (Day et al., 2010) implies that these changes would be expected to have significant implications for fish consumption.

To determine whether the development of aquaculture has been pro-poor, it is necessary to distinguish between farmed and non-farmed fish. The HIES food consumption module records data on 15 categories of fish. Most of these categories include more than one species. Based on a review of the literature, most of the fish categories listed by HIES can be identified primarily as fish originating from aquaculture, inland capture fisheries, or marine/estuarine capture fisheries (Ali et al. ., 2012, Belton et al., 2011, Belton et al., 2014, DoF, 2013, Hussain, Belton, et al., 2013, Mom, 2007, Rahman et al., 2006, Thompson et al., 2002).

Carolina P. Rocha, Henrique N. Cabral et al.(2022), World aquaculture food production grows every year, for another all-time record of 82.1 million tonnes of farmed seafood, as of 2018, with Asia leading global production. In Europe, although coastal countries offer historical fishing habits, aquaculture is in perfect detail. Major European producer Norway is the eighth main producer worldwide. Portugal is a traditional fishing country, but has invested in the development of aquaculture for the past decade, producing 13.3 tonnes, as of 2018, making Portugal the 16th main producer among EU member states that year. Most Portuguese aquaculture facilities operate in coastal systems, resorting to extensive and semi-intensive farming techniques. In Portugal, seafood production in transitional systems is particularly interesting as the practice has been increasingly replaced by intensive methods around the world. In fact, features in transitional systems have evolved over time and products have achieved high commercial value. Clams and oysters accounted for more than three quarters of total mollusk production in Portugal in 2018, while gilthead seabream and European seabass made up almost all fish production in coastal environments. The status of aquaculture practices around the world is reviewed in the present work, with a particular focus on Portugal, where the aquaculture sector is expected to grow significantly.

Adeleke et al. (2021), Investments in the aquaculture sector included the replacement of extensive and semi-intensive rearing systems by intensive pond rearing, which enabled much higher animal densities, the establishment of hatcheries and seed production, as well as fodder production. Egypt has the largest number of attic and seed facilities, as well as all aquaculture feed produced in the country. A SWOT analysis performed by Adeleke et al. (2021) showed that both Egypt and Nigeria present well-developed aquaculture sectors, in which production and market opportunities exist for product flows linked to economic growth.

Food and Agriculture Organization of the United Nations (FAO) (2020) Furthermore, large-scale production of highly desired species by major producing countries has, in recent years, resulted in the saturation of national and international markets, leading to a significant drop in prices I have come Such species number, even in small-producing countries, with social consequences, not to mention the considerable amount of waste produced, affecting regional economies.

Kaleem, O.; Sabi, (2020), Investments in the aquaculture sector included the replacement of extensive and semi-intensive rearing systems by intensive pond rearing, which enabled much higher animal densities, the establishment of hatcheries and seed production, as well as fodder production.

Ribeiro, A.R.; Altintzoglou, T.; Mendes et al. (2019), Southern European countries—Spain, Italy, Greece, Turkey, and Portugal—have a long history in aquaculture production and account for part of the production of marine finfish, some freshwater fish and mollusks, taking the largest share of production. Huh. Apart from Portugal, all other countries have generally adapted their rearing methods to maximize production over the past few decades, resorting to the technological development of intensive rearing methods.

Instituto Nacional de Estatística (INE) (2018) The clam is a mainly saltwater mollusk species native to Portugal and is the main species produced in the country. Clams are raised in parks in the intertidal zone in extensive systems, essentially south of continental Portugal. The production of clams continued to increase from 1999 to 2003, with the highest increase recorded between 1999 and 2000, where production increased from about 1404 tonnes in 1999 to 2417 tonnes the following year.

Production of these organisms peaked in 2003, producing 3186 tonnes, but dropped in subsequent years, roughly matching the production values of 1999.

