

## Community Empowerment through the Utilization of Village Forests for Sustainable Fish Farming

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### ABSTRACT

The Village Forest in Pilang Village, Jabiren Raya Sub-district, Pulang Pisau Regency, Central Kalimantan covers an area of 8,583 hectares. The Village Forest is a social forestry scheme designed to enable local communities living near the forest to utilise it for the purpose of improving their welfare. Community service activities in Pilang Village were carried out in November 2025 with the aim of encouraging the people of Pilang Village to utilise their Village Forest for sustainable fish farming. The Village Forest can be utilised for fisheries activities using the silvofishery system, covering 30% of the total working area. The Village Forest is currently utilised primarily for plantation activities (palm oil and rubber), but fisheries activities have not yet been optimally implemented by the community of Pilang Village.

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## **INTRODUCTION**

Village Forest (HD) is a state forest managed by the village and used for village welfare and its management is carried out by the Village Forest Management Institution (LPHD) which was formed and structurally under the village leadership referring to the Regulation of the Minister of Environment and Forestry No.83 of 2016 (Setiawan, et al., 2021) which was formed through a social forestry scheme (Rahman and Irwandi, 2024).

In the Regulation of the Minister of Environment and Forestry No. 4 of 2023 Article 48 point 4 states that the use of forests in work areas can be carried out, namely silvofishery with a maximum area of 30% of the total area of the approved social forestry area. As a form of sustainable resource utilization, silvofishery integrates fishery cultivation activities with the protection of mangrove ecosystems. This approach not only supports the improvement of community welfare, but also maintains the ecological function and conservation of forest areas in a sustainable manner. The Village Forest in Pilang Village, Jabiren Raya District, Pulang Pisau Regency has an area of 8,583 ha based on the Social Forestry management decree with the village forest scheme (LPHD) with a SK number. 10389/MENLHK- PSKL/PKS.0/12/2019.

The existence of Village Forests in Pilang Village has not been optimally managed by the community that is included in the membership of LPHD Pilang Village. This can be caused because the public's understanding of the use of Village Forests is still very limited, even though according to Suwarti, et al (2015), Village Forests are a form of policy for community empowerment in and around forest areas and realizing fair and sustainable forest management. In addition, Village Forests are expected to provide access to local communities through village institutions, and improve the welfare of local communities in a sustainable manner.

One of the potential village forest management (HD) efforts in Pilang village, is fish farming, because the settlement of Pilang villagers is on the edge of the Kahayan river, so sustainable fish farming management is important, considering the condition of the river which is prone to pollution from gold mining, and sand upstream, according to Pagoray et al (2014) that open mining results in changes in physical properties, soil chemistry and biology, which can affect water quality. This is in line with the results of a study where sustainable fish farming management focuses on social, cultural, and economic aspects, as well as the ecological function of the river environment (Ditya et al., 2012; Wilianto and Sutanto, 2024).

Sustainable fish farming is a fisheries management effort that integrates environmental, economic, social and cultural aspects, to ensure the sustainability of fish production in the long term. These ongoing efforts can be made through; feed efficiency, water quality management, technology utilization, and strengthening the institutional role of the community. So that sustainable cultivation is able to increase fish production while preserving aquatic ecosystems.

Furthermore, Yustiati, A., & Lusia, A. (2025) that challenges in sustainable fish farming management include, environmental pollution, declining water quality, limited capital, lack of cultivation knowledge, and conflicts in the use of aquatic space. This needs to be the government's attention, especially policies on sustainable fisheries management, in an effort to preserve river ecosystems.

## **IMPLEMENTATION AND METHODS**

The Community Service activity was carried out at the Pilang Village Meeting Room, Jabiren Raya District, Pulang Pisau Regency, Central Kalimantan in November 2025. The implementation of the service is carried out by the lecture method which is the simplest and most often carried out counseling method to arouse awareness and interest of the target (Lusiani, et al. 2023) and demonstrations.

Participants in this service activity are the people of Pilang Village, especially people who are included in the Pilang Village Forest Group with a total of 25 participants.

The stages in carrying out this service activity are as follows:

### ***Stages of Observation and Coordination***

The observation stage is carried out to get an overview related to the target audience and to get initial information about the problems faced by the target audience. Observation and coordination are the initial stages carried out to identify the conditions, needs, and potentials of the target community. This activity was carried out through field visits to obtain information on social, economic, and environmental aspects, as well as collect data related to problems, opportunities, and resources that can support the success of community service programs. Then, coordination stages were carried out with village officials to obtain permission to carry out service activities that aim to help provide solutions for the community in utilizing the potential available in the village. The coordination stage is carried out by involving the village government, community groups, village forest managers, and other related parties to harmonize the objectives, plans, and mechanisms for implementing activities. Through this coordination, it is hoped that good communication will be established, support from various parties can be obtained, and an agreement on the schedule and form of activities can be reached so that the service program can run effectively and in accordance with the needs of the community.

