

Where the Sea Meets Opportunity: A Diversity, Equity, and Inclusion Study of Women Workers in the Fish Processing Industry of Pakistan

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Abstract

The fish processing industry in Pakistan is widely perceived as male-dominated, as reflected in prevailing policy narratives and public discourse. Fishermen, vessel owners, and exporters are accorded central importance. Yet this narrative conceals a significant reality: women constitute a substantial portion of the post-harvest workforce. From peeling shrimp and fish to sorting, cleaning, grading, and packaging, they do it all. Women form the operational backbone of the fish processing industry. Yet their role is marginalized in many ways. This case study examines the existing work experiences of women in the Pakistani fish industry through the lens of Diversity, Equity, and Inclusion (DEI). This case study employed a qualitative analysis that drew on 20 semi-structured interviews and close field observations of how these dynamic women function at a major fisheries harbour. The results reveal that these women are the pillars of the fish processing industry, sustaining both productivity and continuity, yet remaining unseen in sectoral governance. Moreover, this study aims to highlight how the fishing industry is sustained by these resilient women rather than merely serving as a support function for their male counterparts. Also, this study contributes to debates in maritime economies on DEI and the need for gender-responsive labor policies and inclusive fisheries development strategies in Pakistan.

Keywords: Women workers; Blue economy; Grounded labour; DEI; Fish processing industry

JEL Classification: M54, Q01, Q22

INTRODUCTION

The Pakistani fisheries sector plays a vital role in supporting livelihoods, food supply, and export activity by connecting coastal economies to global markets. Fish processing serves as a pivotal bridge between the catch and commerce, where seafood is cleaned, graded, peeled, and packed for distribution. However, according to sector narratives and policy discussions,

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the emphasis remains on vessels and fishermen, making the processing work less visible than it should be. The women's post-harvest labor continues to be under-recognized in both governance and statistics globally. (FAO. OECD, 2025)

Women are deeply invested in the daily operations of fish processing units across Pakistan's fisheries industry. This includes peeling, sorting, packaging, and grading shrimp. Their work demonstrates swiftness, expertise, agility, synchronization, guaranteed quality, and continuity across supply chains. For most women, this extensive labor reflects years of acquired skill and knowledge in processing work, rather than representing brief or incidental engagement.

Despite all the laborious detail, women's contributions remain haphazardly vouched for. They still have to face informal employment arrangements, limited bargaining power, shaped workplace experiences, and gendered workspaces. Their immense and substantial contributions to the fisheries chains often seem to coexist, yet a weaker policy of including women in the roles they best cater to and acknowledging their hard work remains. (Bennett et al., 2025).

Pakistan's fisheries sector is embedded in aquaculture and blue economy development strategies, where there is a dire need to renew the importance of these labor dynamics. If governance and policies fail to give adequate attention to equity in the industry, these existing gender hierarchies will continue to undermine quality and modernization efforts in the fish processing sector. (FAO 2024). This study focuses on the actual work experiences of women in Pakistan's fish processing industry, examining how their labor reinforces enterprises' processing activities.

Background of the Study

Fish processing is considered one of the most labor-intensive segments of modern fisheries value chains, positioned between production and timely market circulation.

Alarmingly, only fish capture continues to dominate economic and policy attention, while the post-harvest work that transforms the catch into consumable and exportable commodities remains largely invisible. Many recent studies centering gender-focused fisheries highlight that women are concentrated within these post-harvest segments, where their labor significantly adds value and ensures supply continuity despite limited institutional visibility (Koralegama, 2022; Zulham et al., n.d.). Moreover, studies on aquatic food systems reveal that gendered divisions of labor in processing environments are shaped by structural norms rather than skill differentials.

The fisheries harbors in Pakistan exhibit dynamic labor environments in which processing work unfolds in close proximity to export cycles and landing schedules. Women's participation is visible in daily operations within these settings, encompassing grading and packaging units with speed, coordination, and task familiarity throughout the process. Despite this operational finesse, women's labor remains conspicuously absent from the sector's modernization and documentation planning. Recent studies on the governance of fisheries highlight that post-harvest labor, especially that of women, remains overlooked in the blue economy and reform frameworks, even though it contributes to employment generation and the resilience of the

value chain. (Oloko et al., 2024; O'Meara et al., 2023; Tilley et al., 2021). This case study highlights the day-to-day tension between institutional invisibility and centrality.

