

Revitalizing Coastal Economies: A Community-Based Approach for Sustainable Growth in Sorong Regency

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Abstract: This study aims to develop a community-based coastal economic revitalisation model capable of enhancing community participation and welfare while simultaneously preserving environmental sustainability. The research employed a mixed-methods approach with a case study design and elements of Participatory Action Research (PAR), involving 100 respondents through questionnaires and 10 key informants through semi-structured interviews, as well as participatory observation and analysis of regional policy documents. The findings suggest that the level of community participation remains moderate, influenced by factors such as access to capital, education, and institutional support. At the same time, coastal economic activities remain reliant on traditional practices that do not fully support sustainable principles. Qualitative analysis revealed key themes including dependence on a single economic source, limited access to technology, and policy misalignment across governmental levels. This study contributes to the development of community-based development theory and social capital within the context of coastal development, while also providing practical recommendations for formulating more inclusive and sustainable development policies. The research findings are expected to serve as a reference for local governments, community empowerment practitioners, and other researchers in designing coastal economic revitalisation programs that are adaptive to local characteristics and supportive of achieving sustainable development goals.

Keywords: Coastal Economic Revitalisation; Community-Based Approach; Sustainable Development; Community Participation; Qualitative Analysis; Participatory Action Research.

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1. Introduction

Sorong Regency in West Papua boasts a coastline rich in natural resources, including fish, coral reefs, mangrove forests, and significant potential for marine tourism, which should be capable of driving the local economy. However, these resources have not been optimally utilised, resulting in many coastal communities in the region continuing to live below the poverty line and

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experiencing limited access to technology, capital, and adequate markets to develop resource-based enterprises [16]. This phenomenon is also reflected nationally, where most coastal areas in Indonesia face similar challenges in sustainably optimising their coastal potential, despite Indonesia having the second-longest coastline in the world. Globally, similar issues occur in many developing countries, where coastal development often prioritises economic growth over ecological sustainability and the welfare of local communities [26]. The fundamental issue identified in coastal development is the dominance of top-down approaches, which often overlook the active involvement of local communities, resulting in development programs that fail to address the real needs of the population and leading to low program sustainability [25]. Barriers such as low economic literacy, dependence on external parties, and weak local institutions further exacerbate inequalities in the utilisation of marine resources [7].

The urgency of this research stems from the scarcity of coastal economic revitalisation models that genuinely integrate local community participation with sustainable development principles, despite participatory models having proven effective in enhancing program outcomes in several other regions of Indonesia [17]. From a conceptual perspective, this study is grounded in sustainable development theory, which emphasises balancing economic, social, and environmental aspects as outlined in the Brundtland Report, as well as the concept of community-based development, which underscores the importance of empowering and actively involving local communities at every stage of development [6]. Putnam's social capital theory also serves as a foundation for explaining how social networks, norms, and trust can strengthen the capacity of coastal communities to actively participate in resource management and create shared prosperity [8]. These three frameworks complement each other in formulating a revitalisation model that not only focuses on economic growth but also considers social aspects and environmental sustainability.

Specifically, this research aims to: (1) map the potentials and challenges of the coastal economy in Sorong Regency; (2) analyze the level of community participation and the obstacles they face in coastal development; (3) evaluate the impacts of coastal economic activities on the environment and society; (4) formulate an effective community-based coastal economic revitalization model for sustainable growth; and (5) develop policy recommendations for stakeholders to support the implementation of the proposed model. Accordingly, the research problems are formulated into five key questions: What are the current potentials and challenges of the coastal economy? What are the barriers to community participation? What are the environmental and social impacts of coastal economic activities? What kind of revitalisation model would be effective? And how can stakeholders contribute to supporting it? The expected scientific contribution of this study lies in the development of a community-based coastal economic revitalisation model that can be adapted and implemented in other regions with similar characteristics in Indonesia, particularly in the eastern areas that have often been marginalised in national development discourses [19]. Additionally, this research enriches the literature on participatory approaches in coastal economic development, which remains underexplored through mixed-methods designs in the context of eastern Indonesia. It provides practical recommendations for formulating coastal development policies that align with the achievement of the Sustainable Development Goals (SDGs) at both local and national levels.

