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Mitigation of the Potential Socio-Economic Impact of Marine Sediment Utilization on Housewives in Bintan Regency through Collaborative-Based Counseling Guidance Services

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ABSTRACT. This study explores the perceptions of 35 coastal women in Bintan Regency towards marine sediment cleaning and utilization activities, identifies the ecological, socio-economic, and psychosocial impacts that arise, and formulates component needs for mitigation models based on Collaborative Counseling Guidance. Using a mixed-methods convergent-parallel design, quantitative data with 35 respondents, combined with semi-structured interviews with 15–20 informants and field observations, were then synthesized through Integrative Conceptual Analysis (ICA) to correlate the empirical findings with social resilience theory and family stress-adaptation theory. The main results showed a chain pattern: the majority of respondents (74%) observed increased turbidity and change in currents, 68% reported a decrease in catches, 60% experienced increased anxiety, 71% were willing to support a sedimentation program provided there was clear information and compensation, and 83% stated that psychosocial assistance was needed. The narrative of the interviews enriched these figures, such as changes in sea routes, restructuring of household expenses, and the absence of dialogue space for women, which emphasized the central role of mothers as adaptation agents in fishing families. Based on the findings, the study recommends the development of a Collaborative Counseling Guidance model that combines emotional support services, participatory communication forums between communities and project implementers, and microeconomic empowerment programs; This approach is proposed as an applicative and contextual socio-ecological mitigation strategy to increase the resilience of coastal families. The findings contribute novelty by presenting a framework of psychosocial interventions that are directly connected to local eco-economic dynamics.

Keywords: Counseling Guidance services, collaborative Counseling Guidance, socio-economic, mitigation of potential impacts, socio-economic impact

INTRODUCTION

The coastal area of Bintan Regency is an area that has a strategic position with a geographical character in the form of an archipelago dominated by water areas. Referring to official data from the Bintan Regency Government submitted through (the total area of Bintan was recorded at 88,038.54 km², with the land part only around 2.21% or around 1,946.13 km². This district covers approximately 240 islands, of which 39 islands are already inhabited, while the rest are still uninhabited and used for marine activities, fisheries, as well as the agricultural and plantation sectors. These geographical characteristics show that the people of Bintan have a high dependence on the marine ecosystem as a center of social and economic activity, especially for

fishing families and coastal mothers who play a role in managing daily household needs. (Bintan Regency Regional Government, 2025)

One of the environmental problems faced by the coastal area of Bintan is sedimentation, which is the process of deposition sand, mud, and fine particles that change the basic structure of the waters. Sedimentation can occur naturally due to current, wave, and tidal dynamics, but human activities such as dredging, reclamation, and sediment removal can accelerate the rate of sedimentation (Feng et al., 2023; Newell et al., 1998). The impact is not only in the form of siltation of the waters, but also increased turbidity of the water which can inhibit light penetration, reduce primary productivity, and damage important habitats such as seagrass and coral reefs. The decline in habitat quality has direct implications for the availability of marine life which is the source of livelihood for coastal communities (Sakaria et al., 2019; Kolibongso et al., 2024).

Sediment cleaning and utilization activities carried out at several coastal points in Bintan aim to maintain the quality of the waters and support maritime activities. However, such interventions are not always risk-free. Research shows that sediment mobilization can alter material transport patterns on the seafloor, increase turbidity, and affect benthic biota that is an important part of the food chain (Syam, 2024 ; Sakaria et al., 2019). Another study explains that changes in the basic structure of waters can impact fish migration patterns, nutrient distribution, and stability of local fisheries productivity (Sheaves et al., 2015; Pomeroy et al., 2006). When catches decrease or fishing locations shift, fishing families will experience a decrease in income, which ultimately affects the economic stability of households (Wenger et al., 2015)

In addition to ecological factors, economic pressures in coastal areas are also exacerbated by climate change and increasingly uncertain weather variability. Storm frequency, changes in seasonal patterns, and extreme ocean conditions inhibit seagoing activities and significantly reduce the number of days at sea (Wulandari et al., 2022; FAO, 2020). In such a situation, coastal mothers are the most affected because they manage their daily family needs, reorganize their household budgets, and face psychological burdens due to economic uncertainty. Their role is not only related to financial management, but also the emotional stability of the family to deal with rapidly changing environments.

