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# Household Livelihood Strategies Following the Decline of Shrimp Pond Productivity in Bumi Dipasena, Tulang Bawang, Indonesia

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**ABSTRACT**

Bumi Dipasena in Tulang Bawang Regency, Lampung Province, was once the largest shrimp farming area in Southeast Asia and played a major role in Indonesia's shrimp exports. Since the early 2000s, shrimp pond productivity has declined due to institutional conflicts, infrastructure degradation, limited access to capital, and unstable production systems, resulting in reduced household income and economic pressure on local communities. This study aims to identify and analyze household livelihood strategies following the decline of shrimp pond productivity in Bumi Dipasena. The research employs a qualitative descriptive approach based on secondary data, utilizing official statistics, government reports, scientific publications, and credible media sources. Data were analyzed through descriptive qualitative analysis, including data reduction, thematic categorization, and identification of livelihood strategy patterns. The findings show that households respond to the decline by diversifying income into informal sectors, small-scale trade, labor migration, and increased reliance on social networks. These livelihood strategies reflect household-level economic responses to prolonged structural changes after the collapse of shrimp farming as the primary livelihood source. This study contributes to socio-economic and development studies by providing empirical insights into household livelihood reorganization in post-aquaculture decline contexts and offers policy-relevant input for sustainable livelihood support in coastal areas.

## INTRODUCTION

The fisheries sector, particularly shrimp aquaculture, is one of Indonesia's leading export-oriented economic activities and plays an important role in national economic growth. According to official data from the Ministry of Marine Affairs and Fisheries (MMAF), shrimp production has consistently contributed to Indonesia's export earnings and remains a priority commodity within national aquaculture development programs (Kementerian Kelautan dan Perikanan (KKP), 2023). However, the macro-level success of shrimp aquaculture does not automatically translate into economic security at the household level. In many coastal regions, strong dependence on a single commodity increases household vulnerability to production shocks, price fluctuations, and institutional instability (Yusuf et al., 2019).

This structural vulnerability is particularly evident in coastal communities whose livelihoods rely heavily on shrimp farming as a primary income source. When productivity declines or production systems collapse, households face immediate socio-economic consequences, including income loss, employment insecurity, and limited alternative livelihood options. Such conditions highlight the risks associated with mono-commodity dependence and emphasize the importance of understanding how coastal households reorganize their income sources under prolonged economic pressure (Scoones, 1998).

Lampung Province has historically been one of Indonesia's major shrimp-producing regions. During the peak of shrimp aquaculture development in the 1990s, Lampung contributed a substantial share of national shrimp output, with Bumi Dipasena in Tulang Bawang Regency functioning as a central production area. Bumi Dipasena is a coastal aquaculture settlement located in Rawajitu Timur District, Tulang Bawang Regency, Lampung Province, Indonesia. It refers to a geographical area rather than a corporate entity and was initially developed through a nucleus–plasma partnership system involving private companies and local shrimp farmers. The area was designed as an integrated shrimp farming complex covering approximately 16,250 hectares with more than 17,000 pond units, making it one of the largest shrimp aquaculture zones in Southeast Asia (Kementerian Kelautan dan Perikanan (KKP), 2023).

Since the early 2000s, shrimp pond productivity in Bumi Dipasena has declined significantly due to a combination of institutional conflicts, infrastructure degradation, limited access to capital, and unstable production systems. This decline has generated a series of socio-economic problems at the local level, including reduced household income, increased livelihood uncertainty, weakening of production-related institutions, and growing dependence on non-aquaculture activities. As shrimp farming became less reliable as a primary livelihood source, households were compelled to seek alternative income strategies to maintain basic economic stability (Kumalasari et al., 2025).

At the household level, livelihood strategies represent the combination of economic activities, income sources, and social arrangements adopted to sustain daily living under changing and uncertain conditions (Budi et al., 2020). Previous studies on coastal livelihoods indicate that households facing declining primary-sector productivity often respond through income diversification, engagement in informal economic activities, small-scale trade, wage labor, and reliance on social networks (Chambers & Conway, 1992). These strategies reflect practical household responses to structural economic change rather than formal policy-driven adaptation processes.