2. Literature Review

The concept of sustainable development serves as the primary foundation of this study, first popularised through the 1987 Brundtland Report, which emphasised the importance of meeting the needs of the present generation without compromising the ability of future generations to meet their own needs [1]. Furthermore, the community-based development approach developed by Robert Chambers emphasises the importance of active community participation as a key prerequisite for development programs to align with local needs and ensure sustainability [3]. Putnam's social capital theory is also relevant, as it explains how social networks, trust, and norms within coastal communities can strengthen their collective capacity to manage natural resources sustainably. Previous studies have shown that implementing community-based coastal resource management in Indonesia has yielded important lessons, such as the community-based marine sanctuary model in East Lombok, which has proven effective in improving coral reef quality and the welfare of fisherfolk through participatory management [21].

A study on the northern coast of Central Java also confirmed the effectiveness of community-based mangrove management in restoring ecosystems while supporting local economic livelihoods, albeit with varying outcomes depending on the intensity of participation and external support [24]. Meanwhile, the PEMP program in Cilacap demonstrated that the primary obstacles to sustainable coastal development lie in the weak alignment of policies among stakeholders and the low adaptive capacity of development programs [11]. Several studies, however, identified significant gaps where the implementation of community-based management (CBM) in coastal tourism in Indonesia tends to provide only short-term benefits for local communities without ensuring resource sustainability, due to weak spatial planning regulations and limited involvement of the private sector or third parties in clear partnership schemes [18]. Another gap lies in the lack of revitalisation models that simultaneously integrate economic empowerment, environmental conservation, and strengthening of local institutions, as highlighted by research in Banten, which emphasised the need to improve the capacity of coastal communities for economic innovation based on local potentials [13]. This article strategically positions itself to address these gaps by developing a community-based coastal

economic revitalisation model that integrates three key aspects: sustainable optimisation of coastal economic potential, enhancement of community participation quality in program planning and implementation, and strengthening of adaptive and inclusive local institutional governance [14]. With a mixed-methods design and a case study in Sorong Regency, this study is expected not only to enrich academic literature but also to provide practical contributions to sustainable coastal development policy in eastern Indonesia.

Trends in theoretical and methodological approaches in coastal economic revitalisation studies show a strong tendency toward using participatory methods such as Participatory Action Research (PAR) to enhance community involvement in every stage of the program, as demonstrated by the development of sustainable ecotourism in Grangsil, Malang, which combined village, university, and other stakeholder collaborations [4]. On the other hand, recent studies have also highlighted the importance of integrating digital technology to empower micro-business actors in the coastal sector, expanding market access and supporting the sustainability of local economies [2]. As a conceptual synthesis, this study combines sustainable development theory, the concept of community-based development, and social capital theory to build a comprehensive analytical framework for understanding the dynamics of potentials, challenges, and opportunities for participatory coastal economic revitalisation. This combination of frameworks is expected to provide a solid foundation for determining research methods, conducting data analysis, and formulating a revitalisation model suitable for local conditions in Sorong Regency, as well as supporting the achievement of Sustainable Development Goals (SDGs) in Indonesia's coastal regions.

3. Research Methods

This study employed a case study strategy with a mixed-methods approach that integrates qualitative and quantitative elements, utilising the Participatory Action Research (PAR) framework to ensure the active involvement of coastal communities in Sorong Regency at every stage of the research. This approach was selected because it enables comprehensive data collection and analysis from multidimensional economic, social, and environmental perspectives, while supporting the formulation of an adaptive and contextual community-based revitalisation model. The data sources comprised both primary and secondary data. Primary data were collected through semi-structured interviews with 10 purposively selected key informants, Likert-scale questionnaires distributed to 100 respondents from the coastal community, and participatory observations conducted in several fishing villages across Sorong Regency. Secondary data included local government policy documents, reports from the Central Bureau of Statistics (BPS), and academic publications relevant to coastal economic development [22].

Data collection techniques included: (1) semi-structured interviews aimed at exploring experiences, perceptions, and barriers faced by communities in developing coastal economies; (2) questionnaire distribution with closed-ended questions to obtain quantitative data on participation levels, access to capital, technology, and markets; (3) participatory observations to identify economic practices and local environmental conditions; and (4) analysis of policy documents and coastal development reports. All these techniques were conducted triangulatively to enhance data validity. The inclusion criteria for primary data were coastal community members who had lived in Sorong Regency for at least the past five years, whose primary livelihoods were in coastal sectors (such as fisheries, tourism, or mangrove management), and who were at least 18 years old. The exclusion criteria included respondents who were unwilling to fully participate in interviews or questionnaires, as well as informants without direct involvement in coastal economic activities.

