



Social Impacts of Coastal Resource Depletion on Fishermen Communities in Bantaeng, South Sulawesi

Muhammad Faizal¹, Nasrullah¹, Mustari¹

¹Universitas Muslim Indonesia Makassar

*Corresponding Author: Muhammad Faizal

Article Info

Article History:

Received September 12, 2024

Revised September 20, 2024

Accepted: October 19, 2024

Keywords:

Coastal Resource Depletion,
Fishermen Communities,
Livelihood Diversification,
Social Cohesion, Adaptation
Strategies.

Abstract

The paper investigates the social consequences of coastal resource depletion through studies on economic troubles and adaptation methods alongside changes within fishing communities of Bantaeng located in South Sulawesi. The investigation focuses on how diminishing fish stocks limits fishermen's economic viability alongside affected traditional knowledge transfer and impacts fishing community solidarity. Resource depletion exhibits very powerful negative effects on income yet the community now seeks additional sources of revenue by embracing seaweed production and small-farm cultivation. Social interactions in the community have shown both signs of detachment and strengthening because individuals work to obtain resources while others start working together on collective projects. Gender conceptions have undergone transformations according to this study since women now generate economic benefits rather than men do. The research demonstrates how young people leave rural areas for urban destinations because coastal fishing shows declining opportunities which will worsen traditional fishing in the future. The research findings contribute to advancing small-scale fisheries discourse because they concentrate on sociological aspects of adaptation and advise that place-based community-level strategies should serve as main pillars for fisheries policy. This study demonstrates that the social aspect must be integrated for long-term sustainability in coastal resource management to benefit communities.

Introduction

People living in coastal regions of developed nations face worsening socio-economic issues because their coast-based resources continue to diminish. The combination of crew and fleet excess together with the use of financially unprofitable eco-harmful fishing methods and pollution sources and climate changes have worsened conditions for both the sea and residents' incomes. Coastal resource depletion creates major social and economic and cultural problems which mostly affect fishing communities located in developing nations because fishing plays an essential role in their culture (Warren et al., 2021). A research study conducted in Bantaeng district demonstrates how resource depletion affects a SSMF and the nearby population in coastal south Sulawesi Indonesia.

Fishing alongside all aquatic activities generates the primary income source for many families dwelling in Bantaeng according to de Oliveira et al., 2021. The Bantaeng sea contains abundant marine resources that fishers need besides being essential for population-wide food security in the surrounding area (Tadda et al., 2023). Decreased fish supply during the past few years has emerged due to overfishing as well as environmental degradation and habitat loss (de Mitcheson et al., 2020). Fishermen now need to venture farther underwater because their targets have decreased in quantity resulting in an inferior catch rate along with elevated

operational expenses and severe safety risks. The economic turmoil of these communities through degraded economies also initiated numerous social problems that endanger their ability to maintain cultural sustainability.

The current coastal resource depletion patterns impose sophisticated widespread social consequences upon those who engage in fishing activities (Elegbede et al., 2023; Ali & Kamraju, 2023; Elegbede et al. 2023). Fishery availability defense intensifies after fishing stocks run out resulting in interpersonal conflicts that arise both within and outside fishing collectives (Goettlich, 2022). Poor governance and insufficient coastal resource regulation create this type of conflict in coastal management areas. Most fishermen have left the fishing sector because of declining fish resources which creates novel social relationships and family arrangements and identification systems (Warren & Steenbergen, 2021). Food security together with traditional community culture suffers as a result of the removal of fishing grounds that formed the cultural foundation of their fishing traditions.

Small-scale fishers face harsher impacts from resource decline than industrial fishers mainly because they lack resistance against environmental changes which leads to coastal resource depletion (Islam & Chuenpagdee, 2022). Bantaeng's small-scale fishermen have never possessed modern fishing equipment or financing or alternative income since stock variation creates significant pressure. Weather pattern variations and fish migration in water disrupts traditional fishing methods of these communities because of climatic changes. Most fishermen now face reduced earnings together with higher debts along with elevated socio-economic dangers (Rashid et al., 2020).

Quite a number of socio-economic costs of coastal resources are borne as a result of depletion of the same. These declines have labelled the social impacts as those leading to social dislocation, that saw many people of fishing communities seeking better standards of living, either in urban or foreign countries. This migration usually leads to disintegration of family structures, erasure of sense of community and lack of collective assets. In Bantaeng, there are signs that young people are not willing to become fishermen to support their families, but they look for work in construction and services. This shift not only poses a risk to the continued viability of the local fishing community, but also in the dissemination of locally-coded practices, knowledge and techniques that may have been taught for generations.