Problem Statement

Women's labor in fish processing remains insufficiently recognized in labor documentation, fisheries development discourse, and occupational classifications, despite its operational centrality. They are heavily utilized in post-harvest processing, particularly for shrimp sorting, peeling, packaging, and grading. Yet, this form of work is usually categorized as seasonal, supplementary, or even informal. This misclassification is particularly significant in the Pakistani context, where the fisheries sector contributes substantially to livelihoods, export earnings, and food security along the Sindh and Balochistan coastlines, yet gender-disaggregated data and inclusive labor policies remain largely absent from national fisheries governance frameworks. Recent research on gendered labor in aquatic food systems indicates that such categorization obscures the economic value of women's contributions and limits their access to institutional visibility, wage security, and labor protections (Das, 2023).

Modern analyses highlight that growth-oriented transitions often prioritize production and technological efficiency, overlooking the labor fairness within the value chains centric in feminized workspaces (Issifu et al., 2023). Unless there are policies made to deliberately highlight gender-inclusion, these inequalities will keep on piling up rather than being transformed for the better. This study examines the gap between the indispensability of women's processing work and their continued institutional marginality.

Objectives of the Study

Below are the objectives of this case study:

- 1 Exploring gender divisions of labor and daily work practices in fish processing environments.
- 2 Analyzing how women experience risk, dignity, and employment conditions within these workplaces and processing structures.
- 3 Assessing how women's bargaining power and labor recognition prevail within the fisheries value chains.
- 4 Evaluation of the implications of trending aquaculture initiatives and blue economy for women's work and inclusion.

Research Questions

This case study was guided by the following research questions:

1. How is women's labor organized and structured within the fish processing environments in Pakistan?
2. How are women's risk, bargaining power, and dignity shaped within the ship processing industry in Pakistan?
3. How is women's recognition and opportunities affected by trending aquaculture developments and blue economy dynamics in Pakistan's fisheries value chains?

Significance of the Study

This study contributes to ongoing global discussions on gender equity in aquatic food systems by focusing on women who, through their labor, sustain Pakistan's fish processing industry. Recent research papers show that unbiased governance of fisheries cannot be achieved without identifying the labor and social dynamics rooted in post-harvest value chains (Adam et al., 2024; Neufeld et al., 2023). By positioning women's daily work experiences, this research navigates beyond abstract gender inclusion frameworks and showcases how processing labor, both structurally under-recognized and sustaining fisheries economies. In the global blue economy agenda, sectoral planning has become a persistent concern. (Das, 2023). This study offers insights into how strengthening recognition of women's economic roles, implementing gender-responsive labor policy, and providing support where needed would improve their livelihoods and enhance their daily work routines in the fisheries industry.

LITERATURE REVIEW

The Gender Divide

The value chains in the fisheries sector are, at large, gendered by divisions of labor, in which work is valued based on how a specific task is performed. Men dominate in capture fisheries and offshore activities, while women are disproportionately represented within post-harvest segments such as marketing, preservation, and processing. Research in aquatic food systems highlights that these divisions are not structural but occupational, reflecting how women are positioned within extremely labor-intensive and under-recognized roles. This usually happens because of the wider socio-economic norms that are enforced under the directives of the governance of the fisheries industry (Alexander et al., 2020; Koralegama, 2022).

Recognizing Women's Labor

Post-harvest fisheries work is considered one of the largest sources of employment for women globally, particularly in export-oriented and small-scale seafood industries. Shrimp peeling, fish peeling, sorting, drying, grading, and packaging are skillfully conducted by these women. These processing activities require the skill, familiarity, and swiftness that these women have acquired over many years of hard work, without any formal training or certification. Even the more recent studies emphasize that women's labor in this industry remains under-recognized on all fronts. Both domestically and globally, the labor involved in post-harvest processing sustains the fishing industry at large. (Folindo, 2025). Despite such precision, skill, and perception, the work is largely shadowed as having little or no importance. As a result, they don't enjoy any wage protection, recognition by governing bodies, or access to occupational mobility (Moral et al., 2024).