Although a number of studies have examined Bumi Dipasena from the perspectives of agrarian conflict, production decline, and policy revitalization, limited attention has been given to mapping household-level livelihood strategies following prolonged shrimp aquaculture decline. Existing research tends to emphasize institutional dynamics and macro-level interventions, while empirical descriptions of how households reorganize income sources over time remain underdeveloped, particularly using secondary data that capture long-term socio-economic change (Prasetyo & Sari, 2022).

This study aims to identify and analyze household livelihood strategies following the decline of shrimp pond productivity in Bumi Dipasena, Tulang Bawang. The novelty of this research lies in its focus on household-level livelihood reorganization in a post-aquaculture context, using secondary data to describe patterns of income diversification and economic adjustment over time. By linking national aquaculture dynamics with household vulnerability and livelihood responses, this study contributes to socio-economic and development studies on coastal communities experiencing structural transformation (Oktavia & Isyanawulan, 2024).

## RESEARCH METHODOLOGY

This study employs a descriptive qualitative approach with a secondary data-based research design. This approach was selected to systematically describe and interpret household livelihood strategies following the decline of shrimp pond productivity in Bumi Dipasena, without generating primary field data. A qualitative descriptive design is considered appropriate because the research aims to capture patterns, processes, and socio-economic responses at the household level rather than to test hypotheses or measure causal relationships.

The unit of analysis in this study is household livelihood strategies adopted by coastal communities in Bumi Dipasena after the decline of shrimp aquaculture productivity. Bumi Dipasena, located in Rawajitu Timur District, Tulang Bawang Regency, Lampung Province, is used as a case context to examine the

phenomenon of post-aquaculture livelihood reorganization. The specification of location serves to delimit the socio-economic setting of the analysis rather than to indicate field-based data collection.

The study relies exclusively on secondary data sources, including official statistics from the Central Statistics Agency (BPS), reports from the Ministry of Marine Affairs and Fisheries (MMAF), peer-reviewed journal articles, academic theses, and policy documents relevant to shrimp aquaculture and coastal livelihoods. To ensure data credibility, secondary sources were selected based on three criteria: (1) institutional authority, (2) methodological transparency, and (3) relevance to household-level socio-economic conditions. The data used span the period 2000–2023, allowing for the identification of long-term livelihood responses following the decline of shrimp farming productivity.

Data analysis followed the Miles and Huberman qualitative analysis framework, consisting of data reduction, data display, and conclusion drawing. During data reduction, information related to shrimp production decline, income sources, livelihood diversification, and social networks was systematically filtered and categorized. Data display was conducted through thematic narrative descriptions to illustrate patterns of household livelihood strategies. Conclusions were drawn by identifying recurring livelihood strategy patterns and linking them to prolonged economic shocks in the post-aquaculture context.

This study does not employ sampling or primary data collection, as it is based on secondary sources. Limited informal communication with local residents was used solely for contextual clarification and cross-checking of secondary information, not as primary research data. The main limitation of this study lies in its reliance on secondary data, which restricts the depth of individual household perspectives and prevents direct measurement of income changes. However, this limitation is addressed by triangulating multiple credible data sources to ensure analytical robustness and consistency.

## RESULTS AND DISCUSSION

### Trajectory of Shrimp Pond Productivity Decline

Shrimp pond productivity in Bumi Dipasena has experienced a prolonged and continuous decline following its peak period in the 1990s. During this period, annual shrimp production was estimated to reach approximately 60,000–70,000 tons, supported by extensive pond infrastructure, centralized management, and a nucleus–plasma production system that integrated local farmers into large-scale export-oriented aquaculture. This phase represented the period of highest economic contribution of shrimp farming to the local economy and household livelihoods.

Beginning in the early 2000s, shrimp pond productivity entered a phase of significant decline. Production levels fell sharply to an estimated 30,000–35,000 tons per year, marking the first major disruption to the established production system. This reduction was followed by a continued downward trajectory over subsequent decades, indicating that the decline was not a short-term fluctuation but a long-term structural change. Comparison of Shrimp Production in Bumi Dipasena Before and After the Decline can be seen in Table 1.

