

## Livelihood Generation and Women Empowerment through Pisciculture in Coastal Odisha

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**Abstract:** This study explores how pisciculture can improve livelihood prospects and empower women in Odisha's coastal areas. Rich aquatic resources and growing fish demand have made pisciculture as a sustainable income source for rural towns increasingly important. Through cooperative structures and self-help groups, women's involvement has resulted in higher social standing, skill development, and financial independence. Women, increasingly are being seen actively managing fish farms, marketing food, and helping in earning for their households. They are taking part in government projects and NGO interventions. A flagship program called "Fish Farming in Gram Panchayat Tanks by Women SHGs" was introduced to empower women and ensure sustainable livelihoods for them. The procedure of data collection used for this study involved the participation of twenty groups from different blocks within the area of Kendrapara, which is a small coastal district in Odisha, India. The information was obtained through the use of focussed group discussions (FGDs). Through the utilisation of purposive sampling, a number of different case studies were carried out. The purpose of this paper is to discuss the challenges that are currently being faced in coastal Odisha as well as the opportunities that exist for pisciculture to help inclusive rural development and gender equality.

**Keywords:** Livelihood, Empowerment, Aquatic, Pisciculture, Self-Help Group

### 1. Introduction:

As of 2023, estimates by the World Bank indicate that women constitute approximately fifty percent of the global population. This demographic reality underscores the pivotal role women play in society at large. Beyond their numerical presence, women are integral to defining the quality of life within their families and communities, thereby positioning themselves at the heart of sustainable development initiatives. Their contributions extend across a vast array of responsibilities within the household, where they often serve multiple roles simultaneously. Women are not only wives but also act

as controllers and managers of family income, administrators, leaders, and, crucially, mothers.

In many regions, women are key food producers and agricultural entrepreneurs, which places them at the forefront of ensuring nutritional security for their households and communities. Their involvement in agriculture is not merely a traditional role; it is a vital component of maintaining food supply chains, especially during periods of economic instability or hardship. For instance, in rural communities, women often engage in farming activities that ensure the availability of food, while also participating in local markets that support the family's economic resilience.

Moreover, women have emerged as crucial players in driving the innovative social, environmental, and financial transformations necessary for achieving sustainable development. They have been instrumental in advocating for sustainable practices, promoting environmental stewardship, and fostering community engagement. Despite these significant contributions, women frequently bear the brunt of responsibility for meeting their family's needs while simultaneously facing systemic barriers that limit their access to essential resources. These barriers may include a lack of assets, insufficient training, and restricted freedom of action, which collectively hinder their ability to fully fill their multifaceted roles effectively.

The concept of "livelihood" is often understood as a means of subsistence, encompassing the various occupations and employment opportunities individuals pursue. Within this framework, the term "livelihood systems" encompasses the complex interplay of factors that influence individuals' strengths and vulnerabilities in their respective lifestyles. These factors can include access to financial resources, educational opportunities, and social networks. Furthermore, elements such as bureaucratic inefficiencies, weak policy frameworks, and unstable institutions significantly affect the livelihoods of women and their families.

In contemporary discourse, livelihood approaches and studies have adopted a broad and comprehensive notion of livelihoods, emphasizing the need for sustainability. The term "Sustainable Livelihood Approaches" refers to situations where individuals' livelihoods are sustainable, meaning they align with their capacity to maintain or enhance their assets over time. This approach recognizes the interconnectedness of economic, social, and environmental factors, advocating for policies that empower women and enhance their access to resources. By fostering an environment that supports women's contributions and addresses the barriers they face, societies can work towards a more equitable and sustainable future for all.