### ***Stages of Implementation***

The implementation of the service activities was carried out in two sessions, namely a lecture session and a demonstration session. The lecture session was filled with the delivery of material related to the existence of Village Forests and their Potential Utilization in the Fisheries Sector, and in the demonstration session, participants were given the opportunity to show the Utilization area on the Village Forest Map. The implementation of activities is the core of the service program which focuses on the implementation of work plans based on the results of observation and coordination. At this stage, the service team carries out various activities, such as socialization, counseling, training, practice demonstrations, and technology transfer to improve community knowledge and

skills according to their needs and potential. At the stage of implementing the activity, participants were given material briefings according to the theme of service and the opportunity to discuss to deepen their understanding and skills. The service team also conducts hands-on practice so that participants are able to apply learning results in daily life. By actively involving the community and related parties, the program is expected to be carried out optimally, on target, and have a sustainable positive impact.

## **RESULTS AND DISCUSSION**

### ***Opening Activities***

The service activity in Pilang Village which was carried out at the Pilang Village Meeting Building was attended by the Head of Pilang Village who also concurrently serves as the Chairman of the Village Forest Management Institution and Village Apparatus as well as the community who are included in the members of the Pilang Village LPHD, with a total of 25 participants.

This service activity was officially opened by the Village Head which was continued by one of the service teams to convey the purpose and objectives of the service activities in the village (Figure 1).



**Figure 1. Participants of the Activity and the Opening of the Implementation of Service Activities at the Pilang Village Meeting Building**

### ***Submission of Material on the Utilization of Village Forests for Fish Farming Activities***

After the opening of the activity was completed, the activity continued with a material delivery session using the lecture method by the service team (Figure 2).



**Figure 2. Delivery of Material by the Service Team**

In the delivery of this material, emphasis was placed on the use of Village Forests. Village forests are state forests located in a village area, but can be used by the village for the welfare of the village community. The forest management scheme involves communities around the forest (WARSI, 2026). As a forest that is given the authority to be managed independently by the community, its use should be carried out optimally to improve the community's economy. However, this has not fully been able to have an impact on economic changes for the community. According to Setiawan et. al. (2021) that the existence of Village Forests has not made a significant contribution to improving the community's economy. This is due to various factors, lack of market access, lack of business capital, lack of assistance, the unavailability of strong community institutions to be able to manage forest resources sustainably, limited physical infrastructure is also a factor causing weak communities in the use of village forests.

The Village Forest Management Institution in Pilang Village already has several Social Forestry Business Groups (KUPS), one of which is the Fisheries KUPS whose purpose is to carry out fisheries business in the Village Forest work area. The existence of the Fisheries KUPS is still carrying out fisheries cultivation business outside of the work of Village Forests because the understanding related to the use of Village Forests is very limited. A study on village forest management (HD) through the social forestry method (PS), Wahyu et al (2022) found that the success of Village Forest management in supporting sustainable development is highly dependent on the ability to implement social forestry in maintaining ecological, economic, social, and cultural aspects in a balanced manner. Sustainability assessments are needed to evaluate the effectiveness of its implementation, with important indicators including forest cover conditions, area of management, market access, community income, control of work areas, and benefit distribution systems. Various studies show that economic and social aspects are still the main challenges because the level of sustainability tends to be lower than the ecological aspect.

This is in line with the results of a study by Rochmayanto et al (2022) that some of the problems related to village forest management (HD) include; contradictions in the formulation of forest definitions; lack of regulation on forest allocation, and community-based utilization is still lacking, and there is a varying gap between de jure provisions and de facto rights in forest management. So that people's perceptions of indigenous rights interact with their understanding and experience of formal classification in contexts, where the state has made large concessions to private companies for logging, thus becoming important to promote community-friendly local governance, will potentially contribute to sustainable forest management.

Based on the Regulation of the Minister of Environment and Forestry Number 4 of 2023, Social Forestry has several uses, namely Forest Utilization in Protected Forests and Forest Utilization in Production Forests. Village Forest Management plays an important role in improving the community's economy through the sustainable use of forest resources. Through the social forestry scheme, communities can develop various productive businesses based on forest potential, such as agroforestry, non-timber forest products, and ecotourism. In addition to supporting environmental conservation, these activities also contribute to increasing income and community welfare. The success of its management is influenced by local institutions, market access, the area of management, and a fair and sustainable benefit distribution mechanism. Village Forest Management can be an instrument for improving the community's economy through the sustainable use of forest resources and the development of locally-based productive businesses (Fitriana et al., 2023; Rochmayanto et al., 2022; Sukardi, S. 2017).

