SOCA: Jurnal Sosial Ekonomi Pertanian
Vol. 18 No. 3, 31 Desember 2024, page 322 - 333
ISSN: 2615-6628 (E), ISSN: 1411-7177 (P)


https://ojs.unud.ac.id/index.php/soca

# Survival Strategies: Socio-Economic Adaptation of River Fishing Communities in the Sebangau Conservation Area

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Submitted : 25rd April 2025, Accepted : 15th May 2025

***ABSTRACT***

***Keywords:***
*Socio-Economic; Adaptation Study; Conservation; Fishermen*

**Abstract**

Sebangau National Park is a conservation area designated by the Indonesian government through the Decree of the Minister of Forestry Number SK.423/Menhut-II/2004. The conversion of the Sebangau area into a conservation area has caused significant changes to the livelihood sources of the people living around the area. This study seeks to examine the socio-economic adjustments of river fishermen within the Sebangau National Park region. Employing qualitative methodologies, the research utilizes data collection techniques that include in-depth interviews and observational methods. Findings indicate that the river fishermen in this area have undergone considerable socio-economic transformations as a result of the establishment of the conservation zone. They must adapt to environmental and economic changes and develop strategies to maintain their livelihoods. This research also found that the role of government and conservation institutions is very important in helping river fishermen adapt to changes in the environment and fishing economy in the Sebangau Katingan National Park Area. The policy implications in the social negotiation space are recognition of community rights, community participation and equality.

## INTRODUCTION

Sebangau National Park is one of several national parks in Indonesia, envisioned as a protected area aimed at preserving biodiversity. This concept reflects a well-intentioned effort to safeguard parts of Indonesia's natural environment. However, implementing a regulatory system to protect such areas is far from straightforward. Regulations governing protected areas often become problematic, particularly because many national parks are home to communities that have long inhabited these regions, well before the establishment of conservation policies. This is also the case for Sebangau National Park. The designation of Sebangau as a protected area through the Decree of the Minister of Forestry No. SK.423/Menhut-II/2004 has directly altered the way of life for the communities residing within its boundaries. These residents are now compelled to adapt to new governmental regulations concerning the environmental protection of Sebangau National Park.

The adaptation process involves changes in both access to and interaction with the natural environment of Sebangau. Former livelihood systems—often characterized by environmentally destructive practices such as logging—must now transition to more environmentally friendly alternatives. These regulations are binding for all individuals living in or interacting with the park. As a result, residents have been required to shift their livelihoods to comply. For many, becoming river fishermen has emerged as the most viable option. The limited availability of other livelihood alternatives, due to the enforcement of conservation regulations, has led many to adopt fishing as a means of sustaining their daily needs.

However, life as a river fisherman in the Sebangau area is far from easy. These fishermen now face significant challenges posed by climate change. Unpredictable weather patterns have led to unstable water levels, making fishing more difficult. To cope, fishermen must travel greater distances to find viable fishing grounds, which is necessary to maintain their income. This expansion of fishing range has financial consequences—fishermen must now invest more in supplies and fuel, thereby reducing overall profit margins. These difficulties are compounded by the restrictions imposed by the park's conservation regulations and the scarcity of alternative livelihood opportunities, making it difficult for residents to rely solely on river fishing.

The socio-environmental challenges faced by communities in Sebangau National Park are not unique. Similar issues have been observed in other national parks in Indonesia. For instance, Sudibyo (2016) examined the socio-economic dynamics in Komodo National Park in the context of conservation and tourism. His study highlights how local fishermen have been marginalized due to overlapping interests and the rise of the tourism industry. These local communities have been restricted in their access to natural resources, compelling them to renegotiate their existence within the park. One of the key insights of Sudibyo's study is the persistent presence and even growth of the local population, despite such marginalization. This reflects an ongoing process of social negotiation aimed at finding a middle ground between conservation and local livelihood (Sudibyo, 2016). Similarly, a study by Rosantika dan Swasto (2021) in Sumber Jaya, Bengkulu, found that local fishermen adapted to spatial changes by increasing social interaction, developing new cultural practices, and expanding economic activities. However, many of these prior studies have not sufficiently emphasized the role of stakeholders in addressing the needs of fishermen living within national parks or coastal conservation areas (Rosantika dan Swasto, 2021)

The socio-economic challenges faced by fishermen in Sebangau National Park are closely tied to restricted access to natural resources as a result of conservation policies. Fishermen who depend on river catch are now confronted with serious obstacles in sustaining their livelihoods amidst these limitations. This raises critical questions regarding the current socio-economic conditions of river fishermen living near the national park and the way they negotiate access rights and develop survival strategies to maintain income, particularly through alternative livelihoods aligned with environmental sustainability principles.

