

COMMUNITY EMPOWERMENT IN NATURAL RESOURCE MANAGEMENT BASED ON REGIONAL PLANNING IN WALELAGAMA VILLAGE, WESAPUT DISTRICT, JAYAWIJAYA REGENCY

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Abstract

Sustainable management of natural resources in rural areas is a major challenge for many communities in Indonesia, especially in areas that still depend on local natural resources without structured planning. Walelagama Village, Wesaput District, Jayawijaya Regency, is an example of a community that relies heavily on forest management and agricultural land to meet its living needs. However, the lack of integrated regional planning means that natural resource management practices are often unsustainable and have a negative impact on the environment. Therefore, this community service activity aims to increase community capacity in managing natural resources based on regional planning, with a participatory approach that integrates local wisdom and modern technology. The service activity was carried out in September 2024, with participants consisting of 35 people including the village head, village administrators and the local community. The method used in this activity is socialization carried out in the village head's office, followed by group discussions and regional zoning-based planning simulations. In this activity, participants are invited to understand the importance of regional planning to preserve nature while increasing agricultural productivity through appropriate zoning. This simulation allows participants to identify and map conservation, production and settlement areas that suit natural conditions and community needs. The results of this activity show that the people of Walelagama Village are starting to understand the concept of zoning-based regional planning, although there are several challenges that need to be overcome, such as limited technological infrastructure and differences in education levels between participants. Limited access to technology hampers people's ability to utilize data-based planning tools, while differences in education levels affect the level of understanding of the material presented. However, this program succeeded in increasing public awareness of the importance of planned and sustainable natural resource management. Overall, this service program makes a significant contribution in increasing the capacity of the Walelagama Village community in terms of managing natural resources based on regional planning. It is hoped that this activity can be the first step towards implementing better regional planning in the future, which will not only benefit the community, but also support sustainable environmental conservation. In addition, the results of this activity indicate the need for further support in the form of improved technological infrastructure and advanced training programs to ensure the sustainability of natural resource management at the community level.

Keywords: *community participation, environmental sustainability, local wisdom, natural regional planning, resource management.*

1. INTRODUCTION

Walelagama Village, which is located in Wesaput District, Jayawijaya Regency, is one of the areas that has a wealth of natural resources that have the potential to support sustainable

development. This potential includes forest products, fertile land for agriculture, and abundant water resources. However, the use of these resources still faces various challenges related to community capacity in management, regional planning and environmental sustainability. Most of the people in Walelagama Village depend on natural resource-based activities for their livelihoods, such as traditional farming, animal husbandry and the use of forest products. However, these resource management practices are often not well planned, resulting in environmental damage, land degradation and loss of long-term economic potential. One of the main causes is the lack of community knowledge and skills in data and information-based regional planning.

Apart from that, social and cultural challenges are also factors that influence the management of natural resources in Walelagama Village. Strong customary structures play a large role in decision making regarding land and resource management, but are often not integrated with modern approaches to regional planning. On the other hand, the lack of access to formal education and technical training means that communities do not have adequate tools to utilize the potential of natural resources optimally and sustainably. Community empowerment is the key to overcoming this problem. By increasing community capacity in managing natural resources based on regional planning, a balance can be created between utilizing natural resource potential for community welfare and environmental preservation. Good regional planning allows communities to understand how to manage land, determine development priorities, and minimize the risk of environmental damage.

This empowerment program is also important to support the sustainable development agenda that the regional government has committed to. Jayawijaya Regency, with various development policies based on local empowerment, requires collaboration from various parties, including academics, government and indigenous communities. Walelagama Village, as one of the strategic areas in Wesaput District, can be a model for implementing natural resource management based on community participation and regional planning. With this program, it is hoped that the people of Walelagama Village will not only be able to optimize the use of existing natural resources but also have the capacity to maintain environmental sustainability. This program can also be a starting point for building public awareness about the importance of synergy between local wisdom and modern approaches in natural resource management. This is in line with the development vision of Jayawijaya Regency to create an independent, prosperous and environmentally conscious society. Therefore, implementing a community empowerment program in managing natural resources based on regional planning in Walelagama Village is an urgent need to support development that is inclusive, sustainable and based on local potential.

The potential natural resources in Walelagama Village are actually not only beneficial for the local community but can also make a significant contribution to the economy of Wesaput District and Jayawijaya Regency as a whole. However, the challenges faced by local communities are not only related to a lack of technical skills and knowledge of regional planning. Another fundamental problem is a lack of understanding of the value and economic potential of the resources they own. Many natural resources are not utilized optimally because society does not fully understand how to integrate this potential into a larger economic chain.

