ARTICLE

Developing sustainability indicators for people's organizations engaged in natural resource management: The case study of Ned Landcare Association, Lake Sebu, South Cotabato, Philippines

Louise Bernadette C. del Castillo* and Lorena L. Sabino

Department of Social Forestry and Forest Governance, College of Forestry and Natural Resources, University of the Philippines Los Baños, College, Los Baños, Laguna 4031

ABSTRACT

Sustainability has become a growing concern for many community-based programs initiated by People's Organizations (PO). The purpose was to address local community needs caused by inadequate institutional support, lack of linkages and partnerships, and absence of organizational, technical, and financial capacity. The study's primary objective was to develop an indicator to assess PO sustainability, specifically focusing on the Ned Landcare Association (NLCA) in Barangay Ned, Lake Sebu, South Cotabato, Philippines. NLCA has been a farmer-led people's organization promoting sustainable landcare techniques since 1999. The organization thrives despite insufficient assistance from external stakeholders and geographical remoteness from service providers. Their "*Caring for the Land*" objective encourages conservation farming and agroforestry practices among upland farmers for sustainable natural resource management. The study's rationale stems from the scarcity of relevant literature concerning the sustainability of POs and the corresponding indicators to assess their sustainability. The study employed mixed-method research to achieve its objectives. It developed twelve PO indicators that focused on the social, economic, and environmental factors within the context of NLCA. Extensive field data collection and statistical analysis generated indicators contributing to PO sustainability. The findings indicate that NLCA exhibits a high level of sustainability, attributed to its strong linkages, effective leadership, successful projects, sound governance, and clear vision, mission, and goals. There are specific aspects of the organization, however, that require attention. Particular emphasis should be placed on membership engagement, policy formulation, livelihood initiatives, and enterprise activities. Conversely, the second-line generation of members plays a significant role in influencing the sustainability of NLCA. It is apparent that the organization initiates innovative programs, reinforces governance systems, and disseminates its vision, mission, and goals to old and new members. To a large extent, NLCA should foster sustained engagement and collaboration for effective natural resources management initiatives.

*Corresponding author
Email Address: lcdelcastillo@up.edu.ph
Date received: 19 February 2024
Date revised: 20 May 2024
Date accepted: 28 May 2024
DOI: https://doi.org/10.54645/202417SupRWV-12

INTRODUCTION

People's organizations (POs) face recurring challenges in ensuring the long-term sustainability of community-based programs due to several factors: limited organizational, technical, and financial capacity; dependence on a single

KEYWORDS

People's Organizations, Sustainability Indicators, Landcare, Natural Resources Management

funding source; inadequate local government support; difficulty in forming partnerships; and reliance on external interventions for decision-making processes (Villamor, 2019). These issues significantly increase the risk of these organizations' decline as the program's influence on the community diminishes, leading to unfulfilled goals and adversely affecting members' overall well-being. Crowley et al. (2005) stated that it is pivotal for POs to sustain themselves over time because members of the community and impoverished individuals have a greater likelihood to improve their well-being, access information channels, and gain rights to a multitude of resources, skills, knowledge, and experience if they are a part of these organizations. Ceptureanu et al. (2018) emphasized that sustainability is a significant concern to many organizations, as evidenced by various studies indicating that nearly 40 percent of all such programs discontinue in the first few years of implementation after initial funding is withdrawn, leaving community needs unaddressed. Program sustainability is crucial for several reasons, including (1) the discontinuation of a successful program has unfavorable repercussions for both the community and the host organization, (2) beginning a program leads to more significant costs, and (3) communities who experience abrupt program dissolution feel unmotivated whenever new programs are implemented (Shediac-Rizkallah & Bone, 1998).

The presence of POs contributes significantly to their members' economic and social well-being at the community level. They operate and address local community concerns and needs while facilitating community involvement in natural resource management. POs, however, need help as they organize and support communities in resource management and deal with harsh situations. According to Castillo et al. (2007), at least 67% (104 POs) of the 155 POs studied in four areas in the Philippines are weak or inactive. Most people indicated that functional organizations require more capacity building, particularly to develop plans for resource management, obtain financial resources, and provide non-forest-based livelihood options. Miyawaki et al. (2005) similarly noted that one of the critical reasons for not joining POs is the high membership and monthly dues, despite the meager benefits acquired through PO involvement. Most members remained inactive within a few years due to limited government technical and financial assistance and the resignation of fellow members. Consequently, access to financial and technical assistance proves essential to the survival of POs. Failure to deliver this form of assistance results in ineffective operation for POs. Considering the significant constraints encountered by POs, it was demonstrated that with enough time, support, and incentives, communities can learn to organize, plan, and work toward their own development and sustainable forest management (Borlagdan et al., 2001). Organizations must focus on developing internal resources and adjusting to their external environment, which includes economic, political, socio-cultural, environmental, demographic, and technical elements. These factors significantly threaten local organizations' ability to operate, survive, and persist (Jackson & Morgan, 1978; Jones, 2001; Lusthaus et al., 2002; Okorley & Nkrumah, 2012; Villamor, 2019). It is, therefore, essential to develop sustainability indicators for any people organization. Determining the primary factors contributing to its success and its initiatives for comprehensive local community development is necessary. Hak et al. (2009) defined sustainability indicators as those derived from economic, social, and environmental sources (Latawiec & Agol, 2015). Sustainability indicators are essential for analyzing trends because they indicate changes in capital assets and human well-being. Similarly, McCool and Stankey (2004) stated that sustainability indicators assess the success of activities and policies in transitioning a system to a more sustainable state. Using sustainability indicators and corresponding metrics is essential for an integrated systems approach to addressing the challenges of sustainability (A Framework for Sustainability Indicators at EPA, 2012). The study defines sustainability as an organization's ability to function and sustain its members, no matter their distance from service providers and limited external support. In particular, the study is centered on developing PO sustainability indicators based on the three pillars of sustainable development: social, economic, and environmental. Figure 1. presents the conceptual framework in which the study focused on specific indicators that contribute to PO sustainability within the context of NLCA. The basis for these indicators is based on the literature and studies that the author reviewed.