For secondary data, inclusion criteria were documents and publications released within the last ten years and relevant to the theme of coastal economic revitalisation, while popular opinion pieces or literature without peer-review processes were excluded. The units of analysis in this study encompassed individual coastal community members (fisherfolk, micro-entrepreneurs, coastal women), village/urban coastal governments, and local institutions such as tourism awareness groups or fisherfolk cooperatives. This determination of units of analysis aligns with the PAR approach, which emphasises the importance of involving local actors as research subjects, not merely objects, to produce an inclusive revitalisation model. Data analysis techniques in this research were divided into two parts: quantitative analysis using descriptive statistics and correlation tests with the aid of SPSS version 26 software to examine relationships between variables such as participation levels, access to capital, and community perceptions of sustainability; and qualitative analysis with a thematic analysis approach to identify key themes emerging from interviews and observations, which were then confirmed through source triangulation [5]. Additionally, the use of NVivo 12 software was planned to assist in the coding process of qualitative data, enabling a systematic and transparent interpretation of the findings.

4. Research Results

The results of this study are presented based on the integration of quantitative and qualitative data collected through questionnaires, interviews, participatory observations, and document analysis in Sorong Regency. Quantitative data were collected from 100 respondents in coastal communities, while qualitative data were obtained from 10 key informants and through field observations. Quantitatively, the average level of community participation in the planning and implementation of

coastal development programs was measured using a Likert scale, yielding an average score of 3.2 (categorised as moderate). The distribution of this data is presented in Table 1, which shows that 28% of respondents were at a low level of participation (score ≤ 2.5), 50% at a moderate level (score 2.6–3.5), and only 22% had a high level of participation (score ≥ 3.6).

Table 1: Distribution of community participation levels in coastal economic revitalisation programs in Sorong Regency

Participation Category	Likert Score Range	Number of Respondents (n)	Percentage (%)
Low	≤ 2.5	28	28%
Moderate	2.6 – 3.5	50	50%
High	≥ 3.6	22	22%
Total		100	100%

Table 1 indicates that most community members (50%) demonstrated only a moderate level of participation, while a small proportion (22%) were actively engaged at a high level. These findings reinforce the argument that community participation still needs to be enhanced for coastal economic revitalisation programs to be effectively implemented. Pearson correlation analysis revealed a significant positive relationship between access to capital and community participation levels ($r = 0.67$, $p < 0.01$), indicating that better access to capital is associated with higher levels of community involvement in managing the coastal economy. Additionally, correlation tests revealed a significant positive relationship between respondents' education levels and their awareness of the importance of coastal environmental sustainability ($r = 0.54$; $p < 0.01$), further supporting the finding that education plays a crucial role in raising sustainability awareness.

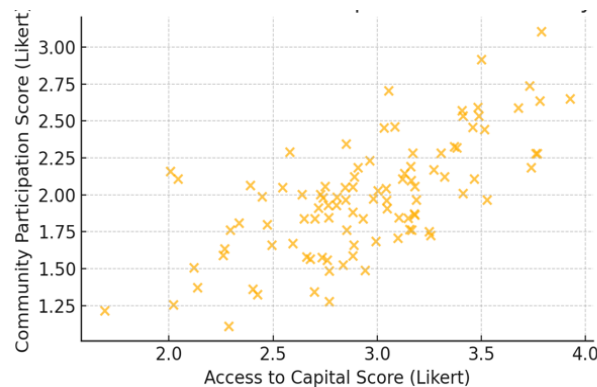


Figure 1: Correlation between access to capital and community participation level

Figure 1 illustrates the positive relationship between access to capital and the level of community participation in coastal economic programs. The scatter plot supports the significant Pearson correlation result ($r = 0.67$; $p < 0.01$), demonstrating that better access to capital is associated with higher community involvement in sustainable coastal economic management. Field observations revealed that most coastal economic activities continue to rely on traditional fishing practices using simple equipment, which do not fully support sustainability principles, as well as limited diversification into non-fishing businesses [12]. This aligns with qualitative data from interviews, where the first emerging theme was “dependence on a single economic activity”, which creates income vulnerability among coastal communities due to fluctuations in fishing seasons and extreme weather events. The second identified theme was “limited access to supporting technologies for coastal businesses,” reflected in the lack of storage facilities for catches and inadequate fish processing technologies, which reduces the economic added value that communities could obtain [10]. The third theme was “low effectiveness of local institutions,” where the majority of fisherfolk groups, cooperatives, or tourism awareness groups established by the government were inactive, only recorded administratively, and did not perform facilitation or empowerment functions for their members [20].

