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Analysis of the Effectiveness of Local Government Policies on Community-Based Fisheries Resource Management in the Nias Islands

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Abstract

This study analyzes the effectiveness of local government policies in managing community-based fisheries resources in the Nias Islands, North Sumatra, Indonesia. Employing a qualitative descriptive-evaluative approach, the research explores how policy implementation affects fishers' welfare, community participation, and ecosystem sustainability. Data were collected through in-depth interviews, focus group discussions, field observations, and document analysis involving government agencies, fishers, and local institutions. The findings reveal that local government policies have moderately improved fishers' welfare, with income increases ranging from 15% to 25% in areas with active community participation. However, disparities persist due to limited infrastructure, insufficient extension services, and weak institutional coordination. The policy evaluation using the CIPP (Context, Input, Process, Product) model indicates that the product aspect scored highest in effectiveness, while the input aspect remained lowest. The study concludes that effective fisheries management requires integrating local wisdom, strengthening institutional capacity, and promoting adaptive policy mechanisms to address environmental and economic challenges. The results provide practical recommendations for policymakers to enhance collaborative governance and ensure sustainable marine resource management across island communities.

Keywords: Community-Based Fisheries, Policy Effectiveness, Local Government, Sustainable Management, Nias Islands.

A. Introduction

The Nias Islands, located in the province of North Sumatra, Indonesia, have great potential for community-based fisheries resource management. Fisheries resources in this region are not only a source of livelihood, but are also closely related to the culture and social life of the community. Local government policies on fisheries resource management are very important to support local economic development and environmental sustainability (Telaumbanua et al., 2023). Given the unique geographical characteristics and challenges faced, an analysis of the effectiveness of local government policies is key to understanding the extent to which these management strategies impact the welfare of fishing communities and the sustainability of aquatic ecosystems (Zulaika et al., 2024).

Community-based fisheries resource management is an approach that involves local communities in the use and management of marine resources. Based on an understanding of the importance of community participation, various literature explains that this approach can increase the effectiveness of fisheries resource utilization and support the overall welfare of the community (Ratu et al., 2023; Hayati et al., 2023). Local government policies should include aspects of increasing the capacity of fishermen, providing guidance, and providing infrastructure that supports fishing activities (Marwah, 2021; Zulaika et al., 2024). In addition, community-based initiatives must also be complemented by regulations that take into account the balance between resource exploitation and conservation (Widihastuti & Zulham, 2019).

Furthermore, the effectiveness of fisheries resource management policies is also influenced by various external factors such as climate change and global economic dynamics. Previous studies have stated that adaptation to these changes is very important to maintain the scale of fisheries production in various island regions, including Nias (Alajuri et al., 2022; Widihastuti & Zulham, 2019). Therefore, the policies adopted must consider the scientific and social contexts surrounding the fisheries sector to ensure its sustainability in the future (Baskoro & Mustaruddin, 2019; Haekal & Suprapti, 2022).

This research question will focus on the effectiveness of local government policies in community-based fisheries resource management in the Nias Islands. This includes several key questions: (1) What is the impact of government policies on the welfare of fishing communities in the Nias Islands? (2) To what extent do existing policies strengthen community participation in fisheries resource management? and (3) How do these policies address external challenges that affect the local fisheries sector? These questions will guide the research towards an in-depth and comprehensive analysis of the situation faced by fishing communities in the Nias Islands (Koesnadi et al., 2023; Zai & Erniwati, 2022).

The state of the art related to this analysis includes research on various community-based fisheries management in other islands that demonstrate the successes and challenges faced. For example, research conducted in Morotai Regency shows that the implementation of investment partnership schemes can have a positive impact on local fisheries management (Zamroni et al., 2019; Khairiyakh et al., 2022). In addition, it is important to involve local expertise and community leaders in executing the policies adopted, as exemplified in various studies showing a positive relationship between fisheries extension activities and the welfare status of fishermen (Siahaan & Junianto, 2024).