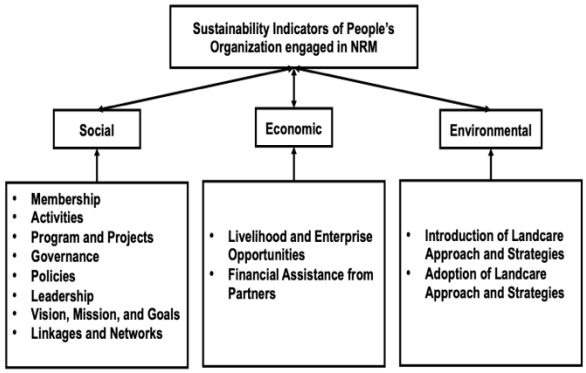

Figure 1: Sustainability Indicators of POs engaged in NRM

The social factor necessitates preserving society's cohesion and capacity to collaborate toward common goals. Individual requirements such as health and well-being, nourishment, housing, education, and cultural expression must be satisfied (Sahota, 2013). In the study context, the social indicators focus on the members' progress, involvement and participation, values, ideals, and relationships, all influencing their overall engagement with the organization and other individuals. The economic factor pertains to the financial viability of development geared towards social and environmental sustainability. The study concentrated on the economic indicators of members' livelihood and enterprise potential. It also highlighted members' access to financial resources and assistance from outside organizations. The environmental factor safeguards natural capital while averting the degradation of source and sink functions. The study's environmental indicators notably draw attention to the organization's contribution to natural resource management and conservation by introducing and adopting Landcare approaches and strategies as the outcome of their membership. Focusing on the case of NLCA, determining the indicators contributing to its sustainability serves as the foundation for any people's organization to focus on the leading indicators contributing to its long-term persistence. The study's primary purpose was to develop PO sustainability indicators focused on NLCA. It intended to assess the contributing indicators influencing its sustainability. The findings of this study can provide salient knowledge on the sustainability indicators of POs in the country, notably the Landcare Association, which farmers lead.

Landcare Program in Barangay Ned

The Landcare concept is a farmer-led movement built on three pillars: appropriate technologies, influential local community groups, and collaboration with government (Campbell & Siepen, 1994). Landcare arose in the mid-1990s due to efforts by the International Centre for Research on Agroforestry (ICRAF) and local farmer groups to expand SWC innovations among upland farmers in Northern Mindanao. Garrity and Mercado (1998) stated that landcare is a strategy for effectively and economically disseminating agroforestry practices among upland farmers. This strategy centers on the farmers' desire to acquire and exchange knowledge about new technological innovations that

yield more income while preserving natural resources. This bottom-up strategy is widely acknowledged as the success factor in all community-based projects—the success of Landcare-driven communities that respond to community support. Partnerships and linkages are also used to guarantee that concepts and projects are spread and widely implemented.

Based on Cramb's findings (2006), the most significant impact of the Landcare Program was to improve human capital through practical, farmer-led training and extension that allowed farmers to implement soil conservation and agroforestry technology into their farming systems. Social capital, particularly the linkages between the Ned Landcare Association and its networks, is a significant contributing factor to the accelerated impact of the Landcare program in Barangay Ned. There is the presence of Landcare facilitators, as well as their overall attitude and commitment to impart soil and water conservation techniques to the members. In addition, the presence of external support has been a significant contributing factor to its success. Even after the Landcare program was completed, it expanded despite lacking informational, technical, and financial support. Catacutan et al. (2006) study proved that the development of Landcare organizations mirrored or served as an indication of the initial stock of bonding social capital in these local communities. Landcare organizations were easily formed, mainly when there was a high level of trust, cooperation, involvement, and competent leadership. The Landcare operations contributed to stabilizing this initial stock and demonstrated that social capital grows with activity and depreciates with inactivity. As a result of their findings, Landcare groups were more sustained in areas with initially substantial bonding social capital but weak bridging social capital.

MATERIALS AND METHODS

Locale of the Study

The study was conducted in Barangay Ned, located in the municipality of Lake Sebu in the province of South Cotabato, Mindanao (Figure 2). It has a total area of 41,000 hectares, which includes the Tasaday Reservation, a forest reserve established to safeguard indigenous peoples, and the Ned Settlement Area. The area's general climate is classified as Type III by PAGASA's Modified Corona classification, with unpronounced seasons (PhilAtlas, 1990). There are 30 sitios (villages) in Ned, which has roughly 15,000 people (Metcalfe, 2004). In particular, there are ten sites with active Landcare groups: Segowet, *Biyawan, Kibang, Kinubing, New Tupi, Tinugas, Seven Lakes, and Proper Ned*. The main office and warehouse of the organization are located in Sitio New Tupi, Barangay Ned, which additionally serves as a venue for the Board of Directors and member's monthly meetings and seminars. Barangay Ned is one of the pioneer project sites in Mindanao that has been doing landcare initiatives. The topography is hilly to mountainous, with slopes ranging from 12% to 40%. The soils are neutral to acidic, with low to moderate fertility, making the area particularly prone to erosion. This aspect has encouraged the initiation of Landcare by the Australian Centre for International Agricultural Research (AICAR) and the Southeast Asian Regional Centre for Graduate Study and Research in Agriculture (SEARCA) to promote soil and water conservation techniques (Cramb & Culasero, 2003).