Table 1. Comparison of Shrimp Production in Bumi Dipasena Before and After the Decline

| Period | Estimated Production (tons/year) | Remarks |
|---|---|---|
| 1990s (Peak Period) | 60,000 – 70,000 | High production level in Southeast Asia |
| Early 2000s | 30,000 – 35,000 | Decline after economic and structural crisis |
| 2010s | 10,000 – 15,000 | Community-based operations under cooperative system |
| 2020s | 5,000 – 8,000 | Sustained small-scale farming efforts |

Source: BPS-Statistics Lampung Province, 2023

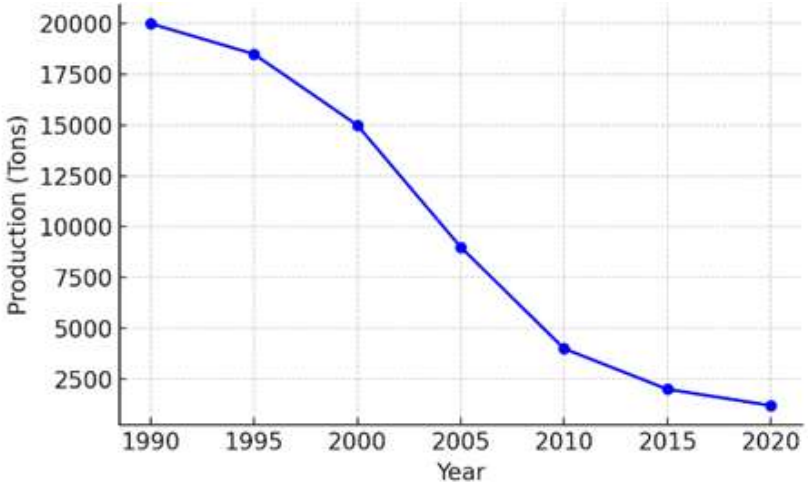


Figure 1. Trend of Shrimp Production in Bumi Dipasena, 1990–2023
Source: BPS-Statistics Lampung Province, 2023

As presented in Table 1, the decline in shrimp pond productivity occurred progressively across four distinct phases. The most pronounced reduction took place between the 1990s and early 2000s, during which estimated production levels decreased by more than 40%. In the 2010s, production levels further declined to approximately 10,000–15,000 tons per year, reflecting the transition from centralized corporate management to smaller-scale, community-based operations. By the 2020s, shrimp farming activities were sustained primarily through small-scale and household-managed ponds, with estimated annual production ranging between 5,000 and 8,000 tons.

Alongside the decline in production, observable changes occurred in the composition of household livelihoods. Secondary data from (Badan Pusat Statistik (BPS) Kabupaten Tulang Bawang, 2021) indicate that approximately 60% of households no longer relied primarily on shrimp farming as their main source of income. Instead, households increasingly engaged in alternative livelihood activities, including wage labor, capture fisheries, small-scale trading, and labor migration. These changes reflect a diversification of income sources within households following the prolonged decline of shrimp aquaculture productivity.

Figure 1 further illustrates the long-term downward trend in shrimp production from 1990 to 2023. The figure shows no significant recovery phase after the initial collapse in the early 2000s, suggesting that shrimp aquaculture in Bumi Dipasena has not returned to its previous production capacity. Instead, production levels have remained persistently low, reinforcing the characterization of the decline as structural and long-lasting rather than temporary.

**Turning Point and Structural Shift of the Local Economy**

Secondary data indicate that the early 2000s represented a critical turning point in the local economic structure of Bumi Dipasena. Prior to this period, shrimp aquaculture functioned as the primary economic base, providing direct employment opportunities and serving as the main source of household income for the majority of residents. During the turning point period, shrimp farming gradually lost its role as the dominant livelihood activity within the community.

This turning point was marked by a significant reduction in the extent of productive pond areas and a sustained decline in shrimp output. As shrimp production decreased, the economic linkages associated with aquaculture such as input supply, pond maintenance, and harvesting-related labor also weakened. Consequently, the capacity of shrimp farming to absorb local labor diminished, affecting both pond-owning households and wage-dependent workers.