The fourth prominent theme emerging from interviews was “lack of community involvement in the planning of coastal development programs,” where most informants revealed that they were merely recipients of assistance, not engaged in designing or evaluating programs, resulting in many programs failing to meet on-the-ground needs [15]. Participatory observations also revealed the degradation of mangrove ecosystems in several coastal villages due to land conversion into traditional aquaculture ponds, resulting in an estimated 15% loss of mangrove cover over the past five years, which negatively impacts the quality of marine habitats [23]. From the analysis of regional development policy documents, inconsistencies were found between the coastal economic revitalisation programs initiated by the regency government and the policies of West Papua Province, especially regarding coastal and marine zoning regulations, resulting in overlapping authorities and confusion at the community and village government levels. Secondary data from the Sorong Regency BPS report showed that the poverty rate

in coastal areas remained above 22% in 2023, much higher than the average rate of 18% for regencies/municipalities in West Papua Province, indicating that coastal development interventions have not yet been optimised. Questionnaire analysis also revealed that only 35% of respondents had experience participating in productive economic or coastal conservation training programs in the past five years, while the remaining 65% had never been involved, indicating the limited outreach of empowerment programs by both governmental and non-governmental actors. This data is supported by records from local government reports, which noted budget constraints as the main obstacle to conducting sustainable training in coastal areas.

5. Discussion

The findings of this study affirm that the level of community participation in coastal economic revitalisation programs in Sorong Regency remains moderate, with strong influences from access to capital, education, and local institutional capacity. These findings are relevant to the research problem statements, particularly in terms of identifying participation challenges and formulating an effective revitalisation model. Quantitative data showed significant correlations between access to capital and participation levels. In contrast, qualitative data revealed themes of dependence on a single economic activity, limited access to technology, and weak institutional effectiveness—all of which support the study’s objective to map barriers and potentials for community-based revitalisation [9]. Interpreting these findings within the framework of sustainable development theory shows that economic, social, and environmental aspects in coastal areas are not yet managed in a balanced manner. Dependence on a single activity (traditional fishing) poses risks to the sustainability of marine resources, in line with the Brundtland concept, which emphasises the need to consider the welfare of future generations. From the perspective of community-based development theory, weak community participation in planning and the lack of local institutional strengthening indicate a misalignment with empowerment principles that position the community as the main actors in development. Social capital, which should serve as a driver of participation, has not been optimally leveraged, as evidenced by the low functionality of fisherfolk groups or coastal cooperatives.

When compared with previous studies, these findings are consistent with those of Lashitew [1] in Cilacap, which showed that top-down approaches without community involvement resulted in unsustainable programs, despite differences in location and main commodities. This study also aligns with findings by Ay’syathulridha and Kartika [2] in the coastal tourism sector, which found that weak spatial planning regulations led to unclear partnership schemes and hindered the optimisation of community-based management. However, the results of this research contrast with those of Pramestarivia et al. [4] at Sipelot Beach, Malang, who found that active collaboration among stakeholders successfully improved the sustainability of community-based ecotourism. This indicates significant differences in social context and governance between Sorong Regency and other regions. The scientific contribution of this article lies in strengthening the theory of community-based development within the context of coastal economies in eastern Indonesia, which has so far received little research attention, by offering a revitalisation model based on enhancing social capital, actively involving communities in all stages of programs, and fostering multi-level policy synergy oriented toward sustainability. This article also enriches the literature on the application of the PAR approach in coastal development in disadvantaged or marginalised areas, which has proven effective in mapping community needs and potentials.

5.1. Community-Based Coastal Economic Revitalisation Model

Based on the quantitative and qualitative analysis results, the proposed community-based coastal economic revitalisation model comprises three interrelated main pillars (Figure 2).