Studies on sedimentation and its impact on coastal areas generally focus on physical and ecological aspects. Much research has also been done on economic pressure on fishermen, but studies that explicitly link ecological change to the psychosocial needs of coastal mothers are still very limited. In fact, from the perspective of the socio-ecological system, coastal communities are vulnerable units and require adaptive support that does not rely solely on economic capabilities (Adger, 2000; Berkes & Folke, 1998). This vulnerability increases when women have to carry out dual roles in unstable conditions, such as maintaining household food security, managing small businesses based on marine products, and managing children's educational needs.

In the context of socio-economic impact mitigation, the Collaborative Counseling Guidance (Collaborative BK) approach is very relevant. This approach prioritizes cooperation between counselors, local governments, educational institutions, community leaders, and community groups to provide psychosocial support based on local realities (Amalia et al., 2024; Ramdani et al., 2020). Through a collaborative approach, coastal women can get assistance in dealing with stress, improve adaptability, and gain access to skills training or micro business development. Multi-sectoral collaboration like this is needed to strengthen the adaptive capacity of coastal families in the face of increasing ecological and economic uncertainty.

Considering the complexity of these ecological, economic, and social dynamics, there are still research gaps related to how coastal mothers understand, respond, and adapt to changes caused by sedimentation and sediment management activities. Previous studies highlight that women in coastal communities often experience multidimensional vulnerability ecological, economic, and psychosocial yet their voices remain underrepresented in environmental impact

studies (Islam et al., 2021). Women, especially coastal mothers, play a crucial role in maintaining household resilience through financial management, emotional labor, and livelihood diversification; however, research has rarely explored their subjective experiences in the context of marine environmental change. Therefore, this study places coastal mothers as the main focus of analysis to describe their perceptions, adaptive strategies, and psychosocial needs as primary household managers affected by environmental changes.

Based on the above background, this research aims to gain a comprehensive understanding of the socio-ecological dynamics experienced by coastal families in Bintan Regency. In particular, this study is directed to analyze the perception of coastal mothers towards marine sediment cleaning and utilization activities as part of environmental management efforts that take place in their coastal areas. In addition, this study also aims to identify various ecological, socio-economic, and psychosocial impacts that arise from changes in water conditions, including how these changes affect household economic stability and family emotional well-being. Based on these findings, this study intends to formulate the needs and main components of a mitigation model based on Collaborative Counseling Guidance, which is expected to be able to strengthen the adaptive capacity and resilience of coastal families in responding to changes in the aquatic environment in a sustainable manner.

LITERATURE REVIEW

Marine Sedimentation and Its Impact on Coastal Ecosystems

Sedimentation is the process of deposition fine particles such as sand, mud, and inorganic materials at the bottom of the waters that can reduce the quality of coastal ecosystems. Naturally, sedimentation is affected by the dynamics of currents, waves, and tides; however, human activities such as dredging, reclamation, and sediment removal often amplify the process (Feng et al., 2023). Intensive sediment mobilization increases water turbidity and interferes with light penetration, thereby lowering primary productivity and damaging benthic habitats (Jones et al., 2015).

The Syam study (2024) shows that sedimentation has a direct impact on the decline of macrozoobentos populations, which are important indicators of ecosystem health. These findings are in line with Newell et al. (1998) who identified that dredging activities can alter substrate structures, destroy underlying organisms, and slow down the ecological recovery process. These ecological impacts ultimately affect fish distribution and fisheries productivity.

In addition, some international studies emphasize that changes in coastal physical conditions disrupt connectivity between habitats, such as seagrass–coral–mangroves, which are important pathways for the life cycle of commercial fish (Sheaves et al., 2015). This disruption in connectivity causes fish to move to a more stable location, so that the fishing ground becomes more distant and the operational costs of fishermen increase.

Previous literature has described the ecological mechanisms of sedimentation in detail, but most studies have not integratively examined how these ecological changes impact socio-economic dynamics, especially in highly vulnerable household groups such as coastal mothers. This gap is important for your research to bridge.

Socio-Economic Vulnerability of Fishing Families

Fishing families are the most vulnerable group to environmental change. Direct dependence on marine products causes ecological fluctuations to be immediately reflected in household income. Research by Maurizka & Adiwibowo (2021) shows that uncertainty in catch triggers economic vulnerability, encouraging families to diversify their income or reduce household spending.

In the context of Bintan, economic pressures due to sedimentation are amplified by climate change and increasingly extreme weather variability. The study of Wulandari et al. (2022) confirms that coastal women are often core actors in household adaptation strategies, including managing small businesses based on marine products. Dependence on unstable ecological conditions makes the family economy very fragile, especially when operational costs increase and income decreases.