This study contributes to the academic discourse on the relationship between conservation and community development in protected areas. It focuses on the socio-economic adaptation of river fishermen near Sebangau National Park and their negotiation strategies in response to conservation regulations. The study offers several novel contributions in comparison to previous research. First, it emphasizes river fisherman communities—an often-overlooked group in conservation literature, despite their strong dependence on natural resources. Second, it examines the negotiation strategies these communities employ in response to restricted access imposed by park authorities, thereby illuminating the tension between conservation goals and local economic survival. Third, the use of a qualitative approach allows for a deeper exploration of the lived experiences, perspectives, and adaptive strategies of the fishermen, offering a more contextual and nuanced understanding of local-community–policy interactions.

The primary aim of this research is to comprehensively understand and analyze the socio-economic conditions of river fishermen residing in the vicinity of Sebangau National Park. Furthermore, the study seeks to identify the adaptive strategies and negotiation practices employed by these communities in the face of conservation-related restrictions, and to explore how they pursue access to sustainable alternative livelihoods.

## RESEARCH METHODS

The methodological approach employed in this socio-economic study consists of two main components: qualitative methods and literature review (document analysis). Both approaches were applied to identify, describe, and analyze the social phenomena and economic activities occurring around Sebangau National Park. The selected methods were aligned with the agreed-upon research procedures. The first method, Qualitative Research, was employed to gather empirical data on the socio-economic conditions of communities in Sebangau National Park (SNP). Techniques used in this method included participant observation, which involved directly observing socio-economic conditions at the research site, and Focus Group Discussions (FGDs). The purpose of participant observation was to provide a general overview of community activities in and around the park area. FGDs, on the other hand, were used to gain insight into local perspectives on conservation practices and existing social dynamics. The second method involved literature review and document analysis. The data collection process is illustrated in Figure 1.

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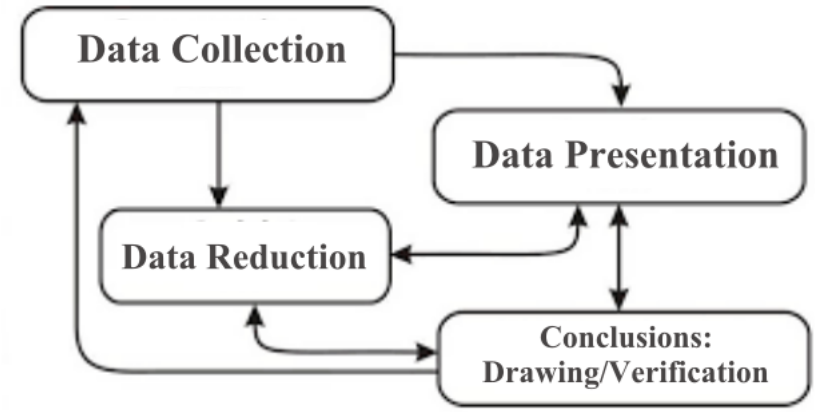


**Gambar 1**. Flow Diagram of the Data Collection Process
Source: Processed Primary Data, 2022

Observation and interview activities were carried out in three villages directly adjacent to Sebangau National Park: Kereng Bangkirai Village, Keruing Village, and Tumbang Bulan Village. The study participants included riverine fishermen within the Sebangau area who met

the following criteria: (1) sufficient knowledge of conservation policy, (2) willingness to participate in the study, and (3) prior experience in negotiating with conservation authorities. Data collection was conducted from the first week to the fourth week of October 2022. The first site visit took place in Kereng Bangkirai Village, located in the Kereng Bangkirai Subdistrict, Palangka Raya City. Site selection was conducted using purposive sampling, based on the following considerations: 1) the villages are near Sebangau National Park and maintain a dependency on the park's natural resources, 2) the villages have previously received assistance or guidance in conservation and environmental protection from stakeholders associated with Sebangau National Park, and 3) the local community groups in these villages directly utilize natural resources located within the Sebangau National Park area.