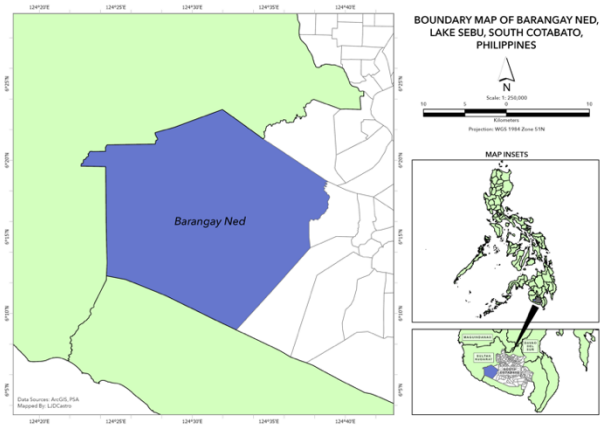

Figure 2: Administrative map of the study site

Sampling Method

This study used a Simple Random Sampling method to select 30% of active members from the entire population for the survey instrument. This method ensures equal opportunity for individuals to be selected from the sample population (Acharya et al., 2013). A sampling frame comprising member information such as names, sitios, clusters, and Registry System for Basic Sectors in Agriculture (RSBSA) Control Numbers was utilized to select 51 respondents from the organization. If a respondent was unavailable, a replacement substitute was chosen randomly.

Data Collection

The study employed mixed-method research to achieve its objectives, as shown in Figure 3. Before data collection, an online consultation with NLCA members was conducted to provide an overview of the study and its purpose. Specifically, the qualitative data collected primary data using a survey questionnaire, critical informant interview (KII), and focus group discussion (FGD) to learn about NLCA members, their history, and the factors of sustainability. Secondary data were acquired through a literature review focused on PO sustainability and indicators. In contrast, quantitative data were analyzed descriptively and statistically using principal component analysis (PCA) to find relevant indicators contributing to PO sustainability. The study results gave NLCA a perspective on the indicators to focus on extensively to achieve its continued sustainability.

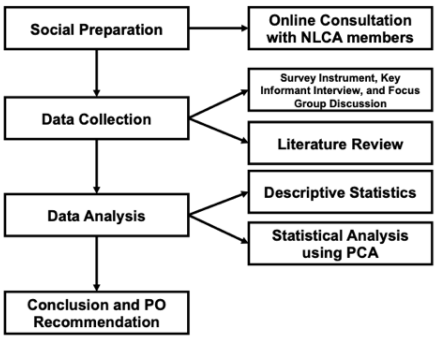

Figure 3: Research Process

Survey Instrument

A survey instrument was designed and administered through face-to-face interviews to gather necessary information about the respondents' demographic and socio-economic profile and organizational involvement. The instrument also included information about NLCA's organizational setting, focusing on the social, economic, and environmental factors contributing to NLCA's sustainability.

Key Informant Interview
The primary respondents for the key informant interviews (KII) were the Board of Directors of NLCA. The interviews covered general to detailed information about the NLCS's situation over the years up to the present. It elaborated on the organization's history, activities, programs, projects, and Landcare contributions. The interviews were later conducted in the respective households of the key informants and were recorded to guarantee that no information was missed.

Table 1: Key Informants and their respective positions

Key Informant	Position	Date Interviewed
Participant 1	President	October 23, 2023
Participant 2	Secretary	
Participant 3	Cluster Leader	October 25, 2023
Participant 3	Treasurer	October 27, 2023

Focus Group Discussion
Focus Group Discussion (FGD) was conducted with 30 participants at the NLCA office. The researcher also employed Participatory Rural Appraisal (PRA) tools such as problem identification and ranking, problem-tree, and solution-tree analysis. This allowed members to exchange ideas about the NLCA's current situation and establish their perspectives on the indicators that contribute to sustainability. The results from the FGD added depth to the discussion and analysis of the study.

Data Analysis
Principal Component Analysis (PCA) was used to assess the contributing indicators that influence the sustainability of NLCA. The PCA is a variable reduction method used when variables are strongly linked. It reduces the number of observed variables to a smaller number of primary components, which account for most of the variation of observed variables (Parul et al., 2013). In this study, this method was necessary to reduce the sustainability indicators into a smaller set of variables and to determine which had the most significant contribution to the NLCS's sustainability. Specifically, the study used Varimax rotation and each indicator's normalized data. Using the min-max method, all values ranging from 0 to 1 were transformed to produce standardized values. The study calculated the average normalized value of each indicator and determined the corresponding level of sustainability. To accomplish this, Equation 2 was used to normalize variables with a positive impact on sustainability, while Equation 3 was used to normalize variables with a negative impact on sustainability.

Formula:

$$y = \frac{X1 - Min\ (X1)}{Max\ (X1) - Min\ (X1)} \quad (2)$$

$$y = \frac{Max\ (Xi) - Xi}{Max\ (Xi) - Min\ (Xi)} \quad (3)$$

Where:
y = normalized value within the range of 0 to 1
Xi = represents the individual value of the indicator to be transformed
Min (Xi) = minimum value for that indicator
Max (Xi) = maximum value for that indicator

Table 2: Level of Sustainability

Numerical Interval	Level of Sustainability	Explanation
0 – 0.25	Unsustainable	Sustainability indicators are weak.
0.25 – 0.50	Less Sustainable	Sustainability indicators are less intense.
0.51 – 0.75	Moderately Sustainable	Sustainability indicators are moderately intense.
0.76 – 1	Highly Sustainable	Sustainability indicators are robust.