In addition, the cultivation of coastal resources affects a specific gender in a distinct way. The role of women in fishing communities draw out the content of this policy brief as indicated by Harper et al. (2020) in almost all the fishing societies worldwide, the women are known to be involved in processing and selling of fish which are main source of family income. Fish has therefore become scarce and hence has resulted in women being provided with less economic chances and burdened most with the responsibility of catering for their families (Harper et al., 2020). This has resulted in the enlargement of poverty levels as well as vulnerability of female headed households since the gender bias is aggravated. In Bantaeng, women are also involved in fish processing industries where many of the industries are small scales and engaging in resource depletion has forced many out of those industries into informal and vulnerable employment (Okafor et al., 2022).

In matters of culture the aspect of resource depletion is equally meaningful. Influence of fishing: Fishing has gone beyond being an economic resource within most of the coastal community and show cultural impact of their lives. The decline in fish stocks has seen many of the earlier worshipping styles, festivities and social gatherings associated with the fishing practices erode, thus negating the cultural calendar of these cultures. In Bantaeng fishermen celebrate bumper crop through sharing food which is currently a preserve of the few due to resource. Consequently, human genetics and demography in our society are in a state of loss

and deficits due to lack of retention of our culture and traditions, which are-humiliating for our communities and damaging morale at large.

The social aspect of Coastal resource exhaustion like fish stock needs more than efforts to sustainably manage only fisheries; aspects that should be undertaken are to provide viable economic activities and social needs as well (Warren & Steenbergen, 2021). It also opens the debate for socio-economic and cultural aspects of fisheries management that require policy approaches tailored their needs of small-scale fishers. Scholars have also pointed at the improvement of the fishing communities' resilience following the implementation of community-based resource management activities such as co-management endeavors. Such measures can support revival of fish resources, and at the same time provide an opportunity to give communities stewardship of their resources.

Method

This research utilized qualitative research method as a way of understanding the social effects of coastal resources scarcity on fishermen societies of Bantaeng district, South Sulawesi province. The rationale for using this approach of the study was the need to capture detail experiences, perceptions as well as feelings of the fishermen, and the social relations in their communities. The study was carried out with the purpose of capturing social economic and cultural impacts of coastal resources for the cases on the basis of people's experience. This study employed a case study research design to get an overall picture of social impacts of coastal resource depletion mainly on fishermen communities in Bantaeng. This design enabled extensive investigation of the interconnections between environmental variations and social consequences in a specific area. The use of case study made it easy to identify the specific socio-economic problems that fishermen experience; their methods of dealing with these problems and how they adapt to them.

The study was made in some selected villages in Bantaeng Regency, specifically where fishing as an occupation and as the primary economic activity is well practiced. Bantaeng was chosen as the study site because it was once a major fishing area and due to the recent decrease in fish stock in the coastal area as stated by the local authority and community members. Data collection involved purposively recruiting subjects exclusive of fishing profession including fishermen, fish traders and leaders from the sampled fishing communities. The applied sampling method made it possible for the study to obtain a varied perception of the effects of coastal resource depletion to the varied fractions in the society. In all, 20 active fishermen, 5 fish processors and 5 community leaders were interviewed in this study, making the total number of participants 30. The participants were selected purposively in that they are adults and have background experience or knowledge in fishing. It was easier to elicit a range of responses because participants represent different backgrounds and this enabled the documentation of effects at both personal and communal level.

Interviews, focus group discussions and observations were employed as main data collection techniques in this study. The use of these methods was more beneficial than a single method since it gave a deeper understanding of the social, economic, and culture aspects of coastal resource depletion. Semi-Structured Interviews: Semi structured interviews were used for data collection in which 25 participants were interviewed. These interviews involved using a standard set of conducting open-ended questions to capture details responses on socio-economic changes that have resulted from declining fish stock on the lives of fishermen, changes in their livelihood, and changes in the social cultural aspect of their lives. This approach of semi structured interviews was both pro-active and reactive since it provided some structure in the conversation to elicit certain type of information while at the same time

permitting the speakers to speak naturally when addressing their life experiences while still making sure that certain themes of researching importance landed on the discussions.

Focus Group Discussions (FGDs): In addition to the individual interviews, two focus group discussions were organized in participation of 5 participants in each focus group. The FGDs were convened to elicit a free and open discussions because the community members need to be able to talk about their problems and solutions together. One significant advantage of this method was to identify community-level effects and ways that the disaster affected the community at large and how such community copes with the effects. Most useful in capturing an understanding of how social cohesion and structures of community support were impacted upon by the depletion of coastal resources it was the FGDs.