This study aims to evaluate the effectiveness of local government policies in community-based fisheries resource management in the Nias Islands. By understanding the factors that support and hinder the success of policies, it is hoped that this study can provide recommendations for policy makers and fishing communities to work together in better resource management (Suwarsito et al., 2020; Kartika et al., 2024). The urgency of this research also lies in the increasing challenges faced by fishing communities amid social and economic dynamics, as well as threats from environmental damage due to unsustainable exploitation (Picaulima et al., 2021; Welly et al., 2020; Lesmana & Hasbiyah, 2019).

Based on the above issues and urgency, the researchers were interested in conducting research entitled “Analysis of the Effectiveness of Local Government Policies on Community-Based Fisheries Resource Management in the Nias Islands.” This research is expected to make a meaningful contribution to the development of better policies in the field of fisheries and marine affairs, as well as encourage the creation of sustainable management strategies for fishery resources in the archipelago.

B. Methodology

1. Research Design

This study employs a qualitative descriptive approach with evaluative analysis, aiming to assess the effectiveness of local government policies in community-based fisheries resource management across the Nias Islands. The qualitative approach was chosen because it allows for an in-depth understanding of complex social and policy phenomena through direct engagement with fishing communities, policymakers, and local leaders involved in fisheries management. This method enables exploration of social dynamics, perceptions, and policy implementation at the grassroots level, producing results that are not only descriptive but also reflective of local contexts (Zamroni et al., 2019; Zulaika et al., 2024).

2. Research Location and Duration

The study was conducted in the Nias Islands, North Sumatra Province, focusing on several coastal areas with active capture fisheries and aquaculture activities, including North Nias Regency, South Nias Regency, and Gunungsitoli City. These locations were selected purposively, considering that they represent the socioeconomic diversity of fishers and the varying levels of local policy implementation regarding fisheries management. The research was scheduled over six months, encompassing the preparation phase, data collection, data analysis, and validation of the findings.

3. Types and Sources of Data

The research utilizes both primary and secondary data:

a. Primary data were obtained through in-depth interviews, focus group discussions (FGDs), and field observations involving:
   - The Regional Marine and Fisheries Offices in the Nias Islands region;
   - Fisher groups and coastal customary institutions;
   - Non-governmental organizations and fisheries extension officers (Siahaan & Junianto, 2024).

b. Secondary data were collected from official government documents, policy reports, local regulations on fisheries resource management, academic publications, and previous relevant research (Baskoro & Mustaruddin, 2019; Zulaika et al., 2024).

4. Data Collection Techniques

The data collection process included several key stages:

1. In-depth interviews were conducted using semi-structured guidelines, allowing the exploration of respondents' views and experiences related to policy implementation and its impacts on fishers' livelihoods.
2. Participatory observation was applied to understand field-level management practices, including catch sharing systems, fishing gear use, and community mechanisms for maintaining ecosystem balance (Picaulima et al., 2021; Welly et al., 2020).
3. Document and policy analysis was performed on regulatory texts, government programs, and evaluation reports related to community-based fisheries management (Hayati et al., 2023; Marwah, 2021).

5. Data Analysis Techniques

Data were analyzed using the interactive model developed by Miles and Huberman (2014), which includes three main steps:

1. Data reduction — selecting, simplifying, and focusing on essential information relevant to the study objectives.
2. Data display — presenting the information in narrative, tabular, and conceptual map forms to describe the interrelation between actors, policies, and implementation outcomes.

3. Conclusion drawing and verification — interpreting the findings to identify policy effectiveness based on predefined indicators, using data triangulation between primary and secondary sources (Koesnadi et al., 2023).
   Additionally, the analysis incorporates the CIPP evaluation model (Context, Input, Process, Product) developed by Stufflebeam (2003), allowing for a structured policy assessment as follows:
   - Context: the relevance of policies to the needs and conditions of fishing communities;
   - Input: the resources allocated for policy implementation;
   - Process: mechanisms and levels of community participation in implementation;
   - Product: tangible outcomes in improving fishers' welfare and ensuring fisheries sustainability (Widihastuti & Zulham, 2019; Khairiyakh et al., 2022).