Developing PO Sustainability Indicators
Given the dearth of relevant literature concerning the sustainability of POs engaged in natural resources management, developing indicators proves significant. This is an understanding of what factors contribute to a PO's sustainability, and the findings from this study are used as a foundation for any PO to ensure the continued success of its program, which is grounded in effective natural resources management. Adams (2006) stated that sustainability entails the incorporation and harmonization of three fundamental dimensions: environmental, economic, and social sustainability. Thus, sustainability indicators can capture long-term progress toward social, environmental, and economic goals (Latawiec & Agol, 2015). The proposed parameters to determine PO sustainability indicators are shown in the table below (Table 3).

Table 3: Definition and Operationalize of Sustainability Indicators

Factors	Indicator	Description	Parameters
Social	Membership	Member engagement substantially impacts the sustainability (Putri et al., 2022).	1. Length of Stay in the Organization 2. Type of Membership
	Activities	Activities allow members to be directly involved in decision-making. In turn, members feel appreciated and encouraged to communicate their opinions (Ancona & Bresman, 2007; as cited in Baker & Manning, 2022).	3. Participation in Meetings 4. Number of Training/Seminars attended
	Policies	Sustainable development requires policies prioritizing economic growth, environmental wellness, and inclusive social development. (OECD, 2001).	5. Number of members following Policies
	Projects & Programs	Programs and organizations will contribute to increasing the implementation of NRM technology (Swinkels & Franzel, 1997; as cited in Pender et al.,2006).	6. Number of Projects & Programs participated 7. Number of Incentives received
	Leadership	Leadership is critical to an organization's success because it provides long-term	8. Number of officers in the organization

		sustainability and self-reliance. (VanSant, 2003; as cited in Villamayor, 2019)	
	Governance	Governance is also a significant aspect in that it influences the organization's sustainability because when the governance is good, it will contribute to the sustainability within the cooperative (Iqbal et al., 2019; as cited in Putri et al., 2022)	9. Number of institutional support
	Vision, Mission, and Goals	Mission and vision statements can shape the organization's performance (Bartkus et al., 2006; as cited in Jonyo et al., 2018)	10. Number of members following VMG
	Linkages and Network	Collaboration is critical for assisting organizations to become more sustainable (Govindan et al., 2016; Lozano, 2007, 2008; Seuring & Gold, 2013; Wassmer, Paquin, & Sharma, 2014; as cited in Lozano et al., 2021).	11. Number of ongoing partnerships 12. Type of external agencies
Economic	Livelihood and Enterprise	A livelihood is sustainable when it can recover from pressure and disruptions while retaining its capabilities and assets without diminishing natural resources. (Fahad et al., 2020)	13. Number of livelihood and enterprise opportunities
	Access to Financial Resources	Proper finance and financial resources are critical aspects in the sustainability of organizations as they allow them to continue operating, carrying out their obligations, and eventually developing the capacities above (Okorley & Nkrumah, 2012; Walker & McCarthy, 2010; as cited inVillamayor, 2019)	14. Number of financial support
Environmental	Introduction to the Landcare Approach Adoption of Landcare Approach	Natural resource management (NRM) technologies need a high level of expertise (Barrett et al., 2002; as cited in Pender et al.,2006), and technical assistance is anticipated to play a significant role in their implementation. The Landcare program's accelerated effect in Barangay Ned is caused by the presence of Landcare facilitators and their general attitude and commitment to teaching members about soil and water conservation practices.	15. Impact of Landcare 16. Number of adoption of farming conservation technologies

RESULTS AND DISCUSSION

Demographic Profile of NLCA

The distribution of respondents by age and sex is shown in Table 4. A total of 51 active members of NLCA were interviewed. Most respondents were male, middle-aged members varying in age from 45 to 59. This result indicates that second-line group members are getting more involved. These data further suggest that the organization should continue expanding its membership among younger generations, focusing on young adults and adult members but encouraging more female members to join.

Table 4: Sex distribution and Age range of respondents

Age Class	Age Range	Sex M	Sex F	Total	%
Young Adult	18-25	2	0	2	3.92
Adult	26-44	17	1	18	35.29
Middle Age	45-59	18	2	20	39.22
Senior	60 and above	10	1	11	21.57
	Total	47	4	51	100

NLCA Sustainability Indicators

Figure 4. portrays the core indicators contributing to the NLCA's sustainability.

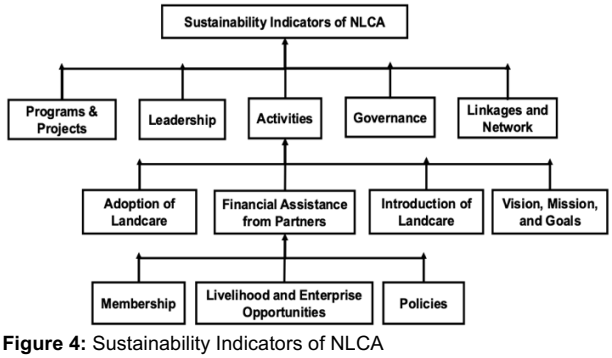

Figure 4: Sustainability Indicators of NLCA

Projects and Programs

NLCA is known for its Landcare approach and strategies, such as implementing conservation farming techniques, soil and farm conservation, environmental protection and riparian management, Agri-tourism development, and Agro-enterprise. Programs and projects are essential in an organization because they encourage and motivate individuals to become members. Specifically, NLCA offers technical, financial, and social

programs that include technical programs such as ACPC, NGP, soil and water conservation, vegetable production and gardening, silkworm training, pest management, and livelihood. Financing programs include the production of farm outputs, farm financing, and loans. Social programs include the general assembly, bible service, sports events, and Christmas parties.