Livelihood approaches offer a comprehensive framework for understanding the intricate dynamics of aquatic resources, which encompass a wide variety of elements such as fish, shrimp, snails, frogs, crabs, aquatic plants, aquatic insects, rice fields, and other critical habitats. These resources play multifaceted roles in the livelihoods of rural communities, serving not only as sources of food and income but also as integral components of cultural identity and social cohesion. By employing livelihood

approaches, policymakers and researchers can gather vital information that ensures poverty alleviation programs are designed with a nuanced understanding of the complex interrelationships between natural resources and various assets, including human, social, and financial capital. This holistic perspective is essential for creating strategies that achieve a more equitable balance among diverse livelihood sources, thus avoiding the pitfalls of favouring one resource or developmental initiative over others. Furthermore, livelihood strategies can provide invaluable insights into the perspectives of users who are heavily dependent on these aquatic resources, highlighting their vulnerabilities and the pressing need for sustainable management practices. Empowerment, in this context, is a critical process that enables marginalized individuals and communities to access essential opportunities, whether directly or through the support of established organizations or skilled groups. It is important to note that empowerment is not a zero-sum game; it necessitates equal opportunities for all genders. Both men and women must be equally empowered to foster resilience and adaptability in the face of environmental and economic challenges. Ultimately, empowerment is achieved through the enhancement of living conditions, the establishment of equitable standards, the promotion of inclusive events, and the cultivation of a broader, more optimistic outlook on life. This multifaceted approach is crucial for sustainable development and the long-term well-being of rural communities reliant on aquatic resources (Choudhury, 2009).

Empowerment fundamentally involves equipping marginalized individuals with not only access to essential resources but also with the authority to utilize them effectively. This includes critical information and a deep understanding of systemic subjugation and discrimination. Furthermore, empowerment necessitates a comprehensive transformation of the organizations and structures that sustain inequitable access to resources, thereby fostering a more just and equitable society for all individuals (Batliwala, 1995, quoted in Danjuma et al., 2013). Women's empowerment encompasses the granting of power and authority to women, enabling them to participate fully in societal, economic, and political spheres. This transformative process necessitates a comprehensive alteration of existing subordination frameworks, which often marginalize women's roles. By providing women with control over their intellectual and material assets, they are empowered to make informed decisions that affect their lives and communities. Such empowerment is crucial for diminishing gender inequalities and fostering a more equitable society. Słodowa-Hełpa (2015) further elaborates that development involves the systematic transformation of a particular system into more advanced forms and ideal conditions, achieved through a series of both quantitative and qualitative changes that enhance women's status and agency.

According to Kartick Das (2016), "Empowerment of women through gainful employment is a constituent and instrument of development in any country." It is crucial to ensure that women are economically, socially, and politically empowered, as their lack of empowerment not only hinders overall economic growth and the effective

reduction of poverty but also leads to numerous adverse consequences. These include poorer health outcomes, such as increased maternal mortality rates, and diminished educational achievements for children, which perpetuate cycles of inequality and limit future opportunities for the next generation.

Extensive research indicates that the empowerment and encouragement of women lead to significant societal advancement. When women are given the tools and opportunities to thrive, their children tend to experience improved health outcomes, as access to nutrition and healthcare becomes more prioritized. Additionally, educational attainment among children rises, as empowered mothers are more likely to value and invest in their children's schooling. Furthermore, in agricultural contexts, women's involvement can enhance productivity and increase yields, contributing to higher household incomes. This study specifically examines the experiences and contributions of fisherwomen in Kendrapara district, Odisha, highlighting their vital role in fostering community resilience and development.

Pisciculture, commonly referred to as fish farming, is the practice of cultivating fish in controlled environments such as ponds or artificially constructed fish tanks for commercial purposes. This method not only aims to enhance fish production but also requires meticulous management and care to achieve optimum yields. The significance of pisciculture can be illustrated by the remarkable annual production levels, which can reach between 8 to 10 tons per acre. This impressive output was a driving force behind the fish farming boom in India during the 1970s and 1980s, a period characterized by rapid growth and expansion within the aquaculture sector.

The 1980s marked a pivotal era in the modernization of fish farming practices in India. During this time, the industry began to adopt innovative techniques and technologies that improved efficiency and sustainability. These advancements included better breeding practices, enhanced feed formulations, and improved water management systems. However, the success of fish farming is often contingent upon the financial capacity of the farmers and the resources available in their respective regions.