Workplace Conditions, Labor Insecurity, and Informality

A substantial amount of informality prevails within the fisheries processing industries. These women workers are employed in categories that include seasonal contracts, receiving only a per-piece payment rate without any protection in the fish processing units. Their work involves significant occupational risks, little or no bargaining power, and economic insecurity. (Tang & Kusakabe, 2025). Many studies on women labor in these processing units point out

that women are easily vulnerable and are being framed through collective organization and through unit-in-charge narratives, despite the fact that their work requires a lot of resilience in their respective fish processing units(Lawless, Lau, et al., 2021).

Gender Equity and Transitions in the Blue Economy

The expansion of aquaculture development and blue economy frameworks has fueled new debates around equity and inclusion within fisheries transformation. These expansion agendas place greater emphasis on technological upgradation, sustainability, and productivity. This gives rise to questions whether these reforms are taking into consideration those value-chains that are solely women-centric (Wardhani & Susilowati, 2023). It is imperative to position women's processing work within broader governance and development directives,

Highlighting the Present Study

Taken together, existing research institutes that women occupy structurally central yet institutionally disregarded positions within fisheries value chains. Region-specific qualitative research conducted in the South Asian fish-processing industries provides only a limited account of women's lived work experiences. By grounding its analysis in labor practices, workplace realities, and the intersections of governance, this case study contributes context-specific insights to broader debates on labor recognition, gender equity, and inclusive fisheries development.

Research Gap

Scholars have recognized women's participation in after-harvest fisheries and aquatic food systems. They have also highlighted that most of their work remains either at the macro-level or policy-driven, offering very limited insight into how they experience processing labor within socio-economic contexts(Issifu et al., 2023). Existing studies frequently document that there are gendered divisions in value chains that advocate for inclusion within blue economy frameworks, yet very few are able to provide actual accounts of how workplace hierarchies, informal employment structures, and modernization agendas intersect in daily processing environments (Sierra Castillo et al., n.d.)Context-specific analyses, particularly from South Asian fish processing industries, remain scarce. This creates a gap between the broad recognition of women's economic centrality and a deeper understanding of how their labor is actually valued, organized, and negotiated.

The conceptual framework presented above illustrates the analytical pathway guiding this study. Women's labor, gendered workplace structures, and informal employment conditions constitute the three core inputs that characterize the lived realities of women workers in Pakistan's fish-processing industry. These inputs are examined through a Diversity, Equity, and Inclusion (DEI) analytical framework, which foregrounds questions of recognition, fairness, and structural participation. The framework produces three interconnected policy outputs: gender-responsive labor policy, institutional visibility and recognition, and inclusive fisheries governance. Together, these outputs reflect the study's broader argument that meaningful sectoral development requires moving beyond acknowledging women's participation towards structurally embedding their contributions within fisheries planning and governance.

CONCEPTUAL FRAMEWORK

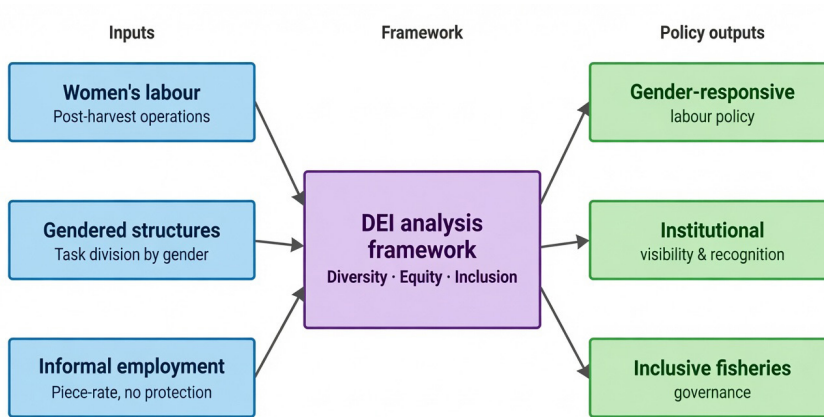


Figure 1: *Conceptual Policy Framework – DEI Integration in Pakistan's Fish Processing Industry*

METHODOLOGY

Research Design

A qualitative case study approach has been used to examine the real-life work experiences of women in Pakistan's fish processing industry within a socio-economic context. This qualitative study provides an in-depth exploration of how women interpret and negotiate their roles within processing environments shaped by gendered task divisions, informality, and developing fisheries authority structures. By grounding analysis in daily workplace sites, this plan allows for rich in-context insights that may not be captured through survey or quantitative-based approaches (Yin, 2018).