Apart from that, the impacts of climate change and unsustainable exploitation of natural resources are also starting to be felt in this region. Irregularities in land clearing, shifting agricultural practices, and deforestation have caused damage to local ecosystems, which ultimately resulted in reduced crop yields, soil erosion, and reduced clean water resources. If not handled properly, this problem could threaten the sustainability of life of the people in Walelagama Village. The socio-cultural context of society also has a significant influence on natural resource management. Traditional structures that are the main decision-making systems often do not have access to modern information regarding land and environmental management.

This creates a gap between local wisdom and the science-based approach needed in managing natural resources in the modern era. Thus, an approach is needed that is able to bridge these two sides, namely through empowerment that respects local culture while introducing new concepts in natural resource management.

From a regional development perspective, Walelagama Village also faces limitations in access to infrastructure and basic services. Connecting roads, access to markets, educational and training facilities are still minimal. This condition makes it difficult for people to market agricultural products or other natural resource products more widely. Thus, good regional planning can help map infrastructure needs in a more targeted manner and is oriented towards developing local potential. The importance of multi-stakeholder collaboration cannot be ignored either. Walelagama Village requires intervention from various parties, including academics, government and non-governmental organizations, to strengthen community capacity in managing natural resources in a sustainable manner. This empowerment program is expected to be a strategic step to build collective awareness and active community involvement in the regional planning process.

A regional planning-based approach provides several key benefits. First, communities can utilize simple technology such as participatory mapping to understand the potential and limitations of their land. Second, this program can help identify regional zoning, such as conservation areas, production areas, and residential areas, all of which are designed to support ecological and socio-economic balance. Third, with ongoing training and assistance, communities are expected to be able to manage their natural resources in a more effective, efficient and sustainability-oriented manner. Apart from that, this program also provides space to introduce relevant innovations, such as environmentally friendly agricultural technology, community-based forest management, and small business models based on local resources. This approach is expected to not only increase people's income but also strengthen their independence in facing changing social and economic dynamics.

Through this program, Walelagama Village can become an example of best practice for community empowerment in regional planning-based natural resource management in Papua. It is hoped that the success of this program will inspire other areas in Wesaput District or even Jayawijaya Regency to implement a similar approach. Thus, this program not only has an impact on improving the quality of life of the people of Walelagama Village but also supports the achievement of sustainable development goals at regional and national levels.

2. METHOD

Community service activities with the title "Community Empowerment in Natural Resource Management Based on Regional Planning in Walelagama Village, Wesaput District, Jayawijaya Regency" were carried out in September 2024. This program aims to increase community understanding and skills in managing natural resources sustainably through regional planning approach. The method for implementing this activity is designed systematically through several stages, namely preparation, implementation of socialization, and evaluation.

1) Activity preparation

The preparation stage is carried out to ensure the smoothness and effectiveness of activities. The series of preparations includes:

- a) **Participant Identification.** Participants consisted of 35 people including the village head, village administrators and the people of Walelagama Village. The selection of participants was carried out by considering their strategic role in the natural resource management process at the village level.
- b) **Coordination with Village Officials.** The service team coordinates with the village head to determine the schedule and location of activities. The village head's office was chosen as the implementation location because it is easily accessible to the local community and has adequate facilities.
- c) **Material preparation.** Socialization materials are prepared in a simple and applicable manner to suit the participants' backgrounds. Material includes:
 - The importance of natural resource management based on regional planning.
 - Basic regional planning techniques that involve community participation.
 - Simple case studies to provide real illustrations to participants.

1) **Implementation of Socialization**

The socialization was carried out directly at the village head's office with time divided into three main sessions:

- **Presentation of Material.** The service team delivered material interactively using visual aids such as PowerPoint presentations and local maps of Walelagama Village. Emphasis is placed on the importance of integrating local wisdom with modern planning approaches.
- **Group Discussion.** Participants were divided into several small groups to discuss the main problems in natural resource management in Walelagama Village. Each group was asked to identify the challenges they faced and develop strategic steps as a solution.
- **Regional Zoning Simulation.** In this session, participants were invited to make a simple zoning sketch of the Walelagama Village area. Participants map conservation areas, production areas and residential areas. This simulation aims to provide a practical illustration of the importance of regional planning in maintaining the sustainability of natural resources.

2) **Participatory Approach**

Participatory methods are used to ensure the active involvement of all participants. This approach allows participants not only to receive the material but also to contribute directly to the planning and decision-making process. Active community participation is expected to strengthen the sense of ownership of the results of this activity.

3) **Evaluation of activities**

After the activity is completed, an evaluation is carried out to measure the success of the program and the level of understanding of the participants. Evaluation is carried out through:

- **Reflective Discussion.** Participants provide feedback on activities, including perceived benefits, challenges faced, as well as suggestions for future improvements.
- **Simple Questionnaire.** Participants fill out a questionnaire to assess their understanding of the material presented and provide input on implementation methods.