In India, pisciculture is not merely an economic activity; it is a significant sector that provides livelihoods to approximately 14.5 million people, making it a cornerstone of rural employment. Furthermore, India stands out as a global leader in fish production and aquaculture, contributing substantially to the country's economy and food security. As such, the continued development and modernization of pisciculture practices are essential for meeting the growing demand for fish and ensuring sustainable practices in this vital industry (Dutta et al., 2023).

Agriculture encompasses a range of interventions aimed at enhancing the productivity of livestock, which includes systematic practices such as regular stocking, optimized feeding regimens, and protective measures against predators. These practices are essential not only for maximizing output but also for ensuring the health and welfare of the animals involved. Additionally, agriculture is characterized by the ownership of

livestock, which can be held by individuals or collective groups, thereby shaping the economic landscape of rural communities.

In the realm of aquaculture, aquatic animals that are cultivated and harvested by individuals or corporate entities represent a significant contribution to the global food supply. This sector is distinct from fisheries, which involve the exploitation of aquatic organisms that are regarded as common property resources. Such resources can be accessed by the public, often requiring appropriate licenses to ensure sustainable practices. Aquaculture production specifically refers to the items harvested from aquaculture activities, which may be intended for human consumption or ornamental purposes, such as decorative fish for aquariums.

Moreover, the term pisciculture is primarily concerned with the production of fish, while aquaculture encompasses a broader scope that includes the cultivation of various aquatic species, such as prawns and oysters. This distinction is crucial, as it highlights the diverse methodologies employed in aquatic farming, contrasting with fish farming that focuses exclusively on the rearing of fish species.

The literature review conducted for this project underscores the significant role that aquaculture plays in empowering rural women, providing them with avenues for both social and financial emancipation. In regions like Kendrapara, which are characterized by heavy rainfall and vulnerability to natural disasters, fish farming emerges as a vital strategy for fostering resilience, generating income, and restoring dignity to marginalized communities. This potential is further enhanced by supportive initiatives, such as government-sponsored programs, self-help groups (SHGs), and specialized training courses designed to equip women with essential skills. However, to fully realize the benefits of aquaculture for women, more extensive research and targeted interventions are necessary to address critical issues such as pond ownership, access to technical knowledge, and market opportunities for women fish cultivators. Utilizing the findings from the research conducted, this study specifically aims to explore the dynamics within rural and economically disadvantaged areas, examining how pisciculture has not only provided sustainable and supplementary sources of income but also enhanced the overall socioeconomic status of women involved in this sector. By analyzing these factors, we can better understand the transformative impact of aquaculture on women's lives and the broader community, ultimately contributing to the discourse on gender equality and economic development in rural settings.

## **2. Methodology:**

The research presented herein is grounded in comprehensive information gathered through direct engagement with various stakeholders, which is essential for ensuring the validity and relevance of the findings. Specifically, twenty distinct groups from different blocks within the Kendrapara area actively participated in this research initiative, contributing valuable insights through focused group discussions. These discussions were meticulously designed to elicit in-depth responses and foster a

collaborative environment where participants could share their experiences and perspectives.

To ensure that the case studies selected were representative and relevant, purposive sampling techniques were employed. This method allowed researchers to identify and select case studies that would provide robust evidence supporting the research objectives. In addition to gathering qualitative data through discussions, a variety of multimedia tools were utilized to enhance the research process. For instance, photography and video recordings were employed to document key events and activities, thereby enriching the data set and providing visual context to the findings. Furthermore, telephone interviews were conducted to reach a broader audience and capture diverse viewpoints.

Secondary data was also integral to this research, sourced from reputable organizations such as the District Fishery Office, the Odisha Livelihoods Mission, and officials from Mission Shakti in the Kendrapara district. These sources, along with various publications, provided a solid foundation of background information and statistical data. The primary data collection involved focused group discussions with the twenty participating groups, each located in different blocks of Kendrapara, which is situated approximately 90 kilometers from Bhubaneswar, the capital city of Odisha. This geographical context is significant, as it highlights the unique socio-economic dynamics of the Kendrapara region that may influence the research outcomes.