Data Collection

Data were generated through 20 (twenty) semi-structured in-depth interviews and non-participant field observations carried out at a major fisheries harbor in Pakistan. Purposive sampling was used to select women in the workforce directly involved in fish processing activities, including sorting, grading, cleaning, shrimp peeling, and packaging. Participants were selected based on their ability to demonstrate variation in work experience, task roles, and age within the processing units. These interviews were conducted to understand and observe how women navigate their daily realities and their views on change in working, governance, and employment conditions. The field observations complemented the data collected via interviews by detailing the rhythmic labor, processing environments, task distribution, and workplace organization.

Data Analysis

A thematic approach was followed, allowing meanings, recurring narratives, and patterns to surface inductively from the data. Interviews and field notes were coded through repeated readings and categorized according to theme development. These highlighted the dynamics

of bargaining, workplace conditions, and recognition of efforts. These were then woven into broader analytical themes.

Due to its flexibility in understanding the lived experiences of these workers while maintaining rigor, this thematic analysis is widely used to carry out such qualitative research based on gender and labor (Braun & Clarke, 2023). By following this approach, the researchers were able to move beyond descriptive accounts by understanding that women workers are valued for their extensive labor and experiences structured within these fish processing systems.

Reliability and Validity

Multiple strategies were used to ensure the validity and reliability of this case study. Evidence from both interviews and field experiences was synthesized to thoroughly examine these workplace practices as narrated by the participants. The procedures and interview structures ensure consistency in coding and support the reliability of the analysis.

Moreover, to further strengthen credibility, the researchers conducted rigorous fieldwork in the settings of these fish processing units to verify that the interview themes were in sync. Moreover, careful taking of notes and documentation pertaining to the workplace assisted in understanding the workplace. Practices such as these are coherent in qualitative research, offering credibility and validity of context over generalized statistics (Lincoln & Guba, 1985; Nowell et al., 2017).

RESULTS AND ANALYSIS

Women as the Operative Body in Fish Processing Units

Our findings from rigorous, thorough interviews and field observations indicate that women are the stalwarts in the operations of these fish processing units. They operate the chain of command in grading stations, sorting, peeling, drying, and packaging units. They dominate the after-harvest operations. The operations site-wide in these units are dominated by women workers, where they display their tasks, coordination, and craft. Moreover, their skill is widely apparent during peak season, where their performance is exceptionally synchronized and well-timed. These participants are well aware of the value their labor adds to the daily operations.

Processing material was structured more around the collective rhythm of the female workers and less around their mechanized efficiency. The delays, if any, in sorting or peeling directly slowed the subsequent activities, indicating that productivity was labor-driven rather than technology-driven. Findings such as these call for broader aquatic food systems research, showing that after-harvest segments—especially processing—heavily support the contributions of the women workforce. (Cohen et al., 2019; Fao. (2024). Cienna commented,

“We have been working in this fish processing industry for a long time now. We’ve not received any formal training on technological advancements. There is little or no time lag, even during the peak seasons. It’s expertise that we’ve gained over the years, and we would like to be recognized for our hard work.”

Even though women’s labor guarantees operational steadiness, their structural prominence

remains limited. Fisheries governance and discourse frameworks continue to privilege capture fisheries as the basis for rendering processing labor institutionally peripheral and economically valuable.

Gendered Labor Organization and Sustainable Productivity

The defining feature of the operational organization turned out to be the gendered structuring of processing work. This included repetitive, labor-intensive, and time-sensitive tasks; in particular, fish and shrimp peeling were overwhelmingly performed by women. The men controlled logistical, supervisory, and equipment-related roles, supporting both horizontal and vertical gender segmentation within the workplace.

Regardless of institutional classifications of processing work as “low-skilled,” participants emphasized the speed, experiential knowledge, and dexterity required to maintain product quality under pressure. Workers stressed that grading accuracy and peeling efficiency were skills developed through lengthy commitment rather than formal training.

This disconnect between institutional recognition and embodied expertise echoes patterns familiar in fishers and gender research, where women’s contributions to the value chains remain fabricated due to slim definitions of skill and labor (S. J. Harper et al., 2026; Kleiber et al., 2015). The findings, hence, indicate that productivity in processing sectors is skill-dependent rather than merely labor-intensive, even though the skill itself remains operationally obscure. Zelemy commented,

“It takes a lot of expertise and precision to perform post-harvest activities, especially during peak season. It has taken a lot of hard work and commitment, and no formal training or certification. Despite the fact that it is the women who run the post-harvest work, our work often gets under-recognized and is often considered as holding little or no importance.”