Focus group discussions file Focus group discussions were also conducted in the fishing villages to determine the community's perception on coastal resource depletion Although interviews were conducted to gather information from key informants, focused group discussions and direct observations were also conducted among the fishing communities to assess the effects of coastal resources depletion on the communities through observations of their day-to-day activities. They included; fishing methods employed by the fishermen, market characteristics, and socio-economic characteristics of the fishermen's households. Interviews and FGD were complemented by field notes on the context in which they took place to describe physical surroundings, dwelling conditions, and social relations in communities.

The data gathered in the study were then subjected to thematic analysis in order to create themes and subthemes, significant to the study's objectives, that describe the social repercussions of coastal resource degradation. The analysis process followed several steps: Data Transcription and Familiarization: Permission was sought and gained to audio record all interviews and focus group discussions; the discussions were then transcribed word by word. Both main participants were transcribed for multiple occasions in order to become familiar with the data, making it easier to identify preliminary themes. The collected data were analyzed through open coding technique in which segments of text were coded on the basis of developed codes. This was done manually in order to stay involved with the data and ensure better interpretation of the expectations of the participants.

Once initial coding had been conducted, the outcomes of which were compared and analyzed, relying on the procedure of assessing similarity of codes, categories were separated from such coding and altered into themes. The themes were constructed from the principal research questions and were correlated to the objectives of the study. The major themes identified included: system, depicted by commercial difficulty, social tension, loss, changes in the family structure, and accommodation. To increase the credibility of the study member checking was done by presenting the same to a sample of the participants. It was about giving back participant's preliminary analysis with a view of seeking their views and validate the interpretations made. To boost the credibility of the study, participants' feedback was also integrated in getting to the last analysis.

Result and Discussion

This paper aimed to investigate the impact of coastal resources exploitation on fishermen in Bantaeng, South Sulawesi: their sociocultural erosion, their yield and their occupations. These changes are as a result of over fishing, climate change, and habitat destruction hence; fishing stock are low forcing fishermen to seek coping strategies such as; economic diversification as well as community activities. Although, such transformations have not only encouraged certain drastic transformation to personal relationship/interactions, but also redefined the concept of family, gender, and the ability to foster unity in the society. This section will seek to review

the studies conducted, and relate how the coastal people have been impacted not only by change in economic practices but also social relations, resilience and sustainability in the coast region. From these findings, the study intends to advance knowledge on the effects of resource depletion of the social echelon particularly the coastal societies with a focus on economic and social capital as worthwhile resources.

Social Impacts on Fishermen's Livelihoods

The disappearance of coastal resources from Bantaeng created severe social results that deteriorated the fishermen's traditional way of surviving. Their main economic activity suffers as well as numerous interconnected social and economic issues which shape their personal lives together with their interactions with others and their future survival methods. Diminishing fish populations have compelled local fishermen to look for new sources of income yet these changes typically introduce extra difficulties and unclear scenarios. Coastal resource depletion directly causes economic challenges to be the immediate impact that fishermen experience. Fish populations decreasing has resulted in fishermen catching fewer fish which has decreased their income amounts. Many fishermen now spend increased time at sea after daily catch numbers have dropped so their operational expenses rise because of increased fuel consumption.

“I used to catch enough fish within a few hours, but now I have to spend almost the entire day at sea to catch half of what I used to get.”

This increased effort for diminishing returns has pushed many fishermen deeper into poverty, as they struggle to cover the rising costs of fuel, boat maintenance, and other fishing-related expenses. The economic strain is not limited to the fishermen themselves but extends to their families who rely on fishing as their primary source of income. Women in these communities, traditionally involved in processing and selling fish, have also been impacted due to the reduced availability of fish, which in turn affects their small-scale businesses.

“When there are fewer fish, we have less to sell, which means we earn less. It’s becoming harder to support our families.”

The scarcity of fish has also led to increased competition among fishermen, sometimes resulting in social conflicts. As resources become limited, there is a growing tendency for fishermen to encroach on each other’s traditional fishing grounds, which disrupts long-standing informal agreements and boundaries. This encroachment has led to tensions and, in some cases, physical altercations between different fishing groups.

“There used to be respect among fishermen for each other’s fishing areas, but now everyone is desperate. They go wherever they think they can find fish, which has caused many disputes.”