### **3. Discussion and Analysis:**

In Odisha aquaculture plays a very important role in the socio-economic development of the state. Fishing is not only a source of household income, but it also provides necessary nutrients to the body while helping in employment generation. Odisha is endowed with a vast area of water resources (6.85 lakh Hectares of freshwater resources, 4.18 lakh hectares of brackish water resources and 480 Km. of coastline for fisheries development). The total fish production of the State during 2018-19 was 7.59 lakh MTS. Odisha annually imports nearly 40,000 metric tons of carps from neighbouring Andhra Pradesh to satisfy the local demand. (Govt, of Odisha report, 2019-20)

In the field of fisheries, men and women participate in activities that are separate from one another but frequently complement one another. These activities are heavily influenced by the social, cultural, and economic settings in which they are situated. The dynamics of male-female relationships are dependent upon economic status, power dynamics, and access to productive resources and services, which leads to significant variations.

The fishing industry is predominantly male-dominated. Men primarily occupy roles in offshore and deep-sea fishing, while women engage in onshore activities, including net making and repair, catch processing and selling, and offering services to vessels. The contributions of fisherwomen are sometimes overlooked or entirely unacknowledged. In aquaculture, women frequently handle a wide range of tasks associated with feeding,

collecting, and processing fish and shellfish. They can assume leadership roles in small domestic enterprises, such as aquaculture, which will improve their families' income and health. However, women rarely engage in aquaculture production beyond meeting their domestic requirements since they typically have little control over ponds and aquaculture inputs. Increased aquaculture production increases the employment constraints on women and youth, affecting their productivity and overall well-being.

A notable initiative aimed at fostering sustainable livelihoods and empowerment, entitled "Fish Farming in Gram Panchayat Tanks by Women SHGs," was initiated in September 2018. The aim is to encourage Women SHGs to engage actively in the livelihood generation scheme and improve fish production by securing financial support from banks. Training and extension services are being provided by departmental staff. About 2,654 GP tanks, spanning an area of 2,025.01 hectares, have been allocated to 2,631 WSHGs. This initiative has proven the crucial role in enhancing nutritional outcomes, increasing fish yield in the state, and providing rural women with a steady source of income.

"Baba Jaleswar SHG" is a self-help group that the ladies of Pegarapada village in the Rajkanika block have formed. The initiative "Fish Farming in Gram Panchayat Tanks by Women SHGs" has led to the decision to implement pisciculture in the village pond. After completing their training in fish rearing, they are now achieving an adequate source of income. The members of the WSHG have expressed their satisfaction regarding the newfound ease of access to credit for engaging in income-generating activities, as well as the opportunities available for skill development. At this stage, they possess the capacity to make contributions to household expenditures. They get involved in the decision-making processes within the family unit.

Likewise, 38-year-old Anjali Sethi, the Secretary of the SHG, said they started fish farming with technical and financial assistance following village pond cleanup from the State Fisheries Department. The members take ownership of tasks like feeding the fish every day, monitoring growth, managing release of fingerlings into the pond, selling the fish, etc. The action they started one year ago brought in Rs. 2 Lakh. They split the profit and paid back the loan with interest to the bank. Women who had spent their time as house makers earlier are now actively involved in fishery activities, which provide them both financial assistance and a source of protein.

More and more villages within the district are scripting additional success tales. Pisciculture was also beneficial to Laxmipriya Mallick, Secretary of "Mahaveer Women's SHG" at Entalapur village in Garadapur block too. The Fishery Department provided technical assistance and the Gram Panchayat Level Federation (GPLF) comprising SHGs gave financial support. From selling fish, they last year done Rs. 4.5 lakh. They not only add to family money but also feel empowered, which was obviously evident when they were talking about it. Likewise, there has been rise in community level

involvement. They said that their SHGs freely supplied fabric masks to village elders during the COVID pandemic. This indicates their social awareness for those in their vicinity or community. Throughout the district, the scheme has benefited up to 452 Self-Help Groups (SHGs) with around 5,000 women as members.