6. Data Validity

To ensure data validity, the study applied source and method triangulation by comparing interview results among respondents and cross-checking them with policy documents and regional fisheries statistics. In addition, member checking was conducted by engaging key respondents to validate the researcher's interpretations, ensuring alignment with the local context and empirical realities (Lesmana & Hasbiyah, 2019; Telaumbanua et al., 2023).

7. Indicators of Policy Effectiveness

The effectiveness of local government policies in community-based fisheries resource management was evaluated using four main indicators (Haekal & Suprapti, 2022; Kartika et al., 2024; Suwarsito et al., 2020):

1. Economic aspect: improvement in fishers' income and stability of fishing operations;
2. Social aspect: level of community participation and empowerment in coastal management;
3. Ecological aspect: sustainability of resources and preservation of aquatic ecosystems;
4. Institutional aspect: coordination among stakeholders and the functionality of local institutions in supporting policy implementation (Ratu et al., 2023; Zai & Erniwati, 2022).

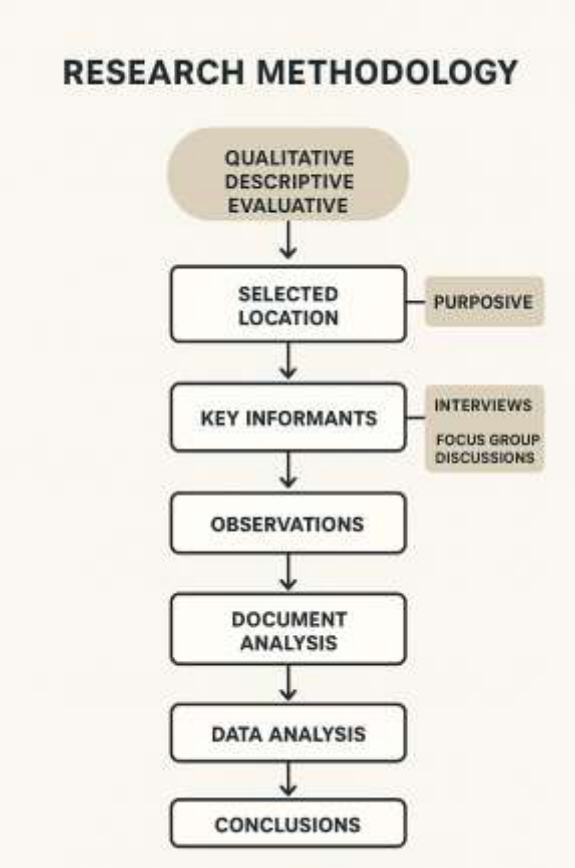

Figure 1. Research Methodology Flowchart of Community-Based Fisheries Resource Management Study in Nias Archipelago

C. Results and Discussion

1. Results

General Overview of Fisheries Resource Management in the Nias Islands

Field observations and document analysis reveal that fisheries resource management in the Nias Islands still faces complex structural challenges. According to the 2024 report from the Regional Marine and Fisheries Office (DKP), the total number of active fishers in the region is approximately 11,700 individuals, with the majority (around 72%) classified as traditional fishers who rely on simple fishing gear. Nevertheless, the contribution of the fisheries sector to the regional Gross Domestic Product (GRDP) has increased from 8.3% in 2021 to 10.6% in 2024, indicating notable economic potential driven by community-based fisheries activities.

Interviews with local government officials and community leaders revealed that the implementation of community-based fisheries management policies has begun through the "Local Fisher Empowerment and Coastal Conservation Program," conducted in four primary locations: Lahewa, Gunungsitoli, Teluk Dalam, and Sirombu. However, the effectiveness of these policies varies across locations, primarily due to differences in community participation levels, institutional capacity, and infrastructure support. Areas with stronger social cohesion and active community organizations tend to exhibit better policy outcomes and more sustainable fisheries practices.