Schemes/Policies

- Fishing Extension
- Mermaid production
- Development of fisheries in irrigation reservoirs
- Education, Training - Training of fishermen
- Education, Training - Fishermen, Study Tour
- Fishermen's Co-operative Societies
- Aquarium and Research

- Machuara Credit Card Scheme
- Rashtriya Krishi Vikas Yojana (RKVY)
- Development of Fisheries and Aquaculture Inland Personal Accident Insurance Scheme
- Mermaids
- Model Fishermen Village Development Scheme
- Savings-cum-relief scheme

Concepts and Scope of Aquaculture

By definition, aquaculture is the production of fish, other animals, plants, algae, and microorganisms in aquatic ecosystems (Edwards 2000). 45 on Fisheries in 2009, "Aquaculture is an activity to maintain, raise and/or breed fish and to harvest the results in a controlled environment, including using a vessel for loading, transport and activities involving storage, cooling, handling, processing, and/or preserving it". There are several ways to identify the types of aquaculture systems. Generally, the system of aquaculture can be divided into the use of inputs (specifically feed) and its cultivation (Edwards 1999).

The link between aquaculture production and poverty reduction

According to Kakwani and Pernia (2000), poverty reduction is about improving human welfare, especially among poor people. Improving welfare is not easy as it must have a clear definition of welfare itself. Sen (1976) says that well-being is about functioning and abilities where functioning is a reflection of achievement whereas abilities are about the power to achieve. It means that poor people should get equal opportunity with others to improve their life. In other words, the poor should actively participate in economic activities and benefit significantly from it.

A body of literature states that the manufacturing sector provides a high multiplier effect for improving people's living standards. However, the agricultural sector, especially aquaculture, has some ways of contributing to poverty reduction, especially for people living in rural and coastal areas, which are not considered centers of economic development.

Problem Statement

The Bureau of Statistics in Madhya Pradesh classified more than 14 million people as poor in 2013. This number was about 11.37% of the total population. Most of these people are living in rural and coastal areas. With lesser range of job opportunities, the aquaculture sector has been seen as one of the solutions to increase income.

There are few studies that provide the impact of aquaculture production on poverty reduction at a macro level. Most of them indicate that communities will benefit from the role of aquaculture production through food supply, employment, income, promoting economic growth, and nutrition. In fact, seldom among them have approached the issue from the point of view of the growth of aquaculture production and its impact on reducing the percentage of poor people, the poverty gap as well as the severity of poverty in the country.

Objective and Hypothesis

Based on the explanation mentioned earlier, the objectives of this study are;

1. To understand the relationship between aquaculture production and poverty alleviation in Madhya Pradesh.
2. To study the extent of aquaculture production and its effects on poverty.

The hypothesis of the study is that the production of aquaculture can have a positive impact on poverty reduction. This means that increasing production will reduce poverty based on three indicators, namely the percentage of poor people, the poverty gap, and the severity of poverty.

Limitation of this study

Some limitations have been identified in this study. The first pertains to data, particularly poverty and aquaculture production data. The Bureau of Indian Statistics began using three indicators of poverty in 2015, namely the percentage of poor people, the poverty gap and the severity of poverty at the provincial level. Previously, the poverty measure relied only on the number of poor people, which was calculated from the average monthly per capita expenditure below the poverty line. Therefore, this study will only analyze data from 2011 to 2022 at the provincial level. The second limitation, some provinces were established after 2015, and this further complicates the structure of the data as the production of new provinces in previous years was embedded in the mother province. In turn, the level of production is lower in the mother province. This condition will affect the result of the estimate.

To further understand the impact of aquaculture production in reducing poverty in Madhya Pradesh, this study will also use data from districts and municipalities for comparison. Like the provincial level, data gathering is also limited, which means not all districts and municipalities in Madhya Pradesh have data on aquaculture production in their area. This is because of governance issues. As a result, only 132 sets of data will be included in this study, which will be collected from 2017 to 2022.

Result

This study will use secondary data with samples from 33 districts of Indonesia over the period 2011 to 2022. The data will be organized into annual balanced panel data. This data will be collected from the districts of Madhya Pradesh.

To compare, this study will employ data from districts and municipalities collected for different years from 2017 to 2022. However, because not all provinces provide production data for each district and municipality in their administrative documents, this part only uses data from 35 districts and municipalities in Madhya Pradesh, which range from western to eastern part of Madhya Pradesh are spread.