Vision, Mission, and Goals (VMG)

The presence of a vision, mission, and goals enables individuals to comprehend the organization's purpose. The vision articulates the long-term goals of an organization, while the mission defines its purpose and position in society. Hence, organizations develop their goals to realize their visions and missions. In particular, the organization's vision is to change the mindset of farmers from small-scale to commercial farming and to help them properly care for the environment so that their farms can serve as a center for tourists and adopt modern technologies. On the other hand, the organization's mission is to encourage the Ned farmers to become members of NLCA by uniting individuals in every sitio, teaching modern farming systems, and producing long-term crops and high-value products that consumers require. The prime goal of the organization is to improve farmers' living standards by adopting landcare. The members must understand the value of the VMG in their duties as members and integrate it into their farms.

Membership

Membership is an essential factor that contributes to the long-term existence of an organization. The organization, however, strives to function correctly without the members. Hence, members have significant roles and impacts on the organization's growth and development. It is the most indispensable asset that the organization should cultivate to develop its abilities and skills through participation in activities and dissemination of information and technical knowledge. In order to achieve efficiency, productivity, and sound judgment in organizational operations, there must be a transparent relationship between members and leaders. Most NLCA members are from the first-liner generation who joined the organization since its establishment in 1999; most are still active members, while five inactive elderly members have other priorities and jobs. However, it is worth mentioning that over the last five years, there has been an increasing number of young members. This is a promising indicator that membership will increase in the coming years. The organization, however, must take the necessary actions to ensure that newly recruited members stay active and aware of the organization's goals.

Activities

The type of activities is essential in building the human and social capital of the members. The technical knowledge and skills gained from the activities are ways to encourage the members to continue participating in the organization. Activities enable and empower the members to be directly involved and participate in decision-making. The NLCA conducts general assembly meetings monthly and quarterly. Members generally participate in activities to deepen their understanding of farming techniques and enhance their interpersonal and communication skills with their fellow farmers. The members claimed they helped their co-farmers increase their knowledge of farming technologies and enhance their leadership skills and social capital. Based on the findings, most respondents often attended meetings, while elderly members attended occasionally or infrequently due to other work commitments.

Governance

The system of governance is an integral component of an organization's success. It can be defined as a mechanism wherein the individual entities are guided and managed. It concerns the formation and mechanisms of decision-making, transparency, management, and interaction. A sound governance system leads to the organization's and its members' effective functioning.

Officers' and members' relationships must be collaborative to foster a favorable atmosphere for the successful implementation, monitoring, and execution of activities, projects/programs, and policies. NLCA members believe a robust governance system with law-abiding leaders and members must be transparent, equitable, and inclusive. The necessity of good governance in connection to transparency increases members' trust and confidence in their leaders. In terms of equity and inclusivity, leaders can distribute resources equally among members and do not discriminate against them, instead making them part of the decision-making and treating them fairly. Leaders who adhere to the rule of law urge their followers to do the same, resulting in a successful and efficient operation. According to the findings, most members are satisfied with the officers' effectiveness in their duties and responsibilities and the NLCA's governance structure.

Leadership

Leadership is defined as the ability to lead and influence individual behavior. Effective leadership brings about a sense of direction for the organization and its members to gain a better understanding of their purpose. As an outcome, well-run organizations with outstanding leadership tend to be more successful and sustainable. According to the members of NLCA, if a leader is to ensure the organization's sustainability, they must be honest, knowledgeable, effective communicators, embody solid moral principles, and have a great sense of authority. In NLCA, the officers are composed of the President, Vice-President, Secretary, Treasurer, AIC, and PIO with two committees, namely, the education and grievance committees. The officers are elected to positions by the general assembly. Likewise, the NLCA President has been in the position since 2005. He was in charge of organizing the Landcare program in the isolated sitios of the barangay. His experiences enhanced his farm and communication skills as a Landcare farmer facilitator. The leaders serve as the instruments among active members by encouraging their members to participate in activities and empowering their social and technical skills.

Policies

Policies provide direction, stability, and integrity in an organization. This provides the members with guidelines and principles to follow. Specifically, the NLCA has its by-laws and policies focusing on conservation farming techniques that officers and members must follow. The BOD is in charge of formulating policies within the organization, whereas the management staff is in charge of implementing the policies. Once the policies have been formulated, they are subject to the members' approval during their general assembly meeting. An awareness of members about the existing policies of NLCA is of prime importance to ensure the organization's efficiency in terms of its operation. A continual operation results if the policies are straightforward and the members well-informed.

Linkages and Network

Linkages refer to the existence of connections between two entities. It is an essential component of building the sustainability of an organization. The presence of networks and linkages enables the organization to be commensurate with the technical advancements and exposure to many resources. According to Nanthagopan (2011), the core of networking and linkages is to assist individuals with shared interests. It is concerned with developing communication channels and collaborations with other organizations. The external agents interact with the local community to provide a variety of services and support functions, including raising start-up funds, institution building, business networking and marketing,

innovation and knowledge exchange, technical training, research, legal support, infrastructure, and public health and social assistance (Seixas & Berkes, 2009).