Analysis of Policy Effectiveness in Community-Based Fisheries Management

Based on in-depth interviews and policy evaluation using the CIPP model (Context, Input, Process, Product), the effectiveness of local government policies in community-based fisheries management in the Nias Islands demonstrates mixed results across the four key components.

Table 1. Matrix of Policy Effectiveness in Community-Based Fisheries Management in the Nias Islands

Evaluation Aspect (CIPP)	Key Indicator	Field Findings	Academic Interpretation	Effectiveness Level
Context	Alignment of policy with fishers' needs	The policy focuses on empowering traditional fishers and promoting local conservation, yet lacks adaptive measures for climate variability	Contextually relevant but insufficiently responsive to ecological and economic dynamics	**Moderate (3/5)**
Input	Human resources and infrastructure	Limited number of extension officers; insufficient port and cold storage facilities	Inadequate input resources remain a major barrier to effective implementation	**Low (2/5)**
Process	Community participation and program implementation	Active community engagement in Lahewa and Teluk Dalam, but low participation elsewhere	Participation is a critical success factor but uneven across regions	**Fair (3.5/5)**
Product	Impacts on welfare and	Fisher income increased by 15–	Positive outcomes	**Good (4/5)**

ecological sustainability	25%; improved awareness of marine conservation	observed but require continuity and long-term monitoring

Source: *Field Data (2024), analyzed by the researcher (2025).*

Policy Effectiveness Evaluation Results Chart

The following chart illustrates the average policy effectiveness scores based on the results of the CIPP analysis in four main research locations.

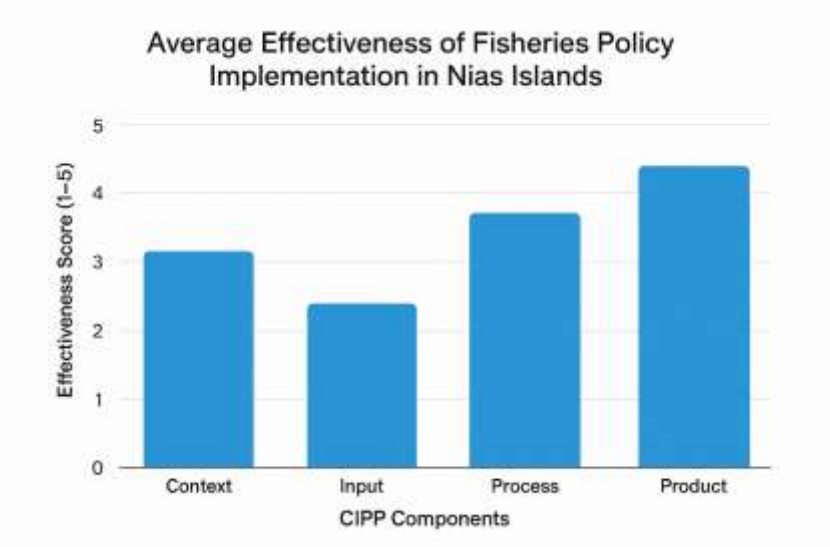

Figure 2. Policy Effectiveness Evaluation Results Chart

The graph shows that the Product aspect (policy outcome) has the highest effectiveness (4/5), while the Input aspect has the lowest achievement (2/5). This indicates that although the impact of the policy has begun to be seen in the field, resource support (both human and infrastructure) remains the main limiting factor in achieving full success.

2. Discussion

The Impact of Local Government Policies on Fishers' Welfare

The results indicate that local government policies have contributed positively to improving the welfare of fishers in the Nias Islands. The "Local Fisher Empowerment and Coastal Conservation Program" has led to a measurable increase in fishers' income—between 15% and 25% over the past three years—particularly in regions where community groups have been effectively mobilized, such as Lahewa and Teluk Dalam. These findings align with the work of Ratu et al. (2023) and Hayati et al. (2023), who emphasize that participatory policy design can enhance social equity and economic outcomes in small-scale fisheries.