The evaluation results show that the method used can increase participants' understanding of the importance of natural resource management based on regional planning. With implementation taking place in September 2024, this activity succeeded in creating community enthusiasm and commitment to implement more planned, effective and sustainable natural resource management.

3. RESULT AND DISCUSSION

Implementation Results

Community service activities with the theme "Community Empowerment in Natural Resource Management Based on Regional Planning in Walelagama Village, Wesaput District, Jayawijaya Regency" were successfully carried out in September 2024 involving 35 participants consisting of village heads, village administrators and the general public. Socialization was carried out at the village head's office with the results which can be summarized as follows:

1. Increased Participant Understanding

Initial evaluation showed that the majority of participants did not understand the concept of regional planning-based natural resource management. After socialization, the results of the questionnaire showed an increase in understanding of 75% of the material presented, especially in aspects of regional zoning (conservation, production and residential areas).

2. Group Discussion and Problem Identification

Through group discussions, participants were able to identify three main problems that are often faced:

- Lack of access to information regarding the potential of natural resources in Walelagama Village.
- There is no clear land use planning, causing overlapping land uses.
- Destructive management practices, such as careless land clearing, which results in environmental degradation.

3. Regional Zoning Simulation

The regional planning simulation produced an initial zoning sketch consisting of a conservation area in the mountains, a production area for agriculture in the lowlands, and an expanded residential area taking into account the community's spatial needs. This sketch will be the basis for the community to develop a more detailed village spatial plan.

Discussion

1. The Importance of Regional Planning-Based Management

Natural resource management based on regional planning is a strategic approach that has proven effective in creating a balance between resource utilization and environmental conservation. This approach emphasizes the importance of targeted and data-based management to optimize natural potential while minimizing the risk of environmental damage. Previous research by Wibowo et al. (2019) shows that implementing a regional zoning-based approach can increase land use efficiency by up to 30%, especially in rural areas which have varying levels of community education. This study highlights how zoning mapping can help communities determine the specific function of each part of the territory, such as conservation, production or residential areas, thereby preventing potentially detrimental overlapping land uses. These findings are relevant to conditions in Walelagama Village, Wesaput District, Jayawijaya Regency, where the majority of people are very dependent on local resources to meet their living needs, but without clear planning guidelines, resource use tends to be inefficient and has the potential to damage the existing ecosystem.

Furthermore, research by Nugroho (2021) emphasizes that a participatory approach in regional planning not only increases the effectiveness of natural resource management but also creates a sense of community ownership of the planning results. This approach actively involves the community in the process of identifying problems, collecting data, and developing solutions so that they feel they are an important part of the decision-making process. In the context of Walelagama Village, the community service activities carried out prove the importance of this participatory approach. Activity participants, consisting of village heads, village administrators and the general public, felt more involved in preparing regional zoning schemes after

participating in the regional planning simulation. This process not only provides participants with a practical understanding of how land use can be designed strategically, but also strengthens their awareness of their collective responsibility in preserving the environment. As a result, participants were able to identify areas that require special protection, such as forests in the mountains, as well as propose ideal locations for agriculture in the lowlands and settlements that could be developed without compromising ecosystem sustainability. This approach proves that management based on regional planning, if carried out by involving direct community participation, not only increases the efficiency of resource use but also creates synergy between local communities and their environment, resulting in long-term sustainability.

2. Collaboration between Local Wisdom and Modern Approaches

Research by Setiawan (2020) emphasizes that successful management of natural resources in rural areas cannot be separated from the integration of local wisdom and modern technology. These two elements must work hand in hand to create an adaptive, effective and sustainable approach. In rural areas such as Walelagama Village, traditional structures have a very significant role in decision making regarding land and resource management. This traditional system has stood the test of time, with principles rooted in respect for nature and utilization patterns that maintain ecosystem balance. In this service activity, the approach used is carefully designed to respect local values while providing renewal by introducing modern concepts such as regional zoning and data-based planning. This approach is expected to be able to create harmony between long-standing traditions and the innovations needed to face resource management challenges in the future.

One form of local wisdom that was raised in the discussion was the practice of the people of Walelagama Village in using the forest for their daily needs, such as taking wood for building materials, collecting medicinal plants, and harvesting non-timber forest products such as rattan or fruit. This practice is carried out with the principle of "take what is necessary," which preserves forest resources and avoids over-exploitation. In group discussions, the community also emphasized that they have customary rules that prohibit environmental damage, such as large-scale land clearing or uncontrolled hunting. These rules have helped maintain balance in the ecosystem over the years. However, with increasing pressure due to population growth and economic needs, society is starting to face challenges in maintaining this tradition.