The existing conflicts weaken both communal bonds and sustainable fishing practice cooperation between fishers. Due to resource scarcity pressures a number of fishermen engage in banned and environmentally destructive fishing tactics including blast fishing alongside the application of fine mesh nets, thus worsening the state of marine ecosystems. This vicious cycle of resource depletion and unsustainable practices exacerbates the existing tensions and poses long-term risks to the community’s survival. Traditional fishing knowledge alongside the upcoming skills have gradually disappeared from one generation to the next. Environment changes alongside increasing offshore operations have rendered some classic fishing techniques less successful for seafood harvests. Youth fishermen today continue leaving behind traditional fishing methods for technological approaches thus decreasing the transfer of fishing skills between generations.

“The younger generation no longer wants to learn the old ways. They think it’s easier to use machines and technology, but they are losing touch with the sea.”

This transition harms cultural heritage in fishing communities together with weakening sustainable methods developed for their local ocean environment. Economic consequences of overfished species forced communities to modify both their household practices and public welfare networks. The current economic situation forces fishermen to shift their focus away from fishing because they must find new means of income that include working in urban areas temporarily or performing jobs outside their traditional domain. Traditional family dynamics have altered since men used to fish exclusively while women handled housework and fish handling responsibilities.

“My husband had to leave for the city to find work because fishing no longer provides enough. Now, I have to take on more responsibilities at home and find ways to earn extra income.”

Male migrant work patterns have led females to carry more family obligations while managing economic responsibilities since there are no male family members present in the household. The traditional system of mutual aid among families has deteriorated because their collective networks have become more fragmented due to this situation. The deterioration of support networks between families makes financial struggles more difficult to manage thus increasing household exposure to risks. The fishing communities in Bantaeng prove their ability to face challenges through different adaptive approaches. The fishermen adopt new sources of income which include farming small plots of land alongside growing seaweed and working temporary agricultural jobs. Fishermen across Bantaeng now form cooperative groups to combine resources thus sharing fish location data in order to lower expenses while increasing their total catch.

“We realized that by working together, we could reduce expenses and help each other find better fishing spots.”

These adaptive strategies reflect the community’s resourcefulness in responding to environmental and economic challenges. However, the effectiveness of these strategies is often limited by external factors such as access to capital, market fluctuations, and lack of government support for alternative livelihood programs. Furthermore, while diversification helps mitigate the immediate impacts of resource depletion, it does not address the root cause of the problem, which is the unsustainable exploitation of coastal resources.

Adaptation and Coping Strategies

The fishermen of Bantaeng in South Sulawesi face their livelihood challenges because coastal resources are getting depleted so fishermen in the area adapted different survival methods. Fishing households demonstrate their adaptability and inventiveness by using these strategies to handle environmental changes as well as economic pressures in their profession. The socioeconomic decline in fish population has not stopped these communities from using traditional wisdom with shared assistance to create progressive solutions that maintain their way of life.

Fishermen have chosen livelihood diversification as their main adaptive approach when fish quantities decrease in their fishing grounds. Fishing by itself no longer provides enough income to support their families so fishermen pursue additional revenue sources. People who work in fishing elect supplementary non-fishing income from small-scale agriculture and seaweed production along with different alternative ventures. Fishermen have established ventures in

seaweed cultivation which does not rely on fish stock depletion while keeping their expertise in marine settings useful.

“Fishing is not enough anymore, so I started growing seaweed. It’s not as profitable as fishing used to be, but at least it’s something we can rely on.”

This shift has provided some degree of financial stability, although the transition has not been easy due to the need for new skills and initial capital investment.

The community's support for seaweed farming together with other aquaculture practices shows their improved abilities but this transition also means they must leave traditional fishing behind which has maintained their lifestyle since past generations. Fishermen implement diversification strategies mainly because they must adapt to an unpredictable coastal ecosystem which has diminished in resources. The addition of new industries helps fishermen recover financial loss but simultaneously evolves cultural attitudes because traditional fishing forms the core of local identity. The decreasing fish populations in Bantaeng have forced fishermen to establish cooperative systems which help them address their economic stress. These cooperatives provide three functions of resource sharing combined with collective decision-making along with mutual support services. A united cooperative of fishermen minimizes costs for each member by distributing expenses such as fuel and boat upkeep and by sharing their knowledge of profitable fishing spots. Operation costs reduce through collaborative practices in addition to creating shared unity among people who confront comparable difficulties.

“By working together, we can share the cost of fuel and equipment. It makes it easier for all of us to survive during these difficult times.”

Through cooperative formation fishermen received improved access to financial support that enabled them to enhance their fishing equipment while pursuing new career options. Although cooperatives have delivered partial advantages they encounter major difficulties in their operation. Such community-based initiatives thrive based on their leadership capabilities along with member cooperation. Outside governmental backing through grant participation and training initiatives keeps cooperative enterprises operating continuously. Fishermen in these areas have changed the way they approach fishing as a response to the decreasing fish populations near the coastline. Fishing groups adopt a strategy of moving into deeper zones and investing in sophisticated equipment to extract more fish from the ocean. Fishermen previously accessed fish through small boats with basic nets but today their lack of fishing captures prompts them to respond by using bigger vessels and state-of-the-art fishing tools.