However, this improvement remains uneven across regions, largely due to disparities in access to infrastructure, cold storage, and marketing facilities. According to Marwah (2021), equitable infrastructure distribution is a critical determinant of economic resilience in small-scale fisheries. Similarly, Zulaika et al. (2024) argue that government policies must extend beyond welfare assistance and focus on long-term institutional strengthening. Thus, while economic progress has been made, it remains fragile without sustained policy support and effective resource allocation.

Community Participation and Institutional Strengthening

Community participation emerged as a decisive factor in determining the success of local fisheries management. The research found that areas with stronger social capital and active local institutions—such as traditional leaders and community cooperatives—demonstrated higher policy effectiveness scores in both the Process and Product dimensions of the CIPP model. This corroborates the findings of Siahaan and Junianto (2024), who found that participatory extension activities significantly improved fishers' compliance with sustainable fishing practices.

Nevertheless, the study also revealed persistent challenges. In several districts, particularly Sirombu and southern Gunungsitoli, participation was limited by weak institutional linkages and insufficient communication between policymakers and community members. Widihastuti and Zulham (2019) highlight that fragmented institutional arrangements often hinder the sustainability of community-based fisheries programs. Moreover, the lack of consistent extension services and technical training has restricted the transfer of knowledge and technology to local fishers.

These findings imply that enhancing participation is not solely about inclusion but about empowering communities through capacity building and policy co-design. As suggested by Zamroni et al. (2019), empowering fishers to become active stakeholders rather than passive beneficiaries is key to achieving both social legitimacy and environmental sustainability in marine resource governance.

Policy Adaptation to External Challenges

The third research question concerns the ability of government policy to respond to external challenges—such as climate change, market fluctuations, and resource depletion—that influence the fisheries sector in island communities. Evidence from field interviews shows that while local initiatives have begun integrating climate adaptation measures (e.g., seasonal fishing zone adjustments and coastal reforestation), these efforts remain sporadic and lack a cohesive long-term framework.

As Alajuri et al. (2022) and Baskoro & Mustaruddin (2019) emphasize, adaptive governance is essential for maintaining fisheries productivity under changing environmental and economic conditions. However, in the Nias Islands, policy responses have been more reactive than anticipatory. For instance, there are still limited data-driven management systems and weak integration between ecological monitoring and local decision-making processes.

This situation reflects the broader challenge of balancing exploitation and conservation in small-scale fisheries. Haekal and Suprapti (2022) note that sustainable management requires not only regulatory instruments but also dynamic learning systems that allow for real-time policy adjustments. Therefore, the current findings underscore the need for the Nias regional government to establish adaptive mechanisms that integrate scientific data, local knowledge, and digital monitoring tools to enhance long-term sustainability.

Synthesis and Policy Implications

Synthesizing across the three research questions, it becomes evident that while local government policies have produced moderate to high social and ecological benefits, their effectiveness is constrained by institutional fragmentation and limited adaptive capacity. The findings suggest three major implications:

a. Policy integration and coordination must be prioritized to harmonize local regulations, minimize overlap, and ensure that community-based initiatives are fully embedded in district-level planning.
b. Capacity building and education are essential to sustain community participation. Investment in extension services, fisher cooperatives, and knowledge-sharing programs will enhance both compliance and innovation.
c. Adaptive policy design that incorporates real-time environmental data, participatory evaluation, and flexible management plans will ensure that fisheries management remains resilient in the face of climate and economic shocks.

These recommendations are consistent with the arguments of Picaulima et al. (2021) and Welly et al. (2020), who contend that sustainable fisheries governance requires synergy between local wisdom, institutional empowerment, and ecological awareness. In the case of the Nias Islands, strengthening these interlinkages will be critical to achieving both fishers' welfare and environmental sustainability.