It is also stated that the use of forests in the working area of the Social Forestry Management Approval can be carried out with the pattern of agroforestry, livestock wana or silvopastura, wana mina or silvofishery, and livestock farming or agrosilvopastura. according to the function of the forest and the type of space. The area that can be used for the use of forest forests with the pattern of silvofishing activities, which is at most 30% (thirty percent) of the working area.

This Community Service (PkM) activity provides knowledge and insight for the people of Pilang village, that fish farming is sustainable, able to provide economic and sustainable benefits for cultivators, while still paying attention to the carrying capacity of the environment, so that production activities do not cause damage to the aquatic ecosystem (Ditya et al., 2012; Arifin and Kepel, 2014).

### ***Demonstration of Village Forest Utilization Area for Fish Farming Activities***

In the next session, the service participants were given the opportunity to work on the Village Forest Map that had been prepared (Figure 3).



**Figure 3. Demonstration of Rural Forest Utilization**

Participants were asked to provide an overview of the Village Forest and also the activities and utilization areas in the Village Forest area. This was done to see the extent to which participants knew the existence and utilization of Village Forests. Based on the observation results of the demonstration activities, it can be seen that more than 50% of the participants do not understand the use of Village Forests. This can be seen from the lack of participation of participants in providing information on the working paper (Village Forest Map) that has been prepared. From the results of the demonstration, it was also found that Village Forests are more used for plantation activities (rubber and palm oil), there has been no use of Village Forests for fish farming areas. Therefore, it needs to be emphasized that Village Forests can be used for fish farming activities in a sustainable manner to support the village economy. The selection of fish commodities for cultivation must also be adjusted to the characteristics of the soil in the Village Forest. The right fish commodity for cultivation can reduce maintenance costs. The part of the Village Forest area where there is a former Peatland canal can be used as a local fish farming area.



**Figure 4. Participant Participation in Discussion**

In addition to functioning as a conservation area, village forests have the potential to support sustainable fish farming activities, as long as their management is carried out by integrating environmental, economic, and social dimensions in a balanced manner. Efforts to develop sustainable fish farming in village forest areas can be carried out by optimizing the management of aquatic resources, integrating silvofishery systems, utilizing the availability of natural feed, encouraging community business diversification, and strengthening local institutional capacity (Perwitasari, W.K., et al. 2020; Arfan, A., et al. 2023; Andriani, Y., & Wulandari, D.K. 2024).

#### *Success of Service Activities*

The service activities in Pilang Village can be said to be successful. This success can be seen from the series of activities that can be carried out well. In addition, it is also seen from the participation of participants who are quite active in discussions during the activity (Figure 4)

Participants provided information related to their knowledge in managing Village Forests and what activities and obstacles were experienced by them in managing Village Forests. Furthermore, Wahyu et al (2022) say that village forests (HD) will be of great benefit in terms of sustainability, if the implementation of social forestry, especially at the local level, is able to ensure ecological, economic, social, and cultural sustainability. Sustainability assessments of various Social Forestry (PS) schemes are essential to recognize, evaluate and improve their implementation at the

local level. In general, the economic and social dimensions have a lower sustainability value, compared to the ecological dimension. Several indicators play an important role in the sustainability of HD, including; changes in forest cover, land area managed, market coverage, community income, control of work areas, and benefit distribution mechanisms.

## **CONCLUSIONS AND RECOMMENDATIONS**

Service activities in the form of community empowerment through the use of Village Forests for sustainable fish farming in Pilang Village showed positive results. Through lectures and demonstration methods, the community gained a better understanding of the functions and benefits of Village Forests as a resource that can be used to improve economic welfare without neglecting the aspect of environmental sustainability. This activity also raises public awareness about the importance of maintaining a balance between the use of forest resources and conservation efforts to ensure the sustainability of the benefits that can be felt by future generations.

The pattern of utilization of Village Forests for fisheries activities is carried out through the implementation of the silvofishery system, which is a cultivation system that integrates fisheries activities with the preservation of forest vegetation around the cultivation area. This approach was chosen because it is able to maintain the ecological function of the area while providing economic benefits to the community. In this activity, cultivation is focused on the use of local fish as the main commodity, considering that these types of fish have a high level of adaptation to local environmental conditions, are easier to manage by the community, and have the potential to support local fishery resource conservation efforts. Community service activities also encourage the community to understand the importance of sustainable resource management, thus, the community not only derives economic benefits from cultivation activities, but also plays an active role in preserving the Village Forest ecosystem. The results of the activity show that there is an increase in community knowledge and interest in the development of fish farming based on Village Forests, as well as supporting the success of productive and sustainable Village Forest management.

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