Partnerships are influential in the formation of any organization to build operational capacities and strengthen members. External agencies, such as linkages and networking, contribute to the organization's and its members' social capital. The existence of such linkages allow individuals and organizations to get access to external sources of information, assistance, and resources. It is then critical to broaden an organization's networking and linkages rather than relying simply on expanding physical, financial, and professional resources. In the context of NLCA, partnerships between government agencies and local government units (LGUs) extending from the barangay to the provincial level were examined. According to members, the organization has a strong partnership with the Department of Environment and Natural Resources (DENR), the Department of Agrarian Reform (DAR), and the Department of Agriculture (DA), but even less with the local government bodies. Similarly, there are no current partnerships between private agencies and barangay cooperatives. As a result, the members believe that the relationship with the LGUs should be strengthened and that the partnership with government agencies should continue to expand the sources of funding and assistance for their future operations. Increasing the external linkages and networks is an excellent strategy for ensuring the organization's sustainability. The organization, however, is affiliated with the Philippine Rural Development Business (PRDP). As a result of their collaboration, they were given equipment such as a solar dryer for their coffee project, seedlings, and financial aid. Linkages and networks are essential for ensuring the sustainability of the organization's future programs and projects. NLCA must continue to work in local partnerships and increase external support from private and public stakeholders.

Livelihood and Enterprise

The study emphasizes livelihood and enterprise. It enables the members to meet their fundamental needs while also having the capacity to offer resources and services sustainably. It allows members to provide for themselves, owing to the information and skills gained through training and seminars. It equips its members to become self-sufficient and capable of dealing with future developments. In particular, NLCA offers livelihood and enterprise activities, such as Ned Agro-Enterprise Cluster Marketing. Since farming is the primary source of income, the Agro-enterprise paves the way for members to improve their lives and prevent the loss of resources and capital caused by industrialization and competitive markets. These livelihood and enterprise opportunities must sustain their long-term economic generation.

Financial Assistance from Partners

Financial support is essential for an organization’s likelihood to succeed. Funding will allow the organization to carry out its operations and provide its members incentives and benefits for farm inputs. When mismanaged finances and funds, it is difficult for an organization to achieve maximum productivity and effectiveness. Economic assistance is essential because the benefits and incentives encourage membership and participation in the activities. According to Cramb and Culasero's (2003) study, learning about farm technologies and receiving benefits such as tree seedlings are the primary motivations for joining a Landcare organization. The economic incentives and sense of community among members motivate individuals to become part of the organization. The NLCA provides its members with financial assistance through livelihood loans. Members are given seedlings, and farmers return these inputs as outputs. The organization will market the crops and products produced to neighboring communities and provinces. This assistance, however, is not provided to all members. To qualify for the livelihood loan, the member must apply. The source of the loan will be taken from the monthly dues collected from the members. The NLCA likewise acquires funds from membership and monthly fees that will be used for their registration purposes. The DA's KADIWA Program has provided the organization with a monetary grant and a service truck (DA-RFOXII), which NED farmers use to transport their products. The NLCA also established a warehouse and an office for their primary operations. The members believe that the NLCA initiatives assist them in being financially self-sufficient. There should be financial regulations, however, to guarantee that funds are distributed evenly to members. Members, too, should not rely entirely on the organization's financial aid but should instead apply conservation farming techniques and continue farming. Efforts should be made from both ends, with farmers and the organization, to aid in the organization's financial sustainability. The organization should collaborate with external agencies and partners to give farmers resource finances, farming grants, and practical assistance to accomplish this. All organizations require resources and financial assistance, which is a significant reason people desire to participate. Without sufficient financing, the organization strives to operate. In this sense, the NLCA must not focus entirely on membership fees and monthly dues as a funding source. Factors such as membership size and farmers' capacity to pay may put the organization in a difficult position in future activities. Bibu et al. (2013) stated that an organization that relies solely on membership fees is unlikely to generate a continuous income in this manner. Instead, the NLCA must increase its economic activity to extend its economic enterprises through the Agro-enterprise. In this way, more members will be driven to participate in activities and realize the benefits of becoming a member. All organizations require resources and financial assistance for member participation. Without sufficient financing, the organization's continued operations are a struggle.

Introduction of Landcare Approach and Strategies

In 1999, the Philippine-Australian Landcare Project pioneered the establishment of Landcare in Barangay Ned. The fundamental purpose of implementing the Landcare approach is to increase soil and water conservation while producing high-value crops such as fruits and vegetables. Following its formation, numerous NED farmers joined the organization and founded Landcare groups in various locations. Many members felt motivated to use the approaches on their farms due to Landcare's technical information and assistance. Members also enhance their farming conditions and practices, as well as their socioeconomic and livelihood, by recognizing the importance of soil and water conservation, contour farming, diversified farming, integrated farming systems, and the production of high-value crops. According to the members, the Landcare approach assisted them in learning technical information on conservation practices, preventing soil erosion, establishing contour to serve as a barrier against erosion, planting trees, and vegetable crops, and applying these technologies to defend against climate change and preserve the environment. Similarly, the Landcare approach aided farmers in strengthening social capacities and establishing camaraderie among organization members. Many farmers in Barangay Ned increasingly adopt conservation farming techniques as a result of the development of Landcare. Regarding technical and environmental contributions, external agencies provide tree seedlings and offer farming technologies to NLCA. The organization's external technical assistance and guidance contribute to the overall foundation of the members’ agricultural production, quality, and market competitiveness. Sustainable conservation farming technology contributes to increased farm outputs, soil nutrients and groundwater preservation, and erosion control. As a result, the member's employment, livelihood, and financial stability improve. It also increases farmers' expertise and marketing strategies. The

