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Gender and Economic Roles of Women in Fishing Communities after Coastal Infrastructure Development

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ABSTRACT:
Background: The development of coastal infrastructure such as breakwaters is often considered a technical solution to overcome the problem of sea waves, but its impact on the social dynamics of coastal communities, especially the division of labor and economic roles in fishing households, has rarely been studied in depth.
Aims: This study aims to reveal how livelihood diversification becomes an adaptation strategy for the Njar Kulon fishing community, Kranji Village, in responding to changes in infrastructure, and how these changes affect gender roles in the family.
Methods: This study uses a qualitative approach with ethnographic methods. Data were obtained through participant observation, in-depth interviews, and documentation of two fishing families as the main informants, as well as several supporting informants. The analysis was conducted using a domain and taxonomy approach based on the concept of material diagnostics and gender as performance.
Result: The results of the study show that the construction of the brook limits women's access to the sea and encourages them to move to informal jobs on land. This change shifts women's economic role to be more dominant in the household, especially during the lean season. Diversifying livelihoods becomes a survival strategy taken by all family members.
Conclusion: Physical infrastructure has complex social impacts, including the restructuring of gender roles in fishing families. Therefore, development planning in coastal areas needs to consider social aspects and involve community participation, especially women, so that development is responsive and sustainable.

Keywords: Gender, Fishermen, Coastal Infrastructure, Economic Diversification

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INTRODUCTION

The development of physical infrastructure in coastal areas, such as breakwaters or locally called brok, is often considered a strategic effort to improve the welfare of fishing communities. However, in practice, the presence of this infrastructure actually has a significant impact on the economic life of fishing households, especially on the role of women in supporting family needs.(Juardi & Bimontoro, 2023; Munandar & Darmawan, 2020; Raycraft, 2019; Samudra et al., 2018). In Kranji Village, Lamongan, the construction of a large port has changed the landscape of the community's livelihoods not only from the perspective of men as the main fishermen, but also from the perspective of women who used to be active in searching for shellfish and sea snails, but have now turned to being daily laborers because their access to marine resources is increasingly limited. This change shows that physical development intended to support port productivity, in fact, narrows the living and working space of the fishing community, especially women.

This phenomenon indicates a gap between the idealism of development policies and the social realities faced by coastal communities. In the context of development with a social justice perspective, the existence of infrastructure should strengthen community resilience. However, the reality in Njar Kulon shows the opposite: many fishermen have difficulty repairing their boats because the coastal area is covered by concrete forks, while women have lost alternative sources of income that they previously accessed independently. This creates vulnerable conditions in fishermen's households that require new adaptation strategies. Therefore, it is important to examine more deeply how communities, especially women, respond to and adapt to these structural changes.

This research is relevant because studies on the impact of infrastructure on work relations and gender roles in fishing communities are still limited, especially in local contexts that are rich in traditional practices and unique social relations.(Aldiyansyah & Jamil, 2024; Dewi & Dadiara, 2022; Hasanah & Musyafak, 2017; Sabarisman, 2017). Different from previous studies that highlighted the failure of infrastructure in responding to the imagination of the community or the dominance of women in managing the household economy and the invisibility of women's roles in fisheries.(Du Preez, 2018; Salmi & Sonck-Rautio, 2018; Syddall et al., 2022; Williams & Syddall, 2022). Another study offers a new perspective through an ethnographic approach that links physical changes in the environment with the restructuring of socio-economic roles at the household level.(Ineru et al., 2024; Nugraha, 2025; Tallo & Pratiwi, nd).

In this case, infrastructure is not only understood as a physical entity, but also as an agent of social change that influences the division of labor and survival strategies of society.(Simanjuntak et al., 2025; Tias et al., 2025; Tuwu, 2025; Wibowo et al., 2025). The choice to make brok as the main research variable is based on its real impact on the daily lives of fishermen, both men and women. Brok has reframed human relations with sea and land space, and created new dynamics in the division of productive roles within the family. Therefore, it is necessary to examine how communities develop livelihood diversification models as a form of adaptation to these structural pressures.