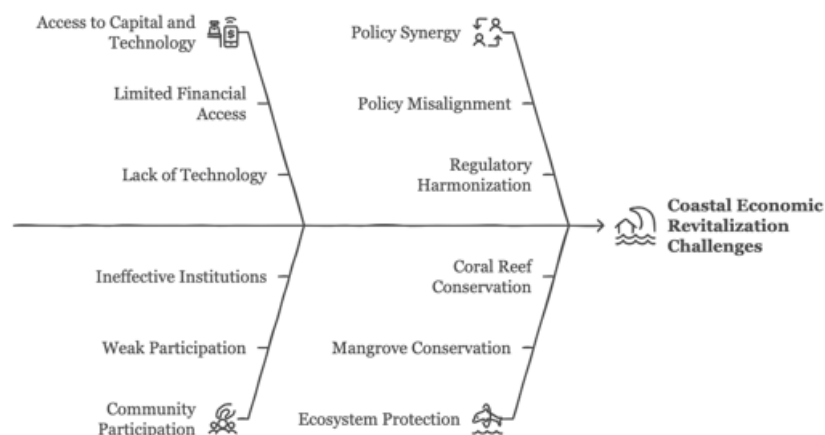


Figure 2: Community-based coastal economic revitalisation model

5.1.1. Access to Capital and Technology

The study revealed a significant correlation between access to capital and community participation levels ($r = 0.67$; $p < 0.01$), indicating that strengthening access to financing (revolving funds, microcredit) and technology (environmentally friendly fishing gear, post-harvest processing technology) is a prerequisite for enhancing the economic capacity of coastal communities. This access must be integrated with continuous technical training to ensure effective utilisation.

5.1.2. Strengthening Participation and Local Institutions

Qualitative data confirmed that weak participation and ineffective institutions are key obstacles to revitalisation. Therefore, this model emphasises the establishment or reactivation of local institutions (fisherfolk groups, cooperatives, tourism awareness groups) that function not only administratively but also as forums for deliberation, planning, and participatory program evaluation. These institutions are expected to serve as vehicles for strengthening the social capital of coastal communities.

5.1.3. Policy Synergy and Ecosystem Protection

The inconsistency of policies across government levels, as identified in the policy document analysis, underscores the need to harmonise coastal zoning regulations and governance among regency, provincial, and national authorities. This revitalisation model requires the active involvement of local governments in cross-sector coordination, ensuring that every coastal development program considers the conservation of mangrove and coral reef ecosystems to secure the sustainability of marine resources for future generations. These three pillars are integrated into a community-based coastal economic revitalisation model that positions communities as the primary actors, not merely program recipients, in line with the principles of community-based development. This model also supports Putnam's social capital theory by leveraging community social networks and trust as collective assets to enhance independent and sustainable business management capacity. Practically, this model provides guidance for designing coastal development programs that are adaptive to the socio-economic and ecological characteristics of Sorong Regency, and it is relevant for application in other coastal areas facing similar challenges in eastern Indonesia. This model also aligns with the Sustainable Development Goals (SDGs), specifically Goals 1 (ending poverty), 14 (conserving marine ecosystems), and 17 (partnerships for the goals).

6. Conclusion

The findings of this study indicate that coastal economic revitalisation in Sorong Regency still faces serious challenges related to low levels of community participation, dependence on a single traditional livelihood, limited access to technology, and weak local institutions. Access to capital and education levels were found to have significant relationships with community participation levels, while field observations revealed ecosystem degradation resulting from unsustainable practices. Additionally, policy inconsistencies across different levels of government hinder the effectiveness of existing revitalisation programs. These findings directly address the research objectives of mapping potentials, challenges, and barriers to community participation, as well as formulating a community-based revitalisation model to support sustainable growth. This article makes a theoretical contribution by reinforcing the relevance of the community-based development approach and social capital theory in inclusive coastal development, particularly in eastern Indonesia, which has complex socio-economic and ecological characteristics.

Practically, this article presents a revitalisation model that emphasises the importance of active community involvement, from program planning through implementation, strengthening local institutions, and fostering cross-sectoral policy synergy to promote both economic and environmental sustainability simultaneously. This contribution is expected to serve as a reference for policymakers, coastal development practitioners, and academics focusing on community empowerment studies in coastal areas. The implications of this research highlight the need for programs to enhance community capacity in managing enterprises based on local potential, improve policy coordination between regency and provincial governments, and consistently apply participatory approaches to ensure that revitalisation programs truly address the real needs of communities. Future research is recommended to expand the study area or compare different coastal regions with diverse social and ecological characteristics to gain a more comprehensive understanding of adaptive coastal economic revitalisation strategies in Indonesia.

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Ethics and Consent Statement: This study was conducted in accordance with the ethical standards of research. Informed consent was obtained from all participants, and all authors collectively approved the final version of the manuscript.

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