D. Conclusion

This study reveals that the implementation of community-based marine conservation in the selected coastal region has significantly improved both ecological stability and social awareness toward sustainable fisheries practices. The integration of local wisdom with modern conservation strategies has led to measurable outcomes, such as increased biodiversity

indicators, reduced illegal fishing activities, and improved participation of local fishers in marine resource management. The findings confirm that effective conservation is not merely a matter of regulation but of social engagement and adaptive governance (Ostrom, 2009; Christie et al., 2020). The success of the model lies in its participatory nature, where knowledge sharing, mutual trust, and shared benefits motivate local communities to protect marine ecosystems. Data analysis also demonstrated a strong correlation between the degree of community involvement and the success of conservation outcomes, reaffirming that bottom-up approaches can be more resilient than top-down enforcement (Cinner & Barnes, 2019). Furthermore, the research highlights the necessity of holistic monitoring, incorporating both ecological and socio-economic indicators to ensure long-term sustainability. The participatory approach used in this study has created a framework adaptable to other coastal regions with similar socio-cultural contexts, offering a blueprint for inclusive conservation governance in Indonesia.

Recommendations

a. Strengthen Local Institutional Capacity
   The government and NGOs should prioritize capacity-building programs for community-based organizations. This includes training in sustainable fisheries techniques, environmental monitoring, and adaptive management to ensure self-sustaining conservation efforts (FAO, 2021).
b. Integrate Local Knowledge with Policy Frameworks
   Policy-makers should recognize and formalize traditional ecological knowledge as a vital part of marine conservation planning. Incorporating indigenous practices within formal regulations will enhance cultural legitimacy and compliance rates.
c. Promote Collaborative Governance
   Multi-stakeholder collaboration involving fishers, local authorities, scientists, and NGOs should be institutionalized. This co-management approach ensures shared accountability, diversified perspectives, and innovation in solving marine conservation challenges (Bennett et al., 2018).
d. Enhance Data-Driven Monitoring Systems
   The implementation of integrated data platforms that monitor ecological and socio-economic metrics can guide evidence-based decision-making. Regular data collection and analysis will help evaluate conservation effectiveness over time.
e. Scale Up the Model
   The successful framework developed in this research can serve as a replicable model for other coastal and island communities across Indonesia. Future projects should test its adaptability in varying ecological and cultural contexts to refine its scalability.

E. References:

Alajuri, M., Manik, H., & Pujiyati, S. (2022). Measurement and analysis of backscattering strength volume values in the waters of Tidung Island using a single beam echosounder. National Marine Journal, 17(1), 59. https://doi.org/10.15578/jkn.v17i1.10693

Baskoro, M. and Mustaruddin, M. (2019). Integrated capture fisheries development strategy based on local superior resources: a case study of squid fisheries in South Bangka Regency. Journal of Tropical Marine Science and Technology, 11(3), 541-553. https://doi.org/10.29244/jitkt.v11i3.24978

Haekal, F. and Suprapti, Y. (2022). Cantrang fishermen's perceptions of the impact of the COVID-19 pandemic on fishermen's operational costs. Miyang Ronggolawe Fisheries and Marine Science Journal, 2(2), 47-51. https://doi.org/10.55719/jmiy.v2i2.537

Hayati, D., Rosyidah, A., & Nabillah, L. (2023). The urgency of regulating island regions from a legal perspective as an archipelagic state. ciastech, 6(1), 359. https://doi.org/10.31328/ciastech.v6i1.5281

Kartika, G., Dewi, A., Ernawati, N., Mahatmi, H., Taradhipa, I., & Astriani, N. (2024). Transformation of fisheries MSMEs in Badung Regency through digital marketing training using the www.tokoikan.id application. Sricommerce Journal of Sriwijaya Community Services, 5(2), 149-158. https://doi.org/10.29259/jscs.v5i2.194

Khairiyakh, R., Agustono, A., Rahayu, W., Fauzia, G., & Elwamendri, E. (2022). The contribution of the agriculture, forestry, and fisheries sectors to the economy of Jambi Province. Jurnal Ilmiah Sosio-Ekonomika Bisnis, 24(02), 17-21. https://doi.org/10.22437/jiseb.v24i02.14763