The main objective of this study is to uncover the dynamics of economic adaptation carried out by fishing communities, especially women, in responding to changes in infrastructure in their environment. Using the approach of material diagnostic theory and gender as performance, this study attempts to understand how physical changes affect the social and gender domains in coastal communities. This study is expected to contribute to the discourse on community-based development and gender responsiveness, as well as become critical input for the formulation of more inclusive and contextual coastal development policies.

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As a theoretical framework, the concept of gender as performance introduced by Judith Butler understands that gender identity is not essential or fixed, but rather shaped through repeated social actions and practices. In this context, changes in the economic role of fisherwomen are not just a practical response to economic needs, but also a performative process that reshapes gender relations amid environmental and developmental pressures.

METHOD

Research Design

This research uses a qualitative approach with ethnographic design.(Oranga & Matere, 2023; Ritter, 2022). This approach was chosen to deeply understand the life experiences, daily practices, and adaptation strategies of the fishing community of Kranji Village in dealing with changes in infrastructure, especially the existence of breakwaters (brok). Researchers play an active role in data collection by being directly involved in the lives of informants.

Participant

The main participants consisted of two fishing families representing two types of fishermen, namely the bela (boat crew fishermen) and the jaring (independent fishermen with small boats) families. In addition, five additional informants were selected using snowball sampling techniques, including one village official and one sociology teacher as reflective informants.

Population and Sampling Techniques, Instruments, Validity and Reliability

The population in this study was the fishing community in the Njar Kulon area, Kranji Village, Lamongan Regency. The sampling technique was carried out purposively, taking into account the involvement of informants in changes in livelihoods and the division of household labor. The main instruments were semi-structured interview guidelines, field notes and documentation. Examples of questions in an interview:

- “What changed in your work after the construction of the bridge?”
- "What is the family's strategy for meeting needs during the rainy season?"

Data validity is tested through triangulation of sources, techniques, and time, as well as member checking. Reliability is strengthened through the involvement of researchers for a long time in the field and repeated interviews with key informants.

Research Instruments

The instruments used include a voice recorder, field notebook, participatory observation guide, and documentation camera. The researcher also used a reflective journal to record interpretations and dynamics during the data collection process.

Research Procedures and Time Frame

Field research was conducted for six weeks. The first two weeks were conducted by participant observation in net fishermen families whose wives work as fish sellers. The next two weeks were conducted in Bela fishermen families whose wives work as laborers. The last weeks were used for additional interviews, data archiving, and literature and documentation analysis.

Data Analysis Plan

Data were analyzed using Spradley's domain analysis and taxonomy methods. Domain analysis was used to identify local terms and cultural meanings related to changes in infrastructure and gender roles.(Qomaruddin & Sa'diyah, nd; Schwalbe & Finzel, 2024; Zang et al., 2022). Taxonomic analysis is used to group categories based on hierarchical relationships, especially in the context of livelihood diversification and fishermen's division of labor. Data interpretation is based on two main theoretical concepts, namely material diagnostics and gender as performance.

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RESULTS AND DISCUSSION

Results

The construction of breakwater infrastructure in the coastal area of Njar Kulon, Kranji Village, has had a significant impact on changes in the economic activities of fishermen's households, especially on the role of women. Before the massive construction of the breakwater, women used to look for shellfish and sea snails on the beach at low tide to sell or consume. However, access to these natural resources has become increasingly limited since the breakwater blocked the sea route. As a result, many women have left these activities and switched to working on land such as coffee frying laborers, fish traders, or market traders. This transition is a form of diversification of fishermen's families' livelihoods in facing the westerly season which is synonymous with famine and high risk when going to sea.

Diversification is not only done by women, but also by male fishermen who cannot go to sea. They take odd jobs or join land work networks as a form of adaptation. This change triggers a shift in the structure of roles in the household, where women are no longer just economic supporters, but also take over the main function of breadwinners when their husbands are not at sea. Several informants even indicated that women are more involved in financial management and family economic decision-making. This illustrates the flexibility of gender roles driven by economic needs.