The second method employed in this study was literature review and document analysis. Data obtained through this method served as primary data, while data from the qualitative fieldwork were used as secondary or supporting data. Time constraints limited the effective use of data from FGDs and participant observations. As a result of the short duration of fieldwork, only limited primary field data could be gathered, necessitating the use of literature review and document analysis to obtain the main dataset. The literature review included relevant academic publications, archived documents, and prior research reports, which together constituted the primary data sources for this study. Based on these sources, the research team analyzed the relationship between conservation policies and socio-economic conditions in the Sebangau National Park area.

## RESULTS AND DISCUSSION

The majority of residents living in the Sebangau National Park area engage in freshwater or river fishing as their primary occupation (Klokke and Mahin 2012; Moeliono and Itta 2015). As previously mentioned, this occupation only supports subsistence-level livelihoods, sufficient merely for daily survival. The fishermen's yields generally cannot contribute meaningfully beyond subsistence needs; income from fish sales typically only covers a month's worth of fishing supplies (Durrenberger and Pálsson 1987). To understand this situation more thoroughly, it is essential to examine the seasonal livelihood patterns of these fishermen.

Fishermen in the Sebangau National Park area operate according to specific seasonal cycles that guide their decisions regarding fishing activities. These temporal patterns are crucial for understanding their livelihood strategies. Table 1 outlines the periodization of fishing activities within the Sebangau National Park area.

**Table 1.** Fishermen Periodization

| No | Period | Description | Time |
|---|---|---|---|
| 1. | *Wayah Surung Layap* | Following the dry season and at the onset of the rainy season, a gradual increase in water levels occurs. During this period, overflowing river currents inundate the surrounding swamp forest areas of Sebangau National Park, prompting the migration of various fish species toward *padang ayap* (floodplain areas), tributaries, flood-prone wetlands (*baruh talaga*), and lakes for spawning. Fishing during this phase typically involves intercepting the migratory movements of fish. | October-December |

| | | | |
|---|---|---|---|
| 2. | *Wayah danum manahan* | At the peak of the water level, the flow of the river is no longer directional but becomes evenly distributed across *padang ayap* areas and tributaries. This condition disperses fish movements, making fishing more challenging and resulting in reduced catches for fishermen. | January-March |
| 3. | *Wayah marintak* | During the gradual recession of water levels or periods of minor fluctuation—occurring between March and June—a phenomenon known as *marintak* emerges. This refers to the movement of fish following the water current toward deeper areas. Fishermen observe that rising water temperatures in the *padang ayap* prompt fish to migrate to cooler, deeper waters. The migration from floodplain areas to smaller streams or main rivers is also seen as an early indication of the impending dry season (*wayah pandang*). During *marintak*, fishing becomes easier due to water being concentrated in limited areas, leading to fish clustering and facilitating the catching process. | March-June |
| 4. | *Wayah pandang or wayah danum surut* | At the height of the dry season, water volume decreases drastically, leaving the *padang ayap* areas parched, with flow remaining only in tributaries and the main river. This period is referred to as *wayah danum surut*. The significant reduction in water levels leads to lower fish catch volumes, diminishing the viability of fishing as a primary livelihood and compelling many fishermen to seek alternative sources of income. | July-September |

Source: Processed Primary Data, September 2024

The Sebangau National Park (TNS) area experiences four seasonal phases throughout the year, including *Wayah Surung Senyap* (October–December), *Wayah Manahan* (January–March), *Wayah Marintak* (March–June), and *Wayah Pandang* or *Wayah Danum Surut* (July–September). Fishermen adapt to these cycles by employing varied fishing techniques corresponding to each seasonal phase. The *high season*, or the peak fishing period in terms of catch volume, occurs during March–June and October–December, approximately six months of the year. Outside this period, fishing activities continue but at a less intensive scale. Table 2 presents the classification of fishermen, while Table 3 outlines the categories of fishing areas within the Sebangau region.

