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COMMUNITY-BASED FOREST MANAGEMENT PROGRAM: WAY FORWARD TO SUSTAINABLE FOREST MANAGEMENT AT OPOL, MISAMIS ORIENTAL, PHILIPPINES

JORDAN B. LARANJO [1], AIDA D. PERPETUA [2],

RAMON FRANCISCO Q. PADILLA [3] and SONNIE A. VEDRA [4]

[1,2,3,4] College of Agriculture, Forestry and Environmental Sciences, Mindanao State University at Naawan, Misamis Oriental, Philippines. Email: [4]sonnie.vedra@msunaawan.edu.ph

Abstract

The Community-Based Forest Management (CBFM) program in the Philippines aims to promote sustainable forestry, democratize forest resource access, and enhance upland community livelihoods. Despite widespread adoption since 1995, its effectiveness remains insufficiently documented. This study assessed the program's sustainability by surveying 80 People's Organization (PO) members from three barangays in Opol, Misamis Oriental. Findings show participants are mainly middle-aged, married men with basic education, earning low incomes from small farms. The program has succeeded in sustainable forest management, securing tenurial rights, and gender inclusion. However, challenges such as limited government involvement, complex approval processes, and weak internal governance persist. Addressing these challenges is vital for the program's continued success in promoting forest conservation and community development.

Keywords: Tropical Forest, Sustainable Development, Conservation and Management.

INTRODUCTION

Forests play a crucial role in human well-being by aiding rural poverty reduction, ensuring food security, and supporting diverse livelihoods. They offer vital ecosystem services such as clean air, water, biodiversity conservation, and climate regulation. However, centralized forest control in numerous countries has resulted in inequalities and jeopardized resources essential for communities reliant on forests, prompting decentralization reforms. In the Philippines, the Community-Based Forest Management (CBFM) initiative, established in 1995 through Executive Order 263, aims to address these challenges by granting upland communities tenure security and assistance for sustainable forest management. It also strives to promote social equity and poverty alleviation.

The significance of Community-Based Forest Management (CBFM) is widely acknowledged worldwide as a fundamental strategy for both sustainable forest management and social justice. Numerous studies have investigated the advantages and obstacles associated with this approach, providing valuable insights into how local communities can be effectively engaged in forest conservation and resource management while enhancing their livelihoods. CBFM has been linked to positive outcomes in terms of forest conservation. Community-based approaches often result in improved forest governance, leading to decreased deforestation rates and enhanced biodiversity (Agrawal and Chhatre, 2006). By involving local communities in decision-making processes, CBFM frequently fosters a sense of ownership, consequently

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promoting better stewardship of forest resources. Community-managed forests typically exhibit lower rates of illegal logging and superior regeneration compared to those managed by the state (Poffenberger and McGean, 1996).

Regarding socioeconomic aspects, Community-Based Forest Management (CBFM) programs aim to enhance the socioeconomic well-being of communities reliant on forests. These programs offer opportunities for local residents to improve their income through sustainable forest-related activities such as agroforestry, ecotourism, and the collection of non-timber forest products (NTFPs) (Ostrom and Nagendra, 2006). In the Philippines, CBFM initiatives have been instrumental in providing stable income sources and enhancing food security for upland communities (Rebugio et al., 2010). Moreover, the establishment of tenurial rights is a crucial component of CBFM's success. Long-term tenure agreements incentivize communities to invest in sustainable practices and infrastructure, thereby contributing to the overall sustainability of the program (Research by Larson et al., 2010). Within the Philippine context, the Community-Based Forest Management Agreement (CBFMA) serves as a legal framework that grants communities rights to forest land, encouraging their active involvement in forest protection endeavors (Pulhin et al., 2008).