Economically, the average income of fishermen before the construction of the fork was at Rp1,061,979 per month, still far below the UMK Lamongan in 2018. After the fork was built, income did not show an increase, while expenses increased due to the decline in marine products that could be consumed by themselves. In this context, diversification efforts are important to maintain the sustainability of fishermen's families. Women's activities shifted from the sea to the land sector, extending their working hours and increasing domestic and economic burdens simultaneously.

A comparison before and after the construction of the fork shows a marked change in women's routines and roles. If previously they worked at sea in the afternoon, now they work from morning to evening as traders, laborers, or small traders. Here is a summary of the changes:

Table 1. Comparison of Economic Activities of Fisherwomen Before and After Breakwater (Brok) Construction in Njar Kulon

No.	Women's Activities	Before Brok (Sea)	After Brok (Land)
1.	Looking for shells/snails	Commonly done	Are not done
2.	Selling seafood	From the catch itself	Through middlemen or markets
3.	Additional types of work	Minim	Laborer, basket, coffee roaster
4.	Working time	Afternoon	Morning to evening
5.	Role in the economy	Husband's Supporter	Main support or equivalent

Overall, the results of this study indicate that infrastructure development without considering social aspects can trigger changes in roles in coastal families, including increasing women's contributions to the economy. Despite facing structural pressures and environmental changes, fishing communities demonstrate resilience by modifying economic strategies and division of labor within households.

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Discussion

The findings of this study indicate that the development of infrastructure such as breakwaters (brok) has a direct impact on the social and economic structure of fishing communities.(Palisu et al., 2022; Sukmawan et al., 2023; Zaini et al., 2025). Changes in access to the sea have forced women to shift their economic activities to the land sector. This emphasizes that development policies in coastal areas need to consider social aspects and gender roles, not just technical dimensions. The presence of infrastructure should support the sustainability of local life as a whole, including maintaining a balance between household work and economic access for women.(Bobby & Basani, 2024; Junedi & Mokodompit, 2025; Sirnan et al., 2025).

Theoretically, this research enriches anthropological studies by showing how physical infrastructure reshapes social relations and roles in fishing families.(Hidayah et al., 2024; Mukramin et al., 2023; Samuel Frederik Tuhumury, nd). The material diagnostic and gender as performance approaches show that the impact of development is not only physical, but also touches on cultural and relational aspects in society. Thus, women emerge as adaptive actors in facing changing environmental pressures.

The limitations of this study lie in its scope which only covers one location, namely Njar Kulon, so that the findings do not yet represent the context of other coastal areas. In addition, the data used are qualitative, so they do not yet reflect quantitative measures of broader socio-economic impacts. It is also necessary to deepen the dynamics of men in responding to changes in the division of labor.

In the future, further research can be conducted comparatively in several fishing villages with similar development characteristics, and involve a quantitative approach to see the trend of changes in income, workload, and family roles. For policy makers, it is important to ensure that infrastructure development directly involves the community, especially women's groups, so that the programs implemented are truly in accordance with local needs.

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CONCLUSION

The results of the study show that the construction of breakwaters (brok) in the coastal area of Njar Kulon has a real impact on the social and economic life of the fishing community. Access to marine resources that were previously an economic space for women is now increasingly limited, triggering a change in their activities to the informal land sector. This shift is not just an individual adaptation, but part of a collective household strategy in maintaining survival amidst environmental changes. Job diversification and gender role flexibility are the main mechanisms in responding to these pressures.

This phenomenon shows that infrastructure is not only a technical project, but also an agent of social change that affects the structure of relations in society. Women appear as key actors in maintaining the economic resilience of families when the traditional role of men is disrupted by natural conditions and development policies. Therefore, it is important for every development plan in coastal areas to involve social and gender perspectives so that the impact is more equitable, sustainable, and in line with the real needs of local communities.

AUTHOR CONTRIBUTION STATEMENT

FN was instrumental in designing and implementing the field research, including data collection through participant observation and in-depth interviews, and writing the initial draft of the manuscript. HA provided theoretical and methodological guidance, critically reviewed the content, and refined the final analysis and structure of the paper. Both actively contributed to the final review and approved the published version.

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