Table 2. Classification of Fishermen in the Sebangau National Park Area

| No | Fisherman Category | Description | Notes |
|---|---|---|---|
| 1. | Resident Fishermen | Fishermen who reside permanently in fishing areas throughout the year to safeguard their assets, including homes, fishing gear, and fishing zones. | Own permanent housing and live near their fishing ground |
| 2. | Seasonal Fishermen around Sebangau | Fishermen living around the Sebangau River (Katingan, Pulang Pisau, and Kereng Bangkirai) who maintain temporary shelters at fishing sites. | - Have temporary huts for seasonal stays<br>- Fish only during peak fishing seasons |
| 3. | Distant Seasonal Fishermen | Migrant fishermen, mostly from Hulu Sungai Selatan, South Kalimantan, typically recruited by relatives already working in Sebangau River. | - Long-distance migrants who build huts for residence<br>- Often live with 2–3 families per hut |
| 4. | Recreational Fishermen from Palangka Raya | Fishermen who engage in fishing for leisure, hobby, or lifestyle reasons, usually part of recreational angling communities. | |
| 5. | *Nyambulang* or Commuter Fishermen | Fishermen who migrate temporarily during fishing seasons but maintain a primary residence in their village. This pattern reflects two groups: permanent and seasonal fishermen. Locally, this mobility is known as *nyambulang*. | - Reside in their home village but occasionally migrate depending on fishing seasons<br>Prioritize returning home after fishing activities |

Source: Processed Primary Data, September 2024

There are five fisherman categories in the Sebangau National Park area: resident fishermen, seasonal fishermen from the Sebangau vicinity, long-distance seasonal fishermen, recreational fishermen from Palangka Raya, and *nyambulang* or commuter fishermen. These categories are based on the fisherman's place of residence or origin. Fishermen's adaptive responses are shaped by ecological, social, and economic conditions, such as seasonal patterns, fishery resource dynamics, accessibility to fishing locations, household economic status, and the regulatory constraints of conservation zones.

**Table 3.** Classification of Fishing Grounds in the Sebangau Area

| No | Fishing Ground Category | Description |
|---|---|---|
| 1. | Main Rivers | Large rivers without established settlements or fisherman huts. These are open-access fishing areas used by fishermen from various regions. |
| 2. | Open and Closed Swamps | Swamps connected to small rivers, usually owned privately or by families. These areas are influenced by tidal changes and often contain fish traps. |

| | | |
|---|---|---|
| 3. | Tributaries and Sub-tributaries | Almost all tributaries and sub-tributaries formed naturally. Ownership is traditionally based on first-use and is passed down hereditarily. |
| 4. | *Tatas* | Areas consisting of former logging canals and peatland rewetting zones. Ownership is typically attributed to the canal creators. |

Source: Processed Primary Data, September 2024

Fishing grounds in the Sebangau region exhibit varying types of user rights: main rivers, open and closed swamps, tributaries and sub-tributaries, and *tatas* (former logging canals). These differences are determined by the ecological and spatial characteristics of each site. Such diversity in fishing areas necessitates the development of varied adaptive strategies among fishermen, involving the use of different technologies, fishing schedules, gear types, and targeted fish species.

The fishing gear utilized by fishermen in the Sebangau National Park (TNS) area is generally simple and non-mechanized. Unlike in some other inland fisheries, fishermen in the Sebangau region do not employ mechanical equipment as auxiliary tools in their fishing activities. The following are the types of fishing gear commonly used by Sebangau fishermen. Table 4 presents the classification of fishing gear in the Sebangau National Park area.

**Table 4.** Types of Fishing Gear in the Sebangau National Park Area

| No | Name of Gear Type | Location of Use | Targeted Fish Species |
|---|---|---|---|
| 1. | Pengilar kakari | Riverbanks and lakes | Kakari, Banta, Seruang |
| 2. | Ancau | Banta, Seruang | Banta, Seruang |
| 3. | Rawai | Lakes, swamps, riverbanks | Baung, Tauman, Patin |
| 4. | Jabak | Lakes, swamps, riverbanks | Baung |
| 5. | Rengge (various size) | Lakes and rivers | All types of fish |
| 6. | Salambau | Lakes and small rivers | All types of fish |
| 7. | Tamba | Riverbanks and lakes | Shrimp |
| 8. | Kambam | Swamps | Kakapar, Patung, Mihau, Catfish |
| 9. | Banjur | Swamps and lakes | Gabus |
| 10. | Lunta/jala | Lakes/rivers | All types of fish |
| 11. | Pengilar | Rivers and lakes | All types of fish |
| 12. | Pasuran | River/lake/swamp banks | Banta/Seruang |
| 13. | Wuw | Swamps | Kakapar, Gabus, Catfish, Mihau |

Source: Processed Primary Data, September 2024

**Figure 2.** Fisherfolk Activities in the Sebangau National Park Area

The calculation of fishermen's production costs is presented in Table 5, which reflects the cumulative amount expended in a single fishing operation. The estimated cost incurred by a fisherman per trip is approximately IDR 185,000, while the gross revenue amounts to IDR 675,000. This yields a net income of IDR 490,000 per fishing activity. On average, fishermen can conduct four to five trips per month, resulting in an estimated monthly income of IDR 2,450,000 (Moeliono and Itta 2015). However, this income is subject to fluctuations due to the unpredictable nature of fish catch yields (Pálsson and Durrenberger 1990; Semedi, Hardianto, and Krishnayanti 1998). Most of the income is used to cover daily debts, including necessities and children's allowances (Moeliono and Itta 2015).