Furthermore, an expanding body of literature examines the role of gender in Community-Based Forest Management (CBFM) initiatives. Increased involvement of women in these programs is associated with more equitable outcomes and improved forest governance (Agarwal, 2001). In the Philippines, there has been a recognized need for gender-inclusive policies within CBFM programs to ensure fair distribution of benefits and opportunities among community members. Despite its advantages, CBFM encounters challenges. Inconsistent implementation and insufficient support from governmental bodies can undermine the success of CBFM endeavors (Charnley and Poe, 2007). Additionally, centralized control over crucial resources, limited financial incentives, and political interference may impede the achievement of CBFM objectives (Li et al., 2011). Despite its positive impacts on securing tenure, promoting gender equality, and facilitating fair access to forest resources, CBFM faces hurdles. Issues such as restricted rights transfer, insufficient focus on economic viability, and gaps in documentation hinder a comprehensive understanding of CBFM's effects on forest conservation and community well-being. Therefore, this study aims to assess the sustainability and effectiveness of the CBFM program in enhancing forest conservation, promoting gender inclusion, and ensuring income security.

The outcomes of this study will serve as valuable input for shaping future policy directions, aiding agencies, local administrations, and stakeholders in refining the implementation strategies of Community-Based Forest Management (CBFM) programs. Additionally, the findings will provide valuable insights for the development of forestry extension initiatives aimed at fostering reforestation and reducing poverty among communities reliant on forests. Furthermore, this research will contribute to the continuous evaluation of the long-term sustainability and effectiveness of CBFM, laying the groundwork for future research endeavors within the forestry sector.

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MATERIALS AND METHODS

A total of 356 members from the three selected POs in Opol, Misamis Oriental (Fig.1) were identified based on their affirmed CRMF plans and CBFM Monitoring and Assessment Reports for 2021-2022 of Department of Environment and Natural Resources (DENR-10). From this group, a sample size of 80 participants, representing 22% of the total membership, was chosen. The breakdown included 30 members each PO from ATPCA Inc. and BMUF Inc., and 20 members from MBTOM Inc. This targeted sampling approach facilitated a concentrated and in-depth examination of the experiences and perspectives of key individuals within the selected POs, aiming to yield relevant and reliable results. The study used personal interviews and focus group discussion through a semi-structured questionnaire in data gathering which is designed to collect relevant information from the participants. The questionnaire was translated into the Cebuano dialect to make the questions more understandable and clearer to the respondents. The strict ethical guidelines from the Technical Advisory Committee (TAC) was followed to ensure the study's ethical integrity when involving human participants. The permission for the study was requested through letters to the DENR-10, CENRO Initao, and concerned LGU. Informed consent was secured prior to conducting individual interviews of the PO. Secondary data, such as PO profiles, Performance and Evaluation Reports, maps of CBFM, Forest Land-Use Plans, and other CBFM-related documents, were gathered from various sources, including DENR/CENRO and LGUs.