This sub-chapter describes the general information of each variable, both the independent and dependent variables, that is applied to the study. This analysis will be divided into two types of data namely provincial and districts and municipalities. The reason these figures differ is that provincial data began from 2011 to 2022, while district and municipal data began from 2017 to 2022.

To measure the relationship between aquaculture production and poverty alleviation in Madhya Pradesh, this study will employ the total production of aquaculture as the main independent variable. The reason for this is due to the fact that it shows how the production is in the aquaculture sector in terms of quantity of products.

To take advantage of other variables that are influencing poverty in the region, Gross Regional Domestic Product (GRDP) and total population will be employed as control variables. The decision to employ GRDP and population is because literature types have demonstrated that such variables can affect poverty in the region (Kelly and Schmidt 1995, Romer and Gugarty 1997, Dollar and Cray 2002, Lanjouw and Ravellian 1995, Fosu 2009). However, the effect of these two controlling variables can be positive or negative in regional poverty. Romer and Gugarty (1997) argue that there is a positive relationship between economic growth and income growth of the poor. This means that an increase in economic growth will lead to an increase in the standard of living of the people of the region (decrease in the number of poor people). Furthermore, Dollar and Cray (2002) state that the poor would benefit from equal development for all members of society. On the other hand, Justin Forsyth (Oxfam's Policy Director) asserted in his paper in "The Economist" that growth and globalization act as a brake on poverty reduction because growth and globalization have reduced income inequalities between societies. made extensive. Taking China and India as examples for this argument, he argues that the relationship between growth and poverty reduction is weakening when inequalities between the rich and the poor are widespread in the region. In line with Justin Forsyth's view, Fosu (2009) also argues that the poverty reduction response to economic growth is small. This means that development does not have the potential to reduce poverty. In addition, he also emphasizes that high rates of income inequality tend to increase poverty.

This is also true with the variables of the population. There are conflicting views on the role of population in influencing poverty. Malthus and his supporters have argued that population has a positive relationship with poverty. They argue that savings, which were initially allocated to infrastructure and development, should be diverted to meet the needs of food, health care, housing and education (Merrick 2002). On the other hand, some economists believe that population can be negatively related to poverty. This means that poor people have more children because it is a symbol of wealth, provides more labor for households, and to care for parents in old age (said). Furthermore, Lanjouw and Ravellian (1995) argue that the relationship between poverty and household size disappears at a certain point in the cost of living (a case study from Pakistan). Apart from all the independent variables mentioned above, this study also uses the dummy variable of the year as another independent variable to capture the unrestricted variables in a particular year such as education, health, inflation, investment and social can affect the poverty rate in Indonesia.

This study applies three different indicators of poverty, with absolute poverty as the dependent variable. These three indicators are the percentage of poor people (P0), the poverty gap (P1), and the severity of poverty (P2). The reason these three indicators are fully implemented is that the percentage (P1) of poor people alone may not provide an in-depth understanding of poverty. Combining the two other indicators, this study has more justification for the impact of aquaculture production in reducing poverty. In addition, these three indicators are commonly used to represent extreme poverty.

A model has been developed that can be used to examine how aquaculture can affect poverty in an area. The model will be differentiated into two levels of data, the pro-level and the level of districts and municipalities.

Shows the relationship of each poverty measure to each of the independent variables. The total output of aquaculture is expected to be positive for poverty alleviation for both the districts and municipal level (negative for poverty measure; P0, P1, and P2). It is the same as total output; GRDP for all levels is expected to be negative for poverty indicators. Meanwhile, for the population, the signal is expected to be positive for poverty. This means that an increase in the population will also increase the indicators of poverty.

Conclusion

The potential of aquaculture in alleviating poverty has been recognized primarily through the numerous literature published by the Food and Agriculture Organization. However, only a few studies have provided empirical evidence of aquatic culture in alleviating poverty based on certain indicators of poverty, namely the percentage of poor people, the poverty gap, and the severity of poverty. Most of the literature provides the contribution of the aquaculture sector only through a number of assumptions, which are considered as avenues of aquaculture to directly and indirectly affect poverty. A study of the relationship of aquaculture production using three indicators of poverty in Madhya Pradesh will contribute to the debate.

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