organization has environmental programs and provisions, notably agricultural farm development and Agro-enterprise. Areas of responsibility include vegetable production, permanent (perennial) crops, orchards, crop establishment, agri-tourism development, soil and farm conservation adoption, and farm structures. This program intends to contribute to environmental sustainability while strengthening the members' farming practices. The overarching purpose of NLCA will be realized with the assistance of external agencies such as Phil-FIDA, DA, and LGUs. The organization also partners with DENR through the National Greening Program (NGP), which provides them with seedlings and financial assistance. Owing to the existence of linkages between external stakeholders and financial assistance, the NLCA continues its mission to spread conservation strategies and care for the environment through Landcare. Farming contributions are evident through the Landcare approach adopted by many farmers. It has assisted them in addressing farming and environmental issues such as preventing soil erosion, incorporating agroforestry practices, planting trees strategically, and contributing to increased carbon filtering. Most farmers believe that Landcare has assisted in protecting their farms and crops and strengthened farm resilience to environmental threats. On the whole, it has enhanced farming techniques and procedures. The majority of farmers agree that conservation practices and approaches are effective.

> *"Contribution sa environment, sa sariling farm yung degradation makikita talaga. Yung nagadopt ng conservation way back 1993. 1994 nagintorduce ng conservation practices yung landcare na hanggang ngayon hindi nasira okay pa yung lupa at yung nagadpot maganda parin."*[Participant, 2022]

Prior to the implementation of Landcare, soil degradation was rampant and visible in individual farms, and with its introduction, individuals restored their farms and improved soil condition; those who used the technology acquired favorable soil characteristics to the present day. Indeed, the Landcare approach has helped Ned farmers both individually and collectively. It has maintained a positive relationship between the community and the barangay, in which farming skills and problems are discussed on the community's farms. Farmers likewise enhanced their income and contributed to the barangay's overall revenue, introduced environmental stewardship to improve their farming expertise, and increased their capacities as individuals and socioeconomic conditions. The introduction of the Landcare approach had a significant impact on the members and the community. Despite the absence of external facilitators, members continued conservation farming techniques and expanded membership.

Adoption of Landcare Approach and Strategies

The Landcare approach was initially developed to address environmental issues such as soil erosion and runoff. Since Claveria's foundation, Barangay Ned has been a pioneering landcare site. The organization's overarching goal is to implement the Landcare concept and techniques.

Figure 5: Sample of contour farming in NLCA

According to farmers, they had empty, bare lands before adopting Landcare; after adoption, their farms became more productive, yielding higher and reducing erosion. Subsequently, it is inherent that the members will continue to support and inspire other farmers to adopt Landcare and soil and water conservation techniques. The members strongly agree that adopting conservation techniques, such as contour farming, has improved their farming conditions and productivity. It is crucial, however, that new members will continue to adopt this principle to achieve the organization's goals.

Indicators to NLCA sustainability

The principal component analysis (PCA) was used to categorize the sustainability indicators into components to determine the most essential contributing indicators to NLCA sustainability. The researcher used the Varimax rotation and normalized data from each indicator for the analysis. The sustainability indicators were classified into three components using the Rotated Component Matrix with Varimax rotation (Table 5). The results of the PCA revealed the critical sustainability indicators grouped into each component, highlighting their strong associations with one another. These indicators collectively indicate the most significant factors contributing to sustainability (Table 5).

Table 5: PCA Results for Sustainability of NLCA

Indicators	Component		
	1	2	3
MEM	0.142		0.769
ACT	0.684	0.135	0.502
POL		0.571	0.692
PRJ	0.758	0.125	0.381
LEAD	0.773	0.295	0.141
GOV	0.735	0.262	0.229
VMG	0.476	0.582	
LIV	0.121	- 0.570	0.442
ALA	0.244	0.528	0.114
LINK	0.768	0.108	- 0.322
FIN	0.261	0.710	
ILA	0.102	0.476	0.204

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 7 iterations.

Based on the results, the sustainability indicators were grouped into each component. The first component included Activities (ACT), Programs and Projects (PRJ), Leadership (LEAD), Governance (GOV), and Networks and Linkages (LINK). The introduction of various activities significantly contributed to the organization's productivity and development, benefiting both the organization and its members. The presence of effective leadership and a robust governance structure fosters peaceful, healthy, and harmonious interactions between leaders and members. Establishing long-term partnerships and linkages greatly enhanced the organization's integrity and credibility in expanding the sustainability of the Landcare approach, particularly in the context of soil and water conservation measures.

Partnerships with diverse stakeholders and organizations offer members additional expertise, technical support, and financial assistance. The second component includes Vision, Mission and Goals, Adaptation of Landcare and Financial, and Introduction to Landcare. It is crucial for members to fully embrace the vision, mission, and goals of the Landcare approach, which are integrated into their farming strategies for overall increased environmental, economic, and social capacities. Access to secure financial resources creates numerous opportunities for the organization to prosper and develop. The third component, which includes membership, policies, livelihood, and enterprise, makes a relatively minor contribution to NLCA's sustainability. The organization should actively strive to encourage second-line

generation members to join and continue championing the success of Landcare's ideas and initiatives.

Simultaneously, existing members must be well-informed about the foundational policies that underpin the organization's operations to prevent misunderstandings and conflicts. Diversifying livelihood and enterprise opportunities is essential to boost members' income-generating capabilities significantly. The organization should initiate additional training and activities to empower members toward self-sufficiency. Prioritizing these components is crucial for the organization's overall management, enhancement, and development.