In addition to the economic aspect, global research on the coast shows that income insecurity can affect the psychological condition of family members, especially women who assume the dual role of household managers and economic supporters (FAO, 2020). This emotional distress is often unaddressed due to limited psychosocial support at the community level.

The existing literature has outlined the economic pressures of fishing families, but not much has explicitly integrated the psychological and social aspects of coastal women. Your research makes a new contribution by placing coastal mothers as the main focus, not just part of the fisherman's household unit.

Social Resilience of Coastal Communities

Coastal communities are known to have a strong form of social resilience through social capital, community networks, and mutually supportive cultural values. Newell et al. (1998) showed that coastal communities can maintain social cohesion despite facing significant ecological stresses. This strength comes from close social relationships, mutual cooperation mechanisms, and inherited value systems.

In the context of socio-ecological systems, Berkes & Folke (1998) explain that social resilience is influenced by the ability of communities to learn, adapt, and modify their social structure to environmental changes. Meanwhile, Adger (2000) emphasizes that community resilience does not only depend on social capital, but also on access to information, individual adaptation capacity, and formal institutional support.

In Bintan, the social resilience of coastal communities can be seen in the ability of communities to maintain communal relationships and cultural activities despite ecological changes. However, this social resilience has not been fully able to overcome the psychological and economic pressures faced by coastal mothers.

The literature on social resilience highlights a lot of communities as a whole, but it still lacks the experience of specific groups such as coastal women. The focus of your research is to fill this gap by examining social resilience from the perspective of coastal mothers as key adaptation actors.

Collaborative Counseling Guidance Model and Its Relevance to Coastal Communities

Collaborative-Based Counseling Guidance (BK Collaborative) is an approach that emphasizes synergy between counselors, educational institutions, local governments, community leaders, and families to solve social and psychological problems in an integrated manner. This model has been shown to be effective in improving psychosocial support, adaptive capacity, and empowerment of vulnerable groups (Amalia et al., 2024).

Ramdani et al. (2020) affirm that collaboration in counseling services increases the effectiveness of interventions because they involve multiple stakeholders. In the coastal context, collaborative models allow for the integration of psychosocial approaches and economic empowerment strategies, so that interventions become more relevant and responsive to the real conditions of the community.

The relevance of this approach for coastal mothers in Bintan is very strong. The socio-economic pressures faced by this group require a form of assistance that not only focuses on emotional aspects, but also increases adaptation capacity, access to information, and cooperation between institutions. Cross-sectoral collaboration can expand support spaces, strengthen psychosocial resilience, and increase the resilience of coastal families to ecological change.

The literature on Collaborative BK is still rarely applied in the context of coastal research, so your research has a high value of novelty. This study can be the basis for the development of a more inclusive and sustainable intervention model.

Public Perception of Sedimentation Activities

Public perception is an important factor in determining the success of coastal environmental management programs. The level of support for dredging or sediment utilization programs is influenced by the perception of benefits, risks, procedural transparency, and fairness of implementation (Pomeroy et al., 2006). If the community sees that the program is providing benefits to the sustainability of the fishery, support increases; Conversely, a lack of information can lead to anxiety.

Coastal women's groups are often the most critical because they feel the economic and social impacts directly. Maurizka & Adiwibowo (2021) noted that women are more sensitive to changes in income and ecological conditions. Sheaves et al. (2015) explain that coastal restoration programs will be more acceptable if they actively involve communities in the planning and evaluation process.

The literature shows that public perception is dynamic and has a major influence on the success of environmental interventions. However, very few studies have highlighted coastal women's perceptions of sedimentation. This research fills this gap by focusing on the perception and experience of coastal women in Bintan.

METHODOLOGY

Research Design

This study uses a mixed-methods approach with a convergent-parallel model, which is a strategy that combines qualitative and quantitative methods simultaneously. Mixed-methods research integrates numerical data and narrative data to obtain a more comprehensive understanding of a phenomenon (Creswell & Plano Clark, 2018). In a convergent-parallel model, both types of data are collected and analyzed concurrently and then merged to produce a strengthened interpretation (Creswell, 2014).

This approach was chosen because the issue of sedimentation on the coast of Bintan is multidimensional: it involves ecological changes, household economic fluctuations, psychological stress, and the need for social support. Complex social-ecological issues like this require the combination of quantitative trends and qualitative narratives to deeply understand coastal mothers' lived experiences (Bryman, 2016).