**Table 5.** Production Cost and Income Calculation of Fishermen in Sebangau National Park Area

| Description of Revenue and Expenditure | Revenue Amount (IDR) | Cost Amount (IDR) |
|---|---|---|
| I. Costs*) | | |
| 1. Fuel (10 liter @ IDR 15,500,-) | | 155,000 |
| 2. Cigarettes, 1 pack @ IDR 10,000,- | | 10,000 |
| 3. Salt (Preservative) | | 10,000 |
| 4. Miscellaneous (oil, spark plugs, etc.) | | 10,000 |
| **Total:** | | **185,000** |
| II. Gross Revenue | | |
| 1. Fresh Fish (10 KG) @ IDR 50,000 | 500,000 | |
| 2. Dried Fish (5 KG) @ IDR 35,000 | 175,000 | |
| Total: | **675,000** | |
| III. Net Revenue | **490,000** | |

Source: Processed Primary Data, September 2024

Fishing is not considered an ideal occupation for the Sebangau community. Limited access to natural resource extraction within the national park constrains income-generating opportunities. Activities that are deemed violations of conservation regulations—such as logging, electrofishing, or gold panning—are prohibited, even though they might offer higher economic returns. Despite these constraints, the Sebangau community, with support from various stakeholders, has sought to develop alternative livelihood strategies.

Following the decline of the timber industry, the Sebangau community had to readjust to a new livelihood system marked by the designation of the area as a "National Park." Ministerial Decree No. SK.423/Menhut-II/2004 declared Sebangau as the 49th National Park in Indonesia. The state's territorialization of this area introduced new regulatory mechanisms that govern access to land and resources (Peluso and Lund 2011). Local communities are compelled to navigate and adapt to these regulations to survive. This territorial governance generates social consequences, compelling the community to continuously negotiate their social space to sustain their livelihoods. These complex negotiations between the conservation authorities, represented by the Sebangau National Park Management Agency, and local communities dependent on the area's natural resources, reflect a form of socio-institutional adaptation. Such negotiations aim to align environmental conservation objectives with the livelihood needs of residents. Fishermen have thus developed adaptive strategies across ecological, technological, and socio-political domains, particularly in their capacity to negotiate regulatory systems and engage with other actors.

Historical inquiry into conservation reveals that it is fundamentally a history of nature governance shaped by the ideologies of environmental experts and legitimized through regulation (see: Boomgaard, Henley, and Colombijn 2022; Cribb and Hermans 2015; Wikramanayake et al. 2002). Conservation is thus a history of regulating nature according to expert visions, which are then negotiated with various political, economic, and community interests (Sudibyo 2016). Unfortunately, such top-down regulatory frameworks often overlook the presence and needs of local communities.

The experience of the Sebangau community reflects these dynamics. Several studies have noted that residents struggle to identify sustainable and welfare-enhancing livelihood options (Meilani et al. 2021; Moeliono and Itta 2015; Roviana 2015). Government regulations often fail to align with empowerment programs grounded in the community's lived realities. Most initiatives originate from external perspectives rather than grassroots engagement (Meilani et al. 2021; Roviana 2015). Consequently, these programs are often perceived merely as "projects" rather than meaningful efforts toward long-term socio-ecological awareness (Meilani et al. 2021). Conservation, and the importance of the environment become abstract concepts, "television advertisements" that fail to resonate with or be internalized by the community. Residents remain focused on securing livelihoods, viewing these programs as peripheral activities.