“We used to fish close to the shore, but now we have to go much further out to find anything. It’s riskier, but it’s the only way we can get a decent catch.”

Offshore fishing changed the industry dynamics yet resulted in new advantages and disadvantages. Offshore fishing provides better fishing territories but fishermen need to spend more money on fuel and equipment together with safety protection systems. Offshore investments must be funded through substantial financial resources which create challenges for people whose income has already diminished. Offshore fishing operations present substantial safety hazards because of severe weather events and expanded maritime work durations which threaten the future viability of this fishing strategy. Community assistance together with social group unity functioned as essential tools which enabled fishermen to navigate the effects of coastal resource reduction during emergency scenarios. Household coping strategies develop through neighborly money loans as well as food and resource sharing and offering mental support to struggling members of the community.

“We look after each other here. If one family is struggling, the others will pitch in to help, whether it’s with food, money, or just being there to listen.”

Through communal backing fishermen maintain their resilience despite the lack of major external assistance. These family networks are currently tested because rising financial struggles reduce the help families can give each other. The dismantling of traditional safety networks causes increasing worry because it reduces access to survival alternatives during times of economic distress for families in need. The depletion of coastal resources has led fishermen to join state and non-profit organization programs for promoting sustainable fishing approaches alongside new income sources. The programs provide fishermen education and financial resources alongside market access to assist their shift towards sustainable businesses with various economic sources.

“The training we received on sustainable fishing and seaweed farming has helped us a lot. We learned new skills and received some financial support to get started.”

These programs cover few participants because not all fishermen can take advantage of their services. Some members of the community face barriers to full program benefits because they lack awareness combined with bureaucratic obstacles and eligibility criteria. The solution requires targeted interventions with strategies to solve the distinctive issues that coastal fishing communities face regarding environmental decay and resource exhaustion.

Implications on Social Cohesion and Community Dynamics

The reduction of coastal resources in Bantaeng creates double harm because it devastates fishing economy while undermining social cohesion among the community members. The dwindling resources have produced social effects on fishing community relationships that have transformed their traditional ways of cooperation and support. The constant struggle between fishermen to stay in business has proven to be a severe test on their social connections which shows both their communal strength and overall interpersonal vulnerability.

Resource depletion near Bantaeng leads to the visible weakening of trust relationships that previously existed between community members. Prior to the modern age fishermen in Bantaeng followed verbal understandings to set fishing territories and kept their water areas distinct. Fish scarcity has intensified competition but fishermen start trespassing against their peers in order to increase their total catch. Limited resources have generated social tension which now leads to conflicts which used to be resolved through cooperation among fishermen.

“Before, we respected each other's areas, but now it feels like everyone is just out for themselves. It’s hard to trust even your neighbors these days.”

Trust breakdown in the fishing sector led to the disappearance of the tight-knit community feeling that previously existed among fishers. The pursuit of diminishing resources creates tension between fishermen as well as damages social cohesion between members of fishing communities which generates distrust throughout communities. The new social environment hinders teamwork and collaborative approaches necessary for sustaining fishing practices.

Economic challenges caused by coastal resource depletion have altered the traditional fishing family support networks which members relied upon previously. Community members executed regular mutual aid practices through sharing food and financial assistance during hardships and emergency support between one another in earlier times. Complete economic deterioration has forced families to leave aside aid to others because they must prioritize their basic survival needs.

“We used to help each other more, but now everyone is struggling. People are more worried about their own families.”

The erosion of these support systems has profound implications for the social safety net that once existed in these communities. As individuals become more self-reliant due to necessity, the bonds that tied families and neighbors together are weakening. This shift not only reduces the community's ability to collectively weather economic shocks but also leaves the most vulnerable members at greater risk, as they can no longer rely on traditional forms of support.

The need to adapt to changing economic circumstances has also led to shifts in gender roles and family dynamics within fishing households. As men are forced to spend longer hours at sea or seek alternative forms of employment outside the community, women are increasingly taking on responsibilities that were traditionally managed by men, including decision-making about household finances and involvement in income-generating activities.

“My husband is away more often now, so I have to manage everything at home. I’ve even started a small business selling snacks to help make ends meet.”