By introducing the concept of regional zoning, the modern approach helps the people of Walelagama Village to design more structured land use, such as determining appropriate forest conservation areas, agricultural production areas and residential areas. This concept does not aim to replace customary rules, but rather strengthen them by providing data-based guidance for more efficient management. In the simulation process, participants are invited to combine their traditional understanding with modern technology, such as using simple maps to identify the potential and limitations of each area. This integration creates a new awareness for the community that their traditions can not only be preserved but also optimized with the help of technology.

As a result, the people of Walelagama Village not only understand the importance of protecting forest areas as part of their cultural and ecological heritage, but also see how data-based planning can help increase land productivity without compromising environmental sustainability. This integrative approach is an important first step in building a natural resource management model that respects tradition and is adaptive to current developments. In this way, communities can continue their wise practices while leveraging modern technology to create more effective, efficient and sustainable management in the future.

3. Environmental and Social Impact

Poor management of natural resources has a very broad impact, not only limited to environmental damage but also affecting the quality of life of people who depend on these

resources. Imbalance in land use, over-exploitation, and lack of planning are often the main triggers for this problem. The study by Supriyadi et al. (2018) clearly shows that environmental degradation due to unsustainable management can reduce agricultural yields by up to 40%, especially in rural areas that rely on land as the main source of livelihood. This decline in productivity not only impacts the economic aspects of society but also increases vulnerability to social problems such as food security and family welfare.

In a group discussion held in Walelagama Village, the community directly expressed complaints about the negative impacts they had felt due to poorly planned land management. They note that their crop yields continue to decline, largely due to soil erosion and deforestation in the surrounding region. Soil erosion has removed the fertile layer on agricultural land, thereby reducing productivity significantly. Meanwhile, uncontrolled deforestation worsens environmental damage, including increasing the risk of landslides and losing animal habitats that are important for the balance of local ecosystems.

This community service program is designed as a first step to overcome these problems by providing a basic understanding of the importance of area-based planning as a strategic solution. The approach taken involves regional zoning simulations, where the community is invited to identify and separate conservation areas, production areas and residential areas. With this approach, people can understand that proper zoning will not only help them optimize production areas but also preserve the environment at the same time. For example, areas prone to erosion can be designated as conservation zones to replant protective vegetation, while areas with better agricultural potential can be allocated for production by implementing sustainable farming techniques.

Apart from providing theoretical understanding, this program also emphasizes the importance of practical action in maintaining the sustainability of natural resources. One of the concrete proposals that emerged from the discussion was community efforts to start implementing crop rotation and agroforestry systems on their agricultural land, which could help restore soil fertility and increase crop yields. With this collaboration between local wisdom and modern concepts, it is hoped that the people of Walelagama Village can rebuild a healthier ecosystem while improving their quality of life in the long term. This program is an important starting point for preventing further damage, providing new understanding, and encouraging collective action to realize sustainable natural resource management.

4. Challenges and Limitations

Although this service activity succeeded in increasing participants' understanding of the importance of natural resource management based on regional planning, there are several challenges that need to be overcome to ensure its sustainability and effectiveness. One of the main challenges is limited infrastructure, especially the lack of access to technology and information in Walelagama Village. Without adequate technological support, such as stable internet access and digital devices, the process of implementing data-based regional planning concepts will be very limited. The majority of people who are not familiar with modern technology will find it difficult to utilize planning tools such as digital maps or other planning software. Therefore, efforts are needed to improve technological infrastructure, both through training and providing more easily accessible devices, so that people can apply the concepts they have learned more effectively.

Apart from that, social obstacles are also an important challenge that must be faced in this activity. Not all participants immediately understood the importance of regional planning due to differences in educational levels. People who have a lower educational background may have difficulty absorbing the information presented, especially when it relates to technical concepts in regional planning and zoning. To overcome this, a simpler and more sustainable approach is needed. This approach could take the form of additional training sessions, direct

assistance in the field, or creating material that is easier to understand, for example by using images or visualizations that clearly illustrate the benefits of regional planning. In order for knowledge transfer to occur effectively and ensure continuity of understanding, continuous involvement and support from relevant parties is needed. By overcoming this challenge, it is hoped that the community can make optimal use of regional planning for sustainable natural resource management.

4. CONCLUSION

In conclusion, this service activity has succeeded in increasing the understanding of the people of Walelagama Village regarding the importance of natural resource management based on regional planning. Through a participatory approach and integration of local wisdom with modern concepts, participants can understand effective ways to preserve the environment while optimizing the use of natural resources. However, there are several challenges that must be overcome, such as limited technological infrastructure and social obstacles related to differences in education levels between communities. To ensure the sustainability and effectiveness of the program, further efforts are needed in the form of increasing access to technology, further training and ongoing mentoring. With the right solution, this program has the potential to have a long-term impact on sustainable natural resource management in Walelagama Village, while improving the quality of life of the local community.

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