Research Subject and Location

The research was conducted in several coastal villages in Bintan Regency affected by sediment cleaning and utilization activities. The location was determined using purposive sampling, a technique used to select sites based on particular characteristics relevant to the study's purpose (Palinkas et al., 2015).

The subjects of the study were coastal mothers because their role as primary household economic managers makes them highly sensitive to changes in water conditions and economic

pressures. A total of 35 respondents participated in the questionnaire, while 15–20 were selected for in-depth interviews until reaching data saturation—a point where no new information emerges (Guest et al., 2020).

Research Instruments

Cousins

Quantitative instruments were developed based on theoretical foundations, preliminary observations, and expert input. The Likert-scale questionnaire consisted of variables such as perceptions of sediment activities, socio-economic impact, psychosocial impact, and need for counseling services following standard procedures in instrument development (DeVellis, 2017).

Interview

Semi-structured interviews were used to explore respondents' experiences in depth. This type of interview combines guided questions with flexibility for probing, allowing researchers to access contextual meanings and lived experiences (Kallio et al., 2016). This approach enabled exploration of coastal mothers' adaptation strategies, emotional conditions, and perceptions about sedimentation.

Field Observation

Field observation is a data collection technique that is carried out by directly observing situations, behaviors, activities, or environmental conditions at the research site. This approach allows researchers to see phenomena as they are, without relying entirely on respondents' reports or perceptions. By observation, researchers can record details that may not appear through interviews or questionnaires, such as spontaneous interactions, habit patterns, environmental dynamics, and situational changes that occur naturally. In this study, the observation sheet was used to record physical conditions such as the level of water turbidity, changes in currents, marine activities, sediment disposal points, and the dynamics of the sea-based economy.

Data Collection Techniques

Data collection is carried out through the following steps: a) Coordination with the village government and community leaders, as well as the delivery of research objectives. b) Providing informed consent to all respondents, both in writing and orally. c) Filling out questionnaires by 35 coastal women with the assistance of enumerators. d) In-depth interviews of informants selected based on their involvement in economic activities and experiences dealing with sediment impacts. e) Direct observation of the environmental conditions of the waters and the pattern of fishermen's activities.

All data is coded anonymously to maintain respondent confidentiality. Steps in the field: a) The team came to several coastal islands. b) Explain the purpose of the research and ask for the respondent's consent. c) Distributing paper questionnaires/google forms to coastal mothers, e) Conduct interviews with several key informants, d) Conducting direct observation (water turbidity level, environmental conditions), e) Record and archive data.

Data Analysis Techniques

Quantitative Analysis

Quantitative data is analyzed with descriptive statistics, including calculations of frequency, percentage, and mean values. Quantitative results are used to identify general trends.

Qualitative Analysis

Interview data were analyzed using thematic analysis, a systematic method for identifying and interpreting patterns of meaning in qualitative data (Braun & Clarke, 2006). The process includes transcription, coding, theme development, and interpretation. Inter-coder agreement was used to maintain consistency.

Integrative Conceptual Analysis (ICA)

ICA was employed to integrate quantitative, qualitative, and theoretical insights. It is an analytical approach used to synthesize multi-method findings into a coherent conceptual model (Jabareen, 2009). Steps included comparing patterns across datasets, aligning findings with resilience and stress-adaptation theories, and constructing a mitigation framework for coastal mothers.

Data Validity and Reliability

Validity

Content validity was ensured through expert review, while field validity was strengthened using method triangulation and source triangulation (Denzin, 2012). Member checking was conducted by asking participants to verify interview summaries (Birt et al., 2016).

Reliability

Quantitative reliability was tested using Cronbach's Alpha, a standard measure of internal consistency (Tavakol & Dennick, 2011). Qualitative reliability was maintained through inter-coder checking and audit trails documenting analytical decisions (Nowell et al., 2017).

Research Ethics

All research procedures followed ethical guidelines, including informed consent, confidentiality, voluntary participation, and secure data storage consistent with international research ethics standards (Resnik, 2020).

RESULT

This study collected data through field observations, in-depth interviews with coastal mothers, and the distribution of questionnaires to 35 respondents. All findings show a chain impact that starts from changes in water conditions after cleaning activities and sediment utilization. This impact then affects sea activities, family income, household spending patterns, and the emotional condition of mothers as managers of daily needs. The following is a table of the results of the questionnaire obtained from the repnden of mothers on the coast of Bintan.

Table 1.