Following this transition, shrimp aquaculture in Bumi Dipasena increasingly shifted from a centralized, large-scale commercial system toward smaller-scale and household-managed operations. These remaining activities were characterized by limited production capacity, reduced capital investment, and irregular production cycles. Shrimp farming, which once functioned as a stable and primary income source, became a supplementary or secondary activity for many households.

The structural shift in the local economy was further reflected in changing employment patterns. With fewer employment opportunities available within the shrimp farming system, households were compelled to seek alternative sources of income beyond aquaculture. This shift reduced the economic dominance of shrimp farming and contributed to a more fragmented local economic structure, in which household livelihoods became increasingly diversified and less dependent on a single commodity-based activity.

**Changes in Household Income Composition**

The decline in shrimp pond productivity was accompanied by substantial changes in household income composition in Bumi Dipasena. Secondary data from (Badan Pusat Statistik (BPS) Kabupaten Tulang Bawang, 2021) indicate that approximately 60% of households no longer relied primarily on shrimp farming as their main source of income. This finding reflects a significant shift in the economic structure of household livelihoods following the prolonged contraction of shrimp aquaculture activities.

Prior to the decline, household income was largely concentrated in shrimp farming-related activities, including pond management, harvesting, and associated wage labor. As shrimp production decreased, income derived from aquaculture became increasingly unstable and insufficient to meet household needs. Consequently, households expanded their engagement in alternative income-generating activities.

As illustrated in Figure 2, households increasingly diversified their income sources by participating in wage labor, capture fisheries, small-scale trading, and migration-based employment. Wage labor included both agricultural and non-agricultural work, while capture fisheries provided supplementary income for households with access to coastal resources. Small-scale trading activities, such as food vending and local market sales, became more prominent as households sought flexible income opportunities. In addition, labor migration emerged as an important strategy for households aiming to stabilize income through remittances.

Overall, the changes in household income composition demonstrate a transition from reliance on a single commodity-based livelihood toward a more diversified income structure. This shift indicates a restructuring of household economic activities in response to prolonged shrimp aquaculture decline, as reflected in the increasing role of non-aquaculture income sources.

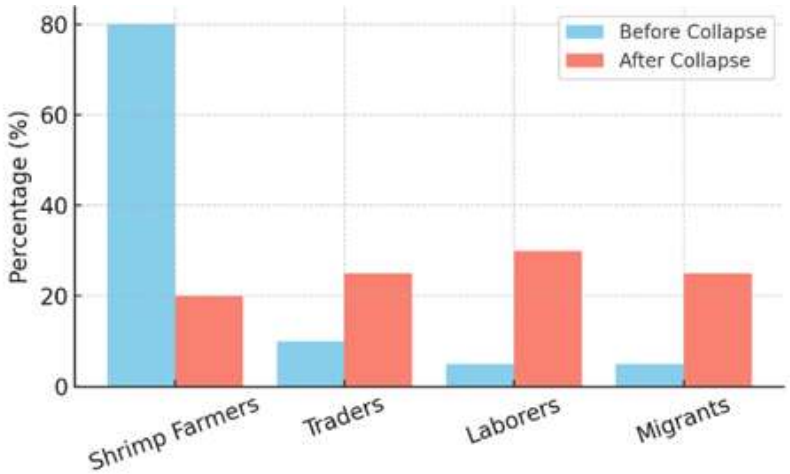


Figure 2. Changes in Household Livelihood Sources Before and After Productivity Decline
Source: Badan Pusat Statistik (BPS) Kabupaten Tulang Bawang, 2021

Table 2. Categories of Household Survival Strategies in Bumi Dipasena

| Type of Strategy | Main Characteristics | Examples of Activities |
|---|---|---|
| Active Strategy | Efforts to increase income through job diversification and entrepreneurship | Grocery stores, fish trading, seafood processing |
| Passive Strategy | Adjustments in consumption and reduction of household expenses | Reducing food, education, and health costs |
| Network Strategy | Utilizing social networks, cooperation, and collective initiatives | Farmer groups, cooperatives, and mutual assistance |

Source: Triana Oktavia & Isyanawulan, 2024

**Patterns of Household Livelihood Strategies**

Based on the synthesis of secondary data, household livelihood strategies in Bumi Dipasena can be grouped into three dominant patterns: active strategies, passive strategies, and network-based strategies. These patterns reflect the range of responses adopted by households to cope with prolonged economic pressure following the decline in shrimp pond productivity.