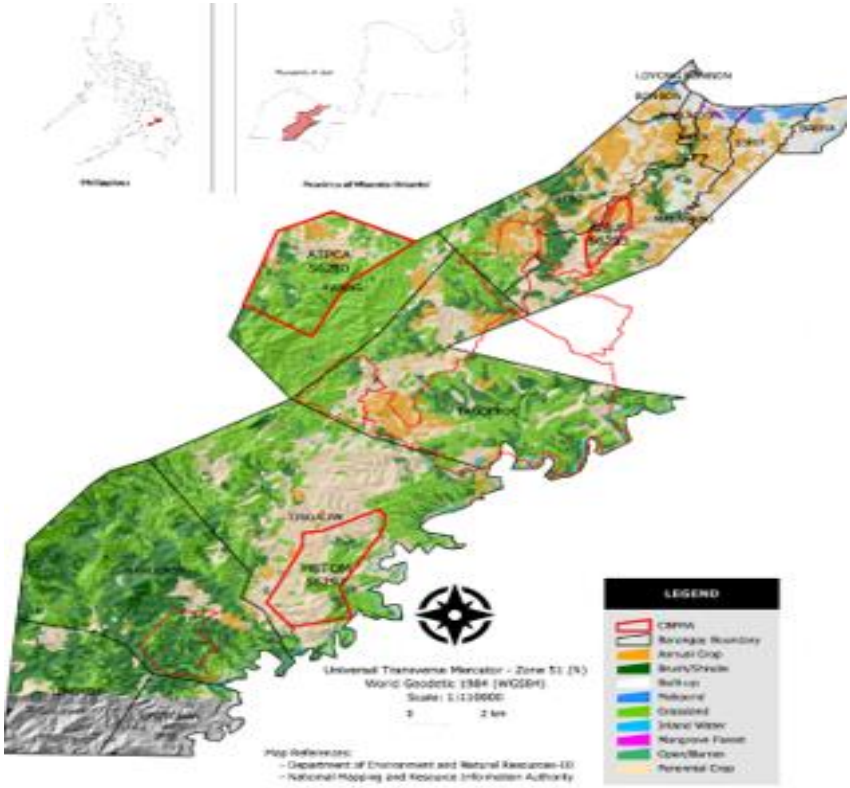

Figure 1: Map Showing the Covered Areas of this Study

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Correlation analysis was employed to determine the extent to which the independent variables contribute to the sustainability of the CBFM program. The degree of relation is expressed as a correlation coefficient represented by positive (with significant) and negative (not significant) numbers. Qualitative data was analyzed based on opinions presented logically and systematically. The effectiveness of the CBFM program was evaluated using a descriptive scale where a score of 81-100% was deemed "Very Effective," 61-80% "Effective," 41-60% "Moderately Effective," 21-40% "Less Effective," and 1-20% "Not Effective." This rating system helped quantify the effectiveness of the program in meeting its goals and objectives.

RESULTS AND DISCUSSION

Based on the findings, the age distribution of PO members ranged from 25 to 78 years, with an average age of 48 years. The majority of members (81%) were male, predominantly married (86%), and typically lived in households averaging five individuals. Elementary education was the most common educational level achieved, and members primarily identified as Cebuano/Bisaya (56%), followed by Boholano (23%) and Higaonon (21%). Roman Catholic was the prevailing religion among members (72%). Annual incomes varied from Php 10,000 to Php 500,000, with an average of Php 45,000, primarily derived from farming activities on plots typically of 3 hectares or less. The average farm size was 1 hectare, and members had an average farming experience of 15 years.

The vast majority (95%) of PO members received information about the CBFM Program from DENR extension officers. Approximately 59% attended meetings annually, and nearly three-quarters (72%) participated in capacity development training. Most farm inputs were acquired from sources outside their barangay, with some assistance from the Department of Agriculture (DA). Interaction with DENR extension officers was generally minimal, mainly occurring during the formulation of new projects or CRMF plans. PO members also received limited assistance from various entities such as the DA, DENR, and LGU for seeds, fertilizers, and other farming tools. Nearly all (94%) marketed their agroforestry products outside their barangay, primarily at the Public Market in Opol, Misamis Oriental.

PO members demonstrated high aspirations, with a mean score of 4.63, and held a positive attitude toward the CBFM Program, with a mean score of 3.78. The program was perceived as moderately effective in forest protection and income enhancement but highly effective in providing tenure security. Gender participation indicated that men were more involved in activities such as re-planting, hauling, and constructing seed beds, while women tended to focus on tasks like watering, potting, and staking. Correlation analysis revealed several significant factors influencing the sustainability of the CBFM program in the study area.

Personal Factors

A positive correlation ($p<.01$, $r = .229$) suggests that middle-aged farmers are more likely to be actively involved in the CBFM program compared to younger or older individuals (Table 1). This could be due to middle-aged farmers having the energy and physical capabilities needed for forest protection and farming tasks. Research in similar contexts supports these findings.

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For example, a study by Lee et al. (2012) on forest farmers' participation in Taiwan showed a similar trend, indicating that older farmers often bring a wealth of experience and a stronger commitment to forestry projects. It was noted that middle-aged farmers were in a prime position to engage in physical work while also possessing the knowledge and skills developed through years of farming.