Summary Table of Findings from Questionnaire Results

Results Indicators	Frequency (n=35)	Percentage
Changes in water quality (turbidity & current)	26	74%
Decline in fishermen's catch	24	68%
Increased psychological stress	21	60%
Attitude in favor of sediment program (conditional)	25	71%
Need Collaborative Mentoring/BK	29	83%

Source : research questionnaire data

Table 1 shows that changes in water quality (74%) are the main triggers that explain other impact patterns, namely decreased income (68%) and increased psychological distress (60%). At the same time, the high need for assistance (83%) confirms that ecological change not only impacts the economic sector, but also creates a gap in social and emotional support that needs to be responded to immediately. The following is a complete explanation of the findings of this study:

Changes in Aquatic Ecological Conditions

Most respondents reported changes in marine conditions after sediment cleanup and utilization activities. As many as 26 out of 35 respondents (74%) stated that the water became cloudier than usual. The changes are seen throughout the day, but are most easily observed in the morning and evening when the waves are relatively calm. As per the interviews, some mothers described the water as "more cloudy, or whitish" and said "the water was like mixed with mud", especially around the boat path. Some also said that the current felt "stronger than usual", making their husbands have to change their route to sea.

The team also found several points that showed an increase in suspended sediment. The coastline appears to have changed slightly, and the shallow areas have darkened due to the pile of fine material. This change in ecological conditions appears to be an initial trigger that then has an impact on fishermen's sea activities.

Impact on Catches and Household Economy

Changes in the quality of these waters have a direct effect on the results of going to sea. A total of 24 respondents (68%) admitted that their family income has decreased due to unstable catches. Fishermen have to go to sea farther than their usual location or even go home without success.This is in accordance with some interview results from several mothers such as one mother who said that her husband "often only brought a few fish", even though previously he could bring home more. Another mother said that her husband "tried new places more often, but it didn't always work."

As a result of declining income, families made adjustments to expenses. Many mothers are reducing the purchase of fresh groceries and relying more on long-lasting menus such as salted fish or instant food. Some postpone the purchase of secondary household necessities, such as kitchen utensils or school supplies.

Psychological Stress of Coastal Mothers

Economic pressure has an impact on the emotional state of coastal mothers. A total of 21 respondents (60%) stated that they are more often anxious or worried since family income has decreased. From the interviews, some mothers said that they "often think about what to eat tomorrow", or "worry when their husbands come home late because they are looking for a new location" and also think about "will my husband catch fish today?"., others said that they "get tired mentally faster and have trouble sleeping when the results are bad at sea".

In some cases, mothers admitted to being more careful in spending money because they were afraid of sudden needs not being met. Although it does not fall into the category of severe psychological disorders, the patterns of anxiety that appear are quite consistent and describe persistent mental distress.

Community Attitudes towards the Sediment Program

Although the impact is quite real, the community does not completely reject the sedimentation program. A total of 25 respondents (71%) actually did not object, but asked for a clear explanation of the objectives, processes, and risks of the activity. Some mothers said they would

support the program "as long as they are told first", or "if it doesn't bother the fishermen for too long" "as long as it doesn't damage the environment. There are also those who say that the lack of information makes them confused and doubtful, not because they reject the activity. This attitude shows that the acceptance of the program is greatly influenced by the communication and openness of the implementers.

Needs for Mentoring and Social Support

The need for assistance is the most dominant finding. A total of 29 respondents (83%) stated that they needed some form of guidance or support to deal with economic changes and emotional distress. Many mothers say they don't have the space to talk about family issues or economic conditions. Some say, "Sometimes I want to tell a story, but I don't know who," or "If there's a place to ask questions or learn, maybe we're not too confused about managing needs." The expected forms of support include: psychosocial assistance, discussion forums between the community and the implementing parties, small business training or household skills, clearer information about sediment activities. The high number of assistance needs shows that the community not only needs technical information, but also emotional and social support to face change.

Unexpected Findings And Critical Comparisons With Previous Studies

Unlike some studies that reported strong opposition to environmental interventions, the findings here show conditional support for sediment utilization programs (71% of respondents), provided there is clear communication and impact management. This highlights that community acceptability depends on participatory processes and the clarity of benefits and compensation of findings that add nuance to the literature on public acceptance of environmental projects (Newell et al., 1998).