Women’s Lived Realities, Continuity, and Contribution to the Economy

Women’s continuous participation in processing work was thoroughly tied to livelihood continuity at both sectoral and household levels. Participants repeatedly described their incomes as stabilizing household economies, especially during fluctuations in fishing harvests. Engagement in processing activities provided a steady income, enhancing women’s roles in steering households dependent on income through fisheries, but beyond fishing itself.

At the same time, interviews revealed that the workplace was characterized by informal employment structures, long working hours during peak seasons, limited occupational protection, and piece-rate payments that shaped daily work experiences. Yet these participants often expressed self-respect and took pride in supporting the industry central to coastal economies.

This synchronicity of insecurity and agency reflects larger findings in small-scale fisheries research, where women’s labor contributes meaningfully to economic resilience while remaining rooted in informal governance structures (S. J. Harper et al., 2026). Jelima commented.

“At the end of the day, this work gets us money, and we contribute to the income of our households. Our houses cannot just function with one working member, given the Inflation in

the country. During the peak seasons, we are expected to put in extra hours of work, but still get paid for cleaning per piece of seafood rather than the extra hours of hard labor we put in."

Operational Invisibility within Fisheries Governance

Despite serving as the backbone of processing productivity, women's labor remained marginal in formal-sector recognition. Participants reported having little or no security and very minimal representation in the governance of the fish processing units. Moreover, they conveyed that their work was categorized as very casual and not given any economic or structural importance.

This invisibility of women's representation highlights how governance patterns and structural policies within fisheries place extreme importance on capture production, technological modernization, and export matrices. As a result of this invisibility in operations, this sector fails in its institutional planning by not taking into account the gendered labor that is cementing the steadiness of processing.

These results are also synchronous with the observations in the global fish governance where the contributions of women workers remain shadowed and are given no importance or accolades in both labor statistics and policy (Baiduri et al., 2026; Mangubhai et al., 2026). Mia commented,

"It's about time we women get acknowledged for the efforts that we have been contributing towards the fish processing industry. Our work is far superior and requires much more expertise than capturing fish. Governance reforms are imperative, and we ought to be recognized for our skills. We deserve to be felicitated also."

DEI in Fish Processing

As discussed throughout this study and in the other citations mentioned, post-harvest functions are spearheaded by women alone. They add value to the value chain's functionality and productivity rather than just being minimal support functions. This shows that, after harvest, these fish processing units are actually dependent on women rather than just being a small part of it.

The findings align with debates on Diversity, Equity, and Inclusion (DEI) in both oceanic and maritime economies. These also spark debates about whether, in actuality, this gendered workforce is actually involved in labor structures or not, or whether they are just spoken about figuratively rather than in actuality, adding them to their performance reports. Contributions of gendered labor should be acknowledged throughout the value chains, and the governance should not merely center its lens on production, export, and capture of fish (Bennett et al., 2021; S. Harper et al., 2020).

The reframing of post-harvest processes in the Pakistani context places significant emphasis on the policies that need to be made and amended. Women ought to be recognized as the pioneering anchors in the post-harvest processes. Their labor and efforts deserve due recognition, which is pivotal to their visibility, inclusivity, and development that are aligned with DEI principles. As aquaculture and blue economy initiatives expand globally, scholars argue that the failure of governance policy frameworks would be apparent if equity of labor and

gender-responsive planning are overshadowed by a focus solely on growth-oriented transitions (Cohen et al., 2019; Lawless, Cohen, et al., 2021). Connie commented,

“Since a long time now, we as women have been awaiting reforms in policies around the fisheries sector, but we have been given little or no hope for change in the way this framework is operated. Our role in the fish processing industry must be clearly defined and accorded the importance it truly deserves. Our work requires commitment, expertise, and speed. We provide invaluable time to the fish processing industry daily, but we have failed due to a lack of governance. We hope it changes and our role gets appreciated.”

DISCUSSION

The findings of this study showcase women as the functioning backbone of Pakistan’s fish processing industry. They lead post-harvest productivity, ensuring processing continuity, value chain flow, and daily operations—thereby challenging narratives that privilege capture activities as the primary source of economic value. This study establishes that the movement of fish from harbor to market is underpinned by female-led processing labor, positioning women’s work as central to value creation rather than peripheral to it.