### **3.1 Changes in Social Life:**

The members of Women Self-Help Groups (SHGs) have highlighted the vital role that engaging in activities aimed at ensuring their families' nutritional security can play in enhancing household income. By providing essential nutrients such as high-quality protein, vitamins, and minerals at affordable prices, these initiatives not only contribute to better health outcomes but also empower families economically. For instance, a member of the "Maha Laxmi SHG" in the Rajakanika block of Kendrapada District shared her elation upon successfully completing the construction of her house last year, a significant milestone that was made possible through the profits generated from her group's activities. This achievement underscores the transformative potential of SHGs in fostering economic independence among women.

Furthermore, the impact of SHGs extends beyond individual success stories. Three additional groups, namely "BudhiJagulai SHG," "Maa Kharakhai SHG," and "Maa Kali SHG," have reported utilizing the funds generated for various essential needs. These include expenditures on food, healthcare, and educational requirements, which are crucial for the overall well-being of their families. The financial stability afforded by the SHGs enables these women to invest in their children's education and health, thereby breaking the cycle of poverty and improving their quality of life. This collective effort not only promotes nutritional security but also fosters a sense of community and solidarity among members, reinforcing the importance of collaboration in achieving sustainable development goals. Overall, the activities undertaken by Women SHGs are instrumental in driving economic growth and enhancing the social fabric of their communities.

### **3.2 Opportunity to access resources:**

The initiative plays a crucial role in advancing gender equality by facilitating access to loans from a diverse array of sources, including both institutional and non-institutional lenders. This accessibility is vital as it allocates essential economic and financial resources to women, who have historically faced barriers in these areas. Notably, only a limited number of members of Women Self-Help Groups (WSHGs) hold land ownership in their names, which restricts their ability to qualify for subsidies at elevated rates and reduced interest rates that are often available to landowners. Furthermore, these women benefit from opportunities for capacity enhancement through various skill development programs, which are designed to empower them economically and socially, thereby fostering a more equitable society.

### 3.3 Changes in decision making and community participation:

By contributing substantially to the family income, women significantly influence various household economic decisions that encompass a wide range of expenditures. These decisions include essential areas such as food and healthcare, as well as investments in household assets like refrigerators and motorcycles. Additionally, their financial contributions enable families to allocate resources for social functions and educational opportunities for their children, which are vital for long-term socio-economic development. Some women also reported actively supporting the small businesses of their unemployed spouses, thereby fostering a collaborative economic environment within the family unit.

Moreover, participation in various social functions within their villages and neighbouring communities has further enhanced their social standing. By contributing to village-level social events, such as Ganesh Pooja and Astam Prahari, and engaging in discussions with government officials at the Gram Panchayat (GP) and Block levels, these women have improved their community status. This newfound visibility and involvement have empowered them to assert their rights and seek opportunities, leading to active participation in local governance structures such as *Palli Sabha*, Gram Panchayat, and Panchayat Samiti.

Notably, the mobility of women has significantly increased following their involvement in Self-Help Groups (SHGs). They have begun to visit banks and government offices independently and engage in business activities, marking a transformative shift in their roles. Furthermore, the sharing of household responsibilities has become more equitable, reflecting the positive impact of women's participation in the SHG movement on domestic dynamics.

### 4. Conclusion:

The formation of Self-Help Groups is a significant mechanism that empowers rural women to sustain their livelihoods. Despite the growing popularity and engagement of Self-Help Groups in the fishing sector, they're facing problems such as financial literacy shortcomings, infrastructural inadequacies, and insufficient ongoing support. Proposals like capacity-building training, accessible microfinance policies, and strengthened institutional links have been put forth to mitigate these deficiencies and guarantee long-term sustainability. Pisciculture in Odisha is no longer just a job; it is a road to women's emancipation. Pisciculture, which is supported by government funding and community activities, suggests that empowering women is more than just a social goal. It is also an economic plan for long-term development. Women are improving their lives and communities with creative ways such as cage culture and backyard ponds. With continuous support, Odisha's fisheries sector can serve as an example for gender-inclusive rural development. Women with less education can effectively manage fish farms using digital tools and smartphone apps for monitoring water quality, tracking fish growth, and managing diseases. A novel approach in India,

the "E-Matsya Mitra" software assists female fish farmers in accessing advisories and markets.

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