These changes in gender roles have been a double-edged sword. On one hand, they have empowered women by giving them a more significant role in sustaining their families. On the other hand, the additional responsibilities have increased the burden on women, who are already managing household chores and childcare. This shift has also altered family dynamics, sometimes leading to tension and stress within households as traditional gender expectations clash with new economic realities.

The impacts of resource depletion are also felt across different generations, particularly affecting the youth. With dwindling prospects in fishing, many young people are choosing to leave the community in search of better opportunities in urban areas. This migration not only leads to a loss of labor in the fishing sector but also disrupts the transmission of traditional fishing knowledge from one generation to the next.

“The young ones don’t want to fish anymore. They see no future in it, so they leave. It’s sad because who will carry on our traditions?”

The departure of younger generations poses a threat to the long-term sustainability of the fishing community, as it leads to a breakdown in the intergenerational transfer of skills and cultural heritage. The loss of youth not only weakens the community's human resources but also affects the social cohesion that is crucial for collective action and community resilience.

Despite the challenges, it is important to note that the crisis has also led to a strengthening of solidarity in certain areas of the community. Faced with common adversities, some fishermen have come together to support one another through informal savings groups, shared fishing ventures, and collective efforts to advocate for government assistance. These initiatives have helped to reinforce a sense of shared identity and mutual dependence among those who remain committed to their traditional livelihoods.

“Even though things are tough, we try to stick together. We know that if we don’t help each other, we won’t survive.”

This renewed sense of solidarity in certain segments of the community reflects the resilience of fishermen in the face of adversity. It underscores the potential for community-based solutions to address the socio-economic challenges posed by coastal resource depletion. However, for these efforts to be sustainable, there is a need for greater external support, including government intervention and capacity-building programs that can help fishermen adapt to the changing environment.

Based on the conclusion of this study on the social effect of resource depletion on fishermen in Bantaeng, South Sulawesi, there are several contributions to the prior literature and research: Essentially it fills in the gap in previous research on issues of socio-economic resilience,

dynamic changes of such communities, and other adaptive measures among the fishermen in small scale fishing grounds. Past research efforts have paid much attention on the physical-geographical and economic consequences of coastal resource exploitation and over utilization without much consideration of the complex social attributes and the complementary mechanisms developed by the affected communities. This study fills that gap by providing a detailed treatment on how coastal resource depletion impacts not just the profitability of fishers but the social structure and coping strategies of the societies they come from as well.

Past research has realized that fish in the waters are disappearing, as well as the effect of this on the coast economies. However, these studies tended to focus more on the rehabilitation cost in the form of money and, fishing yield, etc., than the socio-economic impacts and coping mechanisms. It breaks with this stream by exploring fishermen's experiences of diversification and SEA this through qualitative information regarding the development of seaweed farming, small-scale agriculture practices, and the establishment of informal cooperatives amongst fishermen in Bantaeng. These adaptive strategies described by this research contribute to the understanding of fishing communities' actions to cope with socio-economic vulnerability, therefore building upon Silas et al. (2020) framework on community response to change.

Furthermore, while there is a rich literature that has considered the situating of livelihood diversification as a strategy for improving resilience (Natarajan et al., 2022), this article offers a micro-level analysis of the cultural and social changes necessary for fishermen to enter non-traditional forms of employment. The analysis shows that whereas diversification provides economic security, it complicates the 'doing' of fisherman, an aspect that has not been discussed in theoretical frameworks in the past. This resonates with Martinez et al. (2020) who identify adaptation measures among the socio-cultural context of coastal people but builds on their work by identifying specific traditional practices among the Bantaeng people.

One of the original contributions of this research is a provided analysis of social consequences of resource scarcity in terms of cohesion, trust and support. Previous literature has established that competition for resources is unhealthy to social relationships as it pushes users into competing for the limited resource (Becker et al., 2021). This analysis confirms such observation through depicting how Bantaeng fishermen have been affected by decreasing fish bodies making them lose trust in the established norm on the fishing regions. However, it builds on this by demonstrating that new kind of cooperation, for instance, formation of cooperatives, sharing in fishing business, have become the way of coping. These observations are in sharp disagreement with a typical optimistic view of social impacts on overexploited fishing communities as portrayed.

At the same time, the study advances the methodological discussion of social resilience in terms of the ambivalent role of social solidarity during a crisis. Whereas other authors have described the deterioration of social bonds caused by economic concerns (Clemente et al., 2021; Kyere et al., 2021), this study shows that adversity can stimulate increased togetherness, cooperation and collective action by members of the community in informal saving schemes and support and assistance activities. This is in concord with the study completed by Carmen et al. (2022) on social resilience; nevertheless, this research offers more detailed description of how such patterns unfolds within certain cultural and socio-economic contexts.