Active strategies are characterized by households' efforts to actively seek alternative income sources outside shrimp aquaculture. These strategies include engagement in informal trade, small-scale entrepreneurship, and service-based activities. Examples observed in secondary sources include the establishment of grocery stores, fish trading in local markets, and household-level seafood processing. Active strategies are generally pursued by households with access to minimal capital, labor availability, or market networks, allowing them to partially compensate for income losses from shrimp farming.

Passive strategies involve internal household adjustments aimed at maintaining subsistence under declining income conditions. These strategies are reflected in reduced household expenditures, prioritization of essential needs, and postponement of non-essential spending. Reductions in food consumption, education-related expenses, and health-related costs were commonly reported as part of these adjustments. Passive strategies do not generate additional income but function as short-term mechanisms to extend household economic endurance.

Network-based strategies emphasize the role of social relations and collective action in sustaining livelihoods. Households adopting this strategy rely on social networks, kinship ties, farmer groups, and cooperatives to access resources, share risks, and support economic activities. The formation of shrimp farmer groups and cooperatives represents an effort to collectively manage limited resources and maintain production activities at a smaller scale. Mutual assistance practices also play a role in helping households cope with economic uncertainty.

Across different household groups, these strategies were often combined rather than adopted in isolation. Some households simultaneously engaged in income diversification while reducing consumption and relying on social networks. This combination of strategies reflects varied household responses to prolonged economic pressure and illustrates the heterogeneity of livelihood adjustments within the Bumi Dipasena community.

**Household-Level Socio-Economic Outcomes**

Despite the prolonged decline in shrimp aquaculture, secondary data from (BPS-Statistics Lampung Province, 2023) indicate a gradual reduction in coastal poverty rates in Tulang Bawang Regency of approximately 1.4 percent over the last decade. This reduction did not coincide with a recovery in shrimp pond productivity, which remained low throughout the same period, but occurred alongside noticeable changes in household livelihood structures. The data show an increasing proportion of households engaging in non-aquaculture economic activities, including wage labor, small-scale trade, capture fisheries, and migration-based income sources.

These shifts reflect measurable improvements in household income stability for certain groups, particularly those able to diversify income sources beyond shrimp farming. Households with multiple income streams demonstrated greater economic continuity compared to those that remained dependent on aquaculture alone. The decline in poverty rates therefore corresponds with changes in livelihood composition rather than improvements in the primary production sector.

Overall, the data indicate that household socio-economic conditions in Bumi Dipasena evolved through adaptive livelihood restructuring. The observed improvement in welfare indicators reflects incremental adjustments in income strategies at the household level, rather than a restoration of shrimp farming productivity or large-scale economic recovery. This pattern highlights a transformation in how households sustain their livelihoods under prolonged structural decline.

## CONCLUSION

This study concludes that the decline in shrimp pond productivity in Bumi Dipasena has fundamentally transformed household livelihood structures rather than merely reducing aquaculture output. Consistent with the research objective, the findings demonstrate that coastal households respond to prolonged shrimp farming decline through diversified livelihood strategies, including income diversification into non-aquaculture sectors, consumption adjustment, and the utilization of social networks and collective arrangements. These strategies reflect household-level adaptive responses to sustained economic shocks and structural change, rather than a recovery of shrimp aquaculture as the primary economic base. The case of Bumi Dipasena highlights the vulnerability of coastal communities dependent on a single commodity and underscores the importance of livelihood diversification as a key mechanism for sustaining household welfare under conditions of long-term sectoral decline. Therefore, studying Bumi Dipasena is crucial for understanding how coastal households reorganize livelihoods in post-aquaculture contexts and for informing policies aimed at strengthening household economic resilience and sustainable coastal development.

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