Labor centrality and institutional disconnect are apparent in the findings. Effortless contributions made by the women workforce on a daily basis, including during peak seasons, continue to be undervalued, underrecognized, and marginalized within these fisheries governance systems and the agendas for modernizing the fisheries sector. This invisibility is embedded in policy architectures that prioritize technological upgrading, capture production, and export metrics. Recent governance analyses of the fisheries sector indicate that gender integration in this sector focuses on participation rather than structural inclusion. (de la Torre-Castro et al., 2021; Cohen & Lawless, 2023).

As coastal states become more ambitious in pursuing growth-oriented ocean development, questions of inclusion and labor equity are becoming central. Evolving blue economy research warns that while governance focuses on modernization initiatives, labor dynamics among women across value chain segments are insufficiently addressed (Bennett et al., 2022; Farmery et al., 2021). The findings of this study mirror these concerns, suggesting that investments in labor visibility and gender-responsive policy design will be superseded by export expansion and technological upgradation.

This study contributes to broader Diversity, Equity, and Inclusion (DEI) debates in maritime economies by reframing fish processing as an industry sustained by women rather than simply being supported by them. Recently published works on equity in the blue economy advocate recognizing inclusive development and centralizing focus on value-chain labor rather than merely lauding technological advancements and resource management. (Cisneros-Montemayor et al., 2022).

Formal recognition policies, workplace protections, gender-responsive labor policies, and the integration of after-harvest workers into fisheries planning processes have become critical to inclusive sector development in Pakistani fisheries. Without these measures, sectoral growth will fail to reproduce the exclusions that the DEI framework seeks to address.

CONCLUSION

This study employed a DEI lens to examine the work experiences of women workers in Pakistan's fish processing industry. The results reveal that women sustain process continuity, productivity, and value-chain flow through highly coordinated, labor-intensive practices—including fish sorting, peeling, and packaging—whose critical contribution to sector performance largely goes unrecognized.

Despite their operational centrality, their contributions remain structurally and alarmingly invisible in labor documentation, modernization planning frameworks, and fisheries governance. By reframing the role of the fish processing industry and giving women their due validation rather than merely supporting them, this study challenges the very male-centric narratives that have been contributing to broader debates on DEI in maritime economies.

The study concludes that the Pakistani fisheries sector needs both inclusive and meaningful development, which requires moving beyond gender inclusion towards recognizing women's structural contributions. Without giving due recognition, sectoral growth risks reproducing long-lasting inequities rather than nurturing equitable transformation and modernization of the fisheries sector.

RECOMMENDATIONS

In light of this study's findings, the government is encouraged to implement policies to strengthen gender inclusion in Pakistan's fish processing industry. Women's processing labor should be formally recognized within governance frameworks and in fisheries labor statistics to address their structural invisibility. Secondly, gender-responsive labor and post-harvest workers operating in informal employment arrangements should receive their due protections regarding social security, occupational safety, and wage regulations. Thirdly, these institutional bodies should facilitate women workers by providing them with additional technical training and periodic vocational certifications to recognize their day-to-day efforts on the job and to motivate them to advance in the chain of command within operations. Involving women in governance mechanisms, planning bodies, and cooperative structures would not only strengthen their roles within fish processing units but also contribute to the modernization and advancement of daily post-harvest functions in aquaculture and the blue economy. Finally, gender-responsive labor frameworks must be incorporated into modernized fish processing initiatives to maintain a more sustainable and equitable fisheries sector, aligning with Diversity, Equity, and Inclusion (DEI) principles in Pakistan's fish processing industries.

Further Research Directions

To carry out a more diverse study in the future, women's labor dynamics can be thoroughly observed and recorded across an array of fisheries harbors in Pakistan to identify variations in regional operations, labor conditions, process organization, and women's labor dynamics. Moreover, quantitative labor mapping studies may complement qualitative insights by assessing the scale of women's participation in post-harvest value chains. Additionally, to measure the expansion of aquaculture modernization and blue economy initiatives, longitudinal research can be conducted to further assess how formalization processes and technological upgrading

reshape women's skill recognition, employment security, and bargaining power. Furthermore, an inquiry into the relationship between household resilience and women's processing income would deepen understanding of fisheries economies beyond production metrics.

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