Table 1: Correlation Analysis between Personal Factors (Independent Variables) and Sustainability of CBFM Program (Dependent Variables)

Factor	Correlation	Significance
Age	.229	0.000**
Marital Status	-.032	0.635 ^{ns}
Household Size	-.077	0.199 ^{ns}

***Correlation is highly significant (HS) at 0.01 level (2-tailed)*

** Correlation is significant (S) at 0.05 level (2-tailed)*

^{ns} *Not significant*

Socioeconomic Factors

The analysis shows that these factors are positively correlated with the sustainability of the CBFM program. Higher annual income ($p = 0.008$, $r = .174$), larger farm size ($p = 0.000$, $r = .302$), and greater farming experience ($p = 0.004$, $r = .185$) suggest that these attributes contribute to the sustainability of the program (Table 2). This indicates that greater financial resources, larger farm areas, and more extensive farming knowledge may improve forest protection and generate higher yields.

Table 2: Correlation Analysis between Socioeconomic Factors (Independent Variables) and Sustainability of CBFM Program (Dependent Variables)

Factor	Correlation	Significance
Educational Attainment	0.161	0.113 ^{ns}
Ethnic Origin	-0.083	0.209 ^{ns}
Religious Affiliation	-0.024	0.714 ^{ns}
Annual Income	0.174	0.008**
Sources of Income	0.092	0.166 ^{ns}
Farm Size	0.302	0.000**
Farming Experience	0.185	0.004**

***Correlation is highly significant (HS) at 0.01 level (2-tailed)*

** Correlation is significant (S) at 0.05 level (2-tailed)*

^{ns} *Not significant*

As Bebbington (1999) pointed out, improved financial resources can lead to better access to inputs and technologies, fostering both agricultural productivity and sustainable practices. Furthermore, Murniati, et al. (2022) discussed that access to financial resources might lead to better farm management and higher yields, creating a virtuous cycle of reinvestment in

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community-based programs. Accordingly, larger farms tend to be more efficient and have more resources to implement sustainable land management practices. This aligns with the observation that larger farms often have the capacity to allocate resources towards long-term sustainability goals, as noted in a World Bank report (2013), also suggesting that economies of scale can support more sustainable practices. Further, Ainembabazi and Mugisha (2014) found that experienced farmers are more likely to adopt improved technologies and practices based on learning and performance observation. This experience can lead to increased yields, better resource management, and enhanced community participation. As Zhou and Li (2022) highlighted, experience impacts economic behavior, leading to more informed decisions that positively affect the sustainability of programs like CBFM. Therefore, the null hypothesis stating that "there is no significant relationship between the sustainability of the CBFM program and socioeconomic factors" is rejected regarding annual income, farm size, and farming experience.

Supportive Factors

The study did not find significant correlation with supportive factors (such as sources of information, attendance in meetings, participation in training, availability of inputs, frequency of contact with extension officers, assistance from stakeholders, and access to markets) to be significantly correlated with the sustainability of the CBFM program.

Table 3: Correlation Analysis between Supportive Factors (Independent Variables) and Sustainability of CBFM Program (Dependent Variables)

Factor	Correlation	Significance
Attendance in Meetings	-.040	0.545 ^{ns}
Participation in Training	-0.119	0.071 ^{ns}
Frequency of Contact with DENR	.066	0.318 ^{ns}
Assistance from Stakeholder	-.118	0.075 ^{ns}

***Correlation is highly significant (HS) at 0.01 level (2-tailed)*

** Correlation is significant (S) at 0.05 level (2-tailed)*

^{ns} *Not significant*

The lack of significant correlation might indicate that supportive factors, such as information sources or training programs, are not effectively implemented or lack consistency. As noted by Buhay et.al (2023), inadequate support services and inefficient resource allocation can undermine community-based forestry programs' sustainability. While frequency of contact with extension officers or attendance in meetings might be expected to enhance sustainability, these factors might not translate into effective support if the quality of these interactions is lacking. According to Baloch and Thapa (2016), the impact of extension services relies heavily on the quality of information and guidance provided to farmers, rather than merely the frequency of contact. The sustainability might rely more on internal factors such as social cohesion, leadership quality, and organizational governance rather than external supportive factors. A study by Ruiz-Pérez et al. (2005) highlighted that the internal dynamics of community forestry groups, including leadership, governance structures, and member

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commitment, can play a more substantial role in determining program success than external support. Thus, the null hypothesis, which posits that "there is no significant relationship between the sustainability of the CBFM program and supportive factors," was accepted.