The complexity of these issues is further compounded by climate change and overlapping interests. Climate instability affects local livelihoods, particularly for fishermen. Unpredictable water levels reduce fish availability, leading to diminished catches. As one fisherman recounted:

> ***"The water isn't right—it's neither low nor high—so it's getting harder to find fish. For the past two years, we've only made enough to pay off our debts."***

This condition has led to a decline in income, prompting some members of the community to seek alternative livelihoods to survive, such as gold panning or working in construction projects. The narrowing range of viable livelihood options has also driven some individuals to resort to immediate and high-risk actions. These include engaging in illegal logging, burning *rasau* (peat swamp vegetation) to facilitate fishing, or using electric shocks to quickly harvest fish. This was evident in our conversation with a fisherman in the Mangkok River area, who stated:

> ***"Yes, I burned the rasau, hehe... to make a path for fishing, sir, because it was blocking our way. Once it's cleared, it's easier to fish inland. It's hard to find fish nowadays."***

Such consequences continue to create a space for social negotiation among the community (Sudibyo 2016), as they search for compromises that allow them to survive. Similarly, unpredictable weather conditions have caused ecotourism activities to halt temporarily. Fortunately, in the past six months, tourism-related economic activities have gradually resumed. The figure below illustrates the schematic relationship between conservation, fishermen's responses, adaptation strategies, conflict, and emerging opportunities.

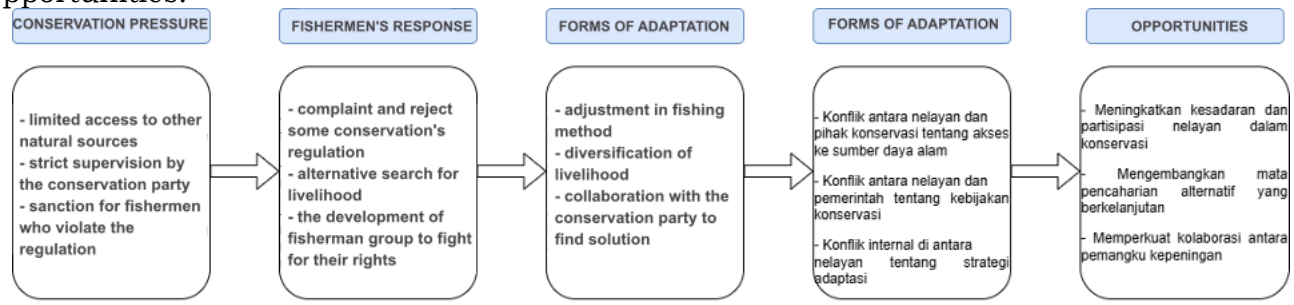


**Figure 3.** Schematic Representation of Research Findings
Source: Processed Primary Data, 2024

## CONCLUSION

The dynamics described above indicate that livelihood practices in Sebangau are still characterized by processes of "social negotiation". Residents are constantly seeking compromises that enable them to adapt to the regulations of Sebangau National Park while meeting their subsistence needs. The regulations imposed upon them have become an unavoidable part of life; yet, the community persistently seeks alternative means of livelihood to sustain themselves.

This study finds that river fishers in the vicinity of Sebangau National Park face significant challenges in sustaining their livelihoods due to the park's regulations, which restrict their access to natural resources. However, these fishers have developed strategies to negotiate with the park's regulations and secure alternative means of subsistence. The limited availability of alternative livelihood options compels the fishers to engage in negotiation spaces concerning conservation rules continuously. These negotiation spaces give rise to various forms of adaptation, such as hybrid coexistence between traditional practices and conservation regulations, seasonal mobility as a negotiated strategy, and limited tolerance by field officers toward certain practices deemed non-destructive. It is undeniable that covert environmentally harmful practices are, in some cases, part of the broader effort to find a middle ground for survival within the "conservation system".

## RECOMMENDATIONS

Recommendations from the results of this study are as follows:

1. Government agencies and conservation institutions should expand empowerment programs to assist fishermen in developing sustainable alternative livelihoods. Ecological incentive schemes—such as Payment for Environmental Services (PES) or conservation-based business capital support (e.g., environmentally friendly fish farming)—can promote active community participation in conservation efforts. Expanding access to training and markets is also critical for supporting sustainable livelihood diversification.
2. Conservation institutions should enhance their communication strategies using more dialogic and locally grounded approaches. Policy development processes should involve representatives of fishing communities from the planning stage through joint forums or co-management mechanisms. Additionally, conservation narratives should be contextualized to align with the community's economic realities to foster stronger

awareness and reduce the perception that conservation is an externally imposed and detrimental agenda.
3. Support for local institutional development and community-based enterprises is essential to improve economic resilience and independence within the Sebangau community.

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