DISCUSSION

The following discussion ties the empirical findings of the research (questionnaires, interviews, observations) to the relevant theoretical framework, confirms whether the findings reinforce or challenge the literature, and points to practical implications for the Collaborative BK model. The following are the results of the discussion:

Ecological instability and its chain effects on the economic–psychological

The results showed that the majority of respondents reported changes in water quality (turbidity, change in currents) after sediment management activities; These findings are consistent with research showing sediment mobilization increases turbidity and disrupts benthic habitats (Feng et al., 2023; Newell et al., 1998; Syam, 2024). In a social context, such physical disturbances lead to a decrease in catch (reported by 68% of respondents) and then to household economic adjustments a pattern that reinforces the narrative of the literature on the strong linkages between ecological conditions and livelihoods (Sheaves et al., 2015).

An empirical addition to the study is a closer mapping of impact pathways: environmental change adaptation of seagoing practices (location/route) economic pressures increased anxiety in mothers. This chain pattern confirms that ecological consequences do not stop at the biological realm, but quickly spread to the daily life of households. However, it is worth noting the limitations: the evidence of ecological change here is perceptual/observational in that follow-up studies with physical data (e.g. turbidity measurements) will corroborate causal relationships.

The role of mothers as agents of adaptation

The data shows mothers are not only managers of household budgets, but also central actors in adaptation strategies: they reorganize consumption, set spending priorities, and become the emotional buffer of families when incomes fluctuate. These findings are in line with studies that place women at the center of household adaptation in coastal communities (Wulandari et al., 2022; FAO, 2020), but this study emphasizes the psychosocial dimensions of anxiety and mental burden as a real consequence of economic turmoil.

Theoretically, this strengthens the family stress-and-adaptation framework, where women are often frontliners coping. Our findings confirm that community social capital alone (mutual cooperation, networks) is not always enough; Formal support targeting psychosocial and economic aspects is needed to make household adaptive strategies more durable.

The relevance of Collaborative BK in the coastal context

The high need for assistance (83% of respondents) shows a service gap that can be filled by Collaborative BK. The collaborative model offers two main advantages: (a) psychosocial responses (group/individual counseling, peer-support) that reduce women's emotional burden; (b) integration with economic empowerment programs (household business training, market access, dialogue forums with project implementers) so that mitigation is not only psychological but also increases economic capacity.

The literature on collaborative BK supports these synergistic benefits (Amalia et al., 2024; Ramdani et al., 2020). This study sharpens the conceptual relevance by showing that interventions that are only environmental technical without psychosocial-social components tend to be less effective in maintaining the welfare of coastal families. In other words, Collaborative BK can function as a link between technical interventions (sediment cleanup/utilization) and the human needs of affected communities.

New contributions to research and unexpected findings

The main contributions of this study are: a) describe the chain path of sedimentation impacts to the psychosocial level of the family, b) affirming the dual role of women as agents of adaptation and emotional support, c) demonstrate a real need for collaborative interventions that combine psychosocial and economic aspects.

The unexpected finding of conditional support for the sedimentation program (71%) contradicts some of the older studies that reported strong rejection (Newell et al., 1998). This distinction suggests that public acceptance depends on participatory processes, communication transparency, and mitigation compensation that should be integrated into project design.

Brief limitations and further research suggestions

The main limitations are the relatively small quantitative sample size and the lack of integrated quantitative environmental measurements. Further research should combine physical monitoring (turbidity, siltation rates) and longitudinal design to test cause-and-effect relationships. Evaluation of the Collaborative BK pilot with quasi-experimental experimental designs will also help assess the effectiveness of the intervention.

CONCLUSION

The study found that sediment clearance and utilization activities on the Bintan coast triggered a series of impacts: physical changes in the waters (turbidity and current patterns) reported by the majority of respondents and decreased catches and household incomes, increased anxiety among

coastal mothers, and a strong need for assistance (83% of respondents), while community support for the program was conditional and demanded communication and impact management Transparent; The implication is that, in addition to the need for technical steps for environmental mitigation and monitoring by stakeholders, social interventions are also needed in the form of a Collaborative Counseling Guidance model that combines psychosocial support, household or small business management training, and a discussion mechanism between stakeholders for which it is recommended that program implementers implement participatory procedures and clear information delivery, while follow-up research needs to be conducted, especially studies longitudinal and broader scale to model the relationship between sedimentation and fisheries productivity, trial of Collaborative BK intervention packages to measure psychosocial and economic impacts, more in-depth gender studies, and ethnographic qualitative studies to ensure that the interventions developed are targeted, responsive to local needs, and sustainable.

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