The changes in the male and female roles portrayed in this study topic helps raise the relatively neglected issues to do with coastal resource depletion in the literature. There is a gradually increasing literature on gender in fisheries (Lawless et al., 2021) but the existing literature overemphasizes the engagement of women in fish processing and marketing than in the ways they can adapt new forms of household flexibility and economic constraints. This study contributes to the gender-specific literature by providing an empirical assessment of gender

stereotypes in Bantaeng where women have gradually embraced the roles previously performed only by the men. Our results are consistent with Harper et al. (2020), who noted that the participation of women in fishing is hidden, but they expand on the fact that dynamics of gender roles at the micro level occur due to the depletion of resources.

The study also fills another research gap pertaining to effects of depletion of resources across generations, an area that has attracted little attention in the extant literature (Casalegno et al., 2022). Thus, the study reveals an increasing rate of young people's out migration from the coastal fishing villages due to declining access to employment in fisheries; consequently, undermining the possibilities for sustainable fishing practices. The given approach supports the observations made by Wulff (2022) about the separation of youth from traditional ways of making a living, but here an attempt was made to give a special emphasis to the fact that the measured absence of economic opportunities resulted in the loss of experience transfer between generations in the framework of the fishing industry.

In contrast to most of the earlier work that prescribes macro level policy measures for managing fisheries (Omerkhil et al., 2020), this paper emphasizes the use of micro level, community based, interventions to accommodate both the economic and social aspects of adaptation. It insists on acquisition of support especially from the government and non-governmental organizations for enhancing the local cooperatives, skill Ubuntu people in other viable economic activities, and stability of the social support systems in Ubuntu. They are in concordance with voices made by several authors in the last years that pointed out the need of stronger focus on interdisciplinary MSFs, which include social, economic, and ecological factors.

Conclusion

This paper investigates how coastal resource depletion affects the fishermen communities of Bantaeng in South Sulawesi by studying how livelihood stresses, social relations and coping mechanisms work together. The information reveals that fish source reduction leads to changes affecting community survival levels and incomes while reshaping their values and lifestyle and responses. Community data demonstrates that income decline alongside traditional fishing activities has not caused overwhelming problems because members use various coping approaches that include multiple income streams along with social assistance and female role transforms. The results presented here make an important addition to current environmental discussions because they require community-based answers to stabilize the environment. The research results offer essential knowledge to policymakers working to support sustainable human living systems in coastal districts while potentially serving as an alert to prospective developers of required action beyond economic progress to establish sustainable living.

References

- Ali, M. A., & Kamraju, M. (2023). *Natural resources and society: understanding the complex relationship between humans and the environment*. Springer Nature.
- Becker, J. C., Hartwich, L., & Haslam, S. A. (2021). Neoliberalism can reduce well-being by promoting a sense of social disconnection, competition, and loneliness. *British Journal of Social Psychology*, 60(3), 947-965. <https://doi.org/10.1111/bjso.12438>
- Carmen, E., Fazey, I., Ross, H., Bedinger, M., Smith, F. M., Prager, K., ... & Morrison, D. (2022). Building community resilience in a context of climate change: The role of social capital. *Ambio*, 51(6), 1371-1387. <https://doi.org/10.1007/s13280-021-01678-9>