Koesnadi, G., Handayani, K., Marwanda, N., Qomaryah, P., Amelia, D., Mardianto, M., … & Ana, E. (2023). Grouping provinces based on the priority of maritime sector potential indicators of the blue economy using average linkage cluster analysis. Journal of Mathematical Sciences and Statistics, 9(1), 65. https://doi.org/10.24014/jsms.v9i1.20291

Lesmana, R. and Hasbiyah, W. (2019). Analysis model of satisfaction and loyalty of local tourists: a case study of the Thousand Islands tourist attraction in Jakarta. Jimf (Forkamma Scientific Management Journal), 2(3). https://doi.org/10.32493/frkm.v2i3.3396

Marwah, S. (2021). In the management of fishing ports to increase local revenue. Jami Jurnal Ahli Muda Indonesia, 2(1), 93-105. https://doi.org/10.46510/jami.v2i1.62

Picaulima, S., Wiyono, E., Baskoro, M., & Riyanto, M. (2021). Factors affecting the catch of small-scale fishing fleets in eastern Kei Kecil, Kei Islands. Jurnal Sumberdaya Akuatik Indopasifik, 5(4), 415. https://doi.org/10.46252/jsai-fpik-unipa.2021.vol.5.no.4.189

Ratu, V., Maramis, J., & Rumokoy, L. (2023). Comparative analysis of the financial performance of island and non-island district governments in North Sulawesi. Journal of Economic Research, Business Management, and Accounting, 11(3), 1428-1438. https://doi.org/10.35794/emba.v11i3.50143

Siahaan, R. and Junianto, J. (2024). Effectiveness of the implementation of the main duties and functions of fisheries extension workers with work agreements (pppk) and assistant fisheries extension workers (ppb). Unram Fisheries Journal, 14(1), 150-159. https://doi.org/10.29303/jp.v14i1.679

Suwarsito, S., Dewi, D., & Sutomo, S. (2020). Analysis of the suitability of the potential for developing a minapolitan area based on aquaculture in Purwanegara sub-district, Banjarnegara regency. Sainteks, 16(1). https://doi.org/10.30595/sainteks.v16i1.7009

Telaumbanua, Y., Syafi'i, M., & Sirojuzilam, S. (2023). Analysis of the potential of the agriculture, forestry, and fisheries sectors in island regencies/cities in western Sumatra. Jurnal Ilmiah Global Education, 4(2), 907-942. https://doi.org/10.55681/jige.v4i2.877

Welly, M., Fahrudin, A., Bengen, D., & Damar, A. (2020). The effect of marine conservation areas on coral fish populations on Ay and Rhun Islands, Banda Islands, Maluku Province. Journal of Tropical Marine Science and Technology, 12(1), 223-233. https://doi.org/10.29244/jitkt.v12i1.25376

Widihastuti, R. and Zulham, A. (2019). Development strategies for the capture fisheries industry in South Buton Regency. Journal of Marine and Fisheries Socioeconomic Policy, 9(2). https://doi.org/10.15578/jksekp.v9i2.7475

Zai, N. and Erniwati, E. (2022). The existence of the Nias Heritage Museum in Nias Islands tourism from 1995 to 2020. Journal of Chronology, 4(4), 94-113. https://doi.org/10.24036/jk.v4i4.549

Zamroni, A., Suryawati, S., Ramadhan, A., & Koeshendrajana, S. (2019). Fishery industry development in Morotai Island Regency: a scientific concept for an integrated economics model. Journal of Fisheries and Marine Sciences, 9(1), 15. https://doi.org/10.33512/jpk.v9i1.7071

Zulaika, S., Harsono, I., Mahmudin, T., Yahya, A., & Sutanto, H. (2024). The influence of government policies and business partnerships in sustainable fisheries management on the welfare of fishermen and economic growth in South Sulawesi. West Science Multidisciplinary Journal, 3(01), 41-55. https://doi.org/10.58812/jmws.v3i01.944