The correlation analysis highlights that age, annual income, farm size, farming experience, and psychological factors (aspirations and attitudes) significantly influence the sustainability of the CBFM program. These findings suggest that a comprehensive approach considering personal, socioeconomic, and psychological factors is crucial to ensure the program's success. The absence of significant supportive factors indicates that these variables might not play a significant role in the sustainability of the CBFM program in this context. Below is the schematic diagram based on the result of the study.

Research indicates that effective community-based forest management (CBFM) programs often face challenges due to limited participation from Local Government Units (LGUs) and relevant agencies. Strong partnerships between community-based organizations and local authorities are essential for comprehensive forest management, as noted by Blanco and Brown (2017). Additionally, inadequate incentives for investing in human and financial resources hinder sustained engagement, leading to fragmented practices (Stewart, 1982). Bureaucratic hurdles in approving Community Resource Management Framework (CRMF) plans discourage active involvement in forest management (Lin and Lee, 2018). Inconsistent livelihood opportunities from CBFM programs contribute to income instability for communities (Mukherjee and Behera, 2015). Obtaining Free, Prior, and Informed Consent (FPIC) for renewing CBFMAs presents a significant barrier due to its complexity, length, and conflicting policies (NCIP vs. DENR). Overcoming these challenges requires enhanced participation from LGUs and agencies, streamlined CRMF plan procedures, consistent livelihood opportunities, strong governance, and coordinated policy efforts. Addressing these issues is vital for ensuring the sustainability of CBFM programs and fostering long-term forest protection and economic development for communities.

CONCLUSION AND RECOMMENDATION

The research identifies several challenges faced by People's Organizations (POs) in implementing Community-Based Forest Management (CBFM), including limited involvement of Local Government Units (LGUs), insufficient incentives, lengthy bureaucratic procedures, unsustainable livelihood opportunities, weak governance, and political interference. These obstacles hinder effective program implementation. Addressing these challenges requires improved coordination, streamlined approval processes, and socioeconomic support for PO members. Positive correlations with income, farm size, and farming experience highlight the importance of providing economic assistance. Fostering a supportive community environment and addressing governance issues are also crucial. The research underscores the need for targeted policy changes and improved governance practices to ensure program sustainability. By addressing these findings, stakeholders can develop more effective strategies to support CBFM programs. The study's comprehensive examination provides valuable insights for policymakers, forest management agencies, and local communities, guiding efforts to promote

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sustainable development in forested areas. Ultimately, it contributes to the enhancement of community-based forest management practices, benefiting both the environment and local communities.

Thus, to address challenges related to information access, policy harmonization, and institutional support, promoting sustainable forest management and socioeconomic development in forest-dependent communities, the following are suggested:

1. The Department of Environment and Natural Resources (DENR) should design effective mechanisms to utilize the CBFM Program for poverty alleviation.
2. Capacity development for sustainable community and forest management should be prioritized to enhance CBFM implementation.
3. Seeking partnerships with other government agencies and private institutions can provide expertise, technical, and financial assistance to support POs in establishing income-generating livelihoods.
4. Collaboration and partnership between DENR, LGUs, local communities, and stakeholders should be strengthened for effective program implementation.
5. Establishing and strengthening community volunteer groups for forest protection and conservation efforts is recommended.
6. Collaboration between DENR and LGUs is necessary to develop and implement efficient protection and management strategies for forests and forestlands.
7. Supporting extension services to provide PO members with access to relevant information on adaptation strategies for agroforestry production systems is essential.
8. Strengthening CBFM programs requires policy harmonization between the National Commission on Indigenous Peoples (NCIP) and DENR, particularly regarding Free, Prior, and Informed Consent (FPIC) processes.
9. Future research should explore additional evaluation measures and assess the perceived effectiveness of the CBFM Program among DENR extension officers.

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