- Casalegno, C., Candelo, E., & Santoro, G. (2022). Exploring the antecedents of green and sustainable purchase behaviour: A comparison among different generations. *Psychology & Marketing*, 39(5), 1007-1021. <https://doi.org/10.1002/mar.21637>
- Clemente-Suárez, V. J., Navarro-Jiménez, E., Moreno-Luna, L., Saavedra-Serrano, M. C., Jimenez, M., Simón, J. A., & Tornero-Aguilera, J. F. (2021). The impact of the COVID-19 pandemic on social, health, and economy. *Sustainability*, 13(11), 6314. <https://doi.org/10.3390/su13116314>
- de Mitcheson, Y. J. S., Linardich, C., Barreiros, J. P., Ralph, G. M., Aguilar-Perera, A., Afonso, P., ... & Craig, M. T. (2020). Valuable but vulnerable: Over-fishing and under-management continue to threaten groupers so what now?. *Marine Policy*, 116, 103909. <https://doi.org/10.1016/j.marpol.2020.103909>
- de Oliveira Estevo, M., Lopes, P. F., de Oliveira Júnior, J. G. C., Junqueira, A. B., de Oliveira Santos, A. P., da Silva Lima, J. A., ... & Campos-Silva, J. V. (2021). Immediate social and economic impacts of a major oil spill on Brazilian coastal fishing communities. *Marine Pollution Bulletin*, 164, 111984. <https://doi.org/10.1016/j.marpolbul.2021.111984>
- Elegbede, I. O., Fakoya, K. A., Adewolu, M. A., Jolaosho, T. L., Adebayo, J. A., Oshodi, E., ... & Abikoye, O. (2023). Understanding the social–ecological systems of non-state seafood sustainability scheme in the blue economy. *Environment, Development and Sustainability*, 1-32.
- Elegbede, I. O., MaxemilieNgo-Massou, V., Kies, F., Lekan, J. T., Kaullysing, D., Al Jufaili, S. M., & Oloko, A. (2023). Marine and coastal resources. In *Encyclopedia of sustainable management* (pp. 2312-2317). Cham: Springer International Publishing. https://doi.org/10.1007/978-3-031-25984-5_304
- Goettlich, K. (2022). Fishing for territory: Historical International Relations and the environment. In *The Sea and International Relations* (pp. 220-243). Manchester University Press. <https://doi.org/10.7765/9781526155122.00015>
- Harper, S., Adshade, M., Lam, V. W., Pauly, D., & Sumaila, U. R. (2020). Valuing invisible catches: Estimating the global contribution by women to small-scale marine capture fisheries production. *PloS one*, 15(3), e0228912.
- Islam, M. M., & Chuenpagdee, R. (2022). Towards a classification of vulnerability of small-scale fisheries. *Environmental Science & Policy*, 134, 1-12. <https://doi.org/10.1016/j.envsci.2022.03.023>
- Kyere-Boateng, R., & Marek, M. V. (2021). Analysis of the social-ecological causes of deforestation and forest degradation in Ghana: Application of the DPSIR framework. *Forests*, 12(4), 409. <https://doi.org/10.3390/f12040409>
- Lawless, S., Cohen, P. J., Mangubhai, S., Kleiber, D., & Morrison, T. H. (2021). Gender equality is diluted in commitments made to small-scale fisheries. *World Development*, 140, 105348. <https://doi.org/10.1016/j.worlddev.2020.105348>
- Martinez, G., Costas, S., & Ferreira, Ó. (2020). The role of culture for coastal disaster risk reduction measures: Empirical evidence from northern and southern Europe. *Advances in Climate Change Research*, 11(4), 297-309.

- Natarajan, N., Newsham, A., Rigg, J., & Suhardiman, D. (2022). A sustainable livelihoods framework for the 21st century. *World Development*, *155*, 105898. <https://doi.org/10.1016/j.worlddev.2022.105898>
- Okafor-Yarwood, I., Kadagi, N. I., Belhabib, D., & Allison, E. H. (2022). Survival of the Richest, not the Fittest: How attempts to improve governance impact African small-scale marine fisheries. *Marine Policy*, *135*, 104847. <https://doi.org/10.1016/j.marpol.2021.104847>
- Omerkhil, N., Kumar, P., Mallick, M., Meru, L. B., Chand, T., Rawat, P. S., & Pandey, R. (2020). Micro-level adaptation strategies by smallholders to adapt climate change in the least developed countries (LDCs): Insights from Afghanistan. *Ecological Indicators*, *118*, 106781. <https://doi.org/10.1016/j.ecolind.2020.106781>
- Rashid, M. M., Azman, A., Singh, P. S. J., & Ali, M. I. (2020). Issues and problems of small-scale fishing (SSF) communities in South Asia: a comprehensive overview. *Indian Journal of Ecology*, *47*(3), 775-781.
- Silas, M. O., Mgeleka, S. S., Polte, P., Sköld, M., Lindborg, R., de la Torre-Castro, M., & Gullström, M. (2020). Adaptive capacity and coping strategies of small-scale coastal fisheries to declining fish catches: Insights from Tanzanian communities. *Environmental Science & Policy*, *108*, 67-76. <https://doi.org/10.1016/j.envsci.2020.03.012>
- Tadda, M. R. A., Nurlinah, S., Mustari, N., & Saputra, L. N. H. A. (2023, June). Check For Updates Information Management Based On Digital Government: Experience For Luwu Regency. In *Proceedings Of The 3rd International Conference On Linguistics And Cultural (Iclc 2022)* (Vol. 756, p. 280).
- Warren, C., & Steenbergen, D. J. (2021). Fisheries decline, local livelihoods and conflicted governance: An Indonesian case. *Ocean & Coastal Management*, *202*, 105498. <https://doi.org/10.1016/j.ocecoaman.2020.105498>
- Wulff, H. (2022). Introducing youth culture in its own right: The state of the art and new possibilities. *Youth Cultures*, 1-18.