CONCLUSION

People's organizations, like the NLCA, are vital in promoting and advancing natural resource conservation for sustainable development. Collaboration and participation between local communities and governing entities are essential for effective natural resource management. Such cooperation helps prevent further degradation of natural resources and optimizes their function for the benefit of current and future generations.

This study aimed to identify key sustainability indicators for the Ned Landcare Association (NLCA). The analysis revealed several critical factors contributing to the organization's long-term sustainability. Membership was identified as an essential asset, highlighting the importance of cultivating and maintaining a committed member. For NLCA, the active involvement of its members is a vital driver of the organization's sustainability. The study's findings emphasize that NLCA should consistently expand its membership, particularly among the second-line generation, and encourage participation in the organization's initiatives and activities. It is essential to sustain the involvement of young adults and middle-aged members, and NLCA should explore initiatives to increase female engagement. While the recent increase in young members is promising, the organization must ensure their ongoing active participation and alignment with its goals.

NLCA's sustainability is also attributed to its robust linkages and networks due to its ongoing partnerships with government agencies. Linkages and networks with external entities, such as government agencies and private stakeholders, are essential for resource acquisition, technical support, and financial assistance. Strengthening these partnerships is crucial for sustaining NLCA's operations and expanding its impact. Nonetheless, it is recommended that the organization strengthen its ties to local government units at the barangay and municipal levels.

In addition, the competent leaders of NLCA contribute to its continued success owing to the members' mutual trust and relationships. NLCA's projects and activities based on natural resource management also contribute to its long-term sustainability. Increased involvement is crucial in these activities to ensure the organization's continued functioning and effective governance. Activities play a crucial role in building human and social capital. Regular general assembly meetings and farming-related activities enhance members' technical knowledge and interpersonal skills, promoting a deeper understanding and commitment to conservation practices.

Vision, Mission, and Goals (VMG) give the organization a clear purpose and direction. NLCA's vision to transition from small-scale to commercial farming while promoting environmental stewardship is vital for long-term success. Members must internalize their vision, mission, and goals to enhance organizational coherence and effectiveness.

To strengthen and uphold NLCA's sustainability, leaders and members must maintain their partnerships with external stakeholders, enhance its governance system, and adeptly convey its vision, mission, and goals to new and existing members. The livelihood and enterprise opportunities NLCA provides are fundamental to members' economic stability and self-sufficiency. Expanding these opportunities through training and development and continued adoption of Landcare practices are vital for long-term sustainability.

The Principal Component Analysis (PCA) identified three main components contributing to NLCA's sustainability: (1) Activities, Programs, and Projects; Leadership; Governance; and Networks and Linkages; (2) Vision, Mission, and Goals; Adaptation of Landcare; and Financial aspects; (3) Membership; Policies; Livelihood; and Enterprise. Prioritizing these components is crucial for the organization's overall management, enhancement, and development. Finally, the NLCA should focus on the primary factors: membership roster, livelihood opportunities, and strengthened policies. Given the results, future researchers can use the study's findings to generate a sustainability model for other related organizations coupled with an understanding of PO sustainability aspects.

ACKNOWLEDGMENT

The authors would like to thank the members of NED Landcare Association (NLCA), notably Sir John Villanueva, Sir Eldon Ruiz, Sir Roy Divinagracia, and Sir Boy Liaganad for the assistance during the site visitation and data collection; The Cabalinan Family for the hospitality and kindness throughout the authors brief stay in Barangay Ned. Acknowledgment is also due to Assistant Professor Lara Paul A. Ebal and STATBase for the assistance on the statistical analysis of the study; and For. Luke Joshua Castro for generating the map.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

CONTRIBUTIONS OF INDIVIDUAL AUTHORS

LBC Del Castillo contributed to the conception of the paper, reviewed relevant literature, and gathered and analyzed data on the sustainability of People's Organizations engaged in natural resources management, particularly in the Ned Landcare Association. LBC Del Castillo also wrote the entire manuscript.

LL Sabino conceptualized the study and assisted in the data collection and analysis. LL Sabino also provided substantial comments, review, and editing of the manuscript.

REFERENCES

Adams, W.M. (2006). The Future of Sustainability: Re-thinking Environment and Development in the Twenty-First Century. World Conservation Union, Gland, Switzerland.

Anita Shankar Acharya, Prakash, A., Saxena, P., & Nigam, A. (2013). Sampling: Why and How of it? ResearchGate; doi: 10.7713/ijms.2013.0032

Barker, B. A., & Manning, M. R. (2022). Designing the Collaborative Organization: A Framework for how Collaborative Work, Relationships, and Behaviors Generate Collaborative Capacity. Journal of Applied Behavioral

Science/˜the œJournal of Applied Behavioral Science, 60(1), 149–193. https://doi.org/10.1177/00218863221106245

Catacutan, D., Cramb, R., & Culasero-Arellano, Z. (2006). THE DYNAMICS OF LANDCARE GROUPS IN THE PHILIPPINES: A SOCIAL CAPITAL PERSPECTIVE. International Landcare Conference, Melbourne, Australia. http://apps.worldagroforestry.org/downloads/Publications/PDFS/pp06248.pdf

Cramb, R. A., & Culasero, Z. (2003). Landcare and Livelihoods: The Promotion and Adoption of Conservation Farming Systems in the Philippine Uplands. International Journal of Agricultural Sustainability, 1(2), 141–154. doi:10.3763/ijas.2003.0113.

Cramb, R.A. (2006). The role of social capital in promoting conservation farming: the case of "Landcare" in the Southern Philippines. Land Degradation & Development, 17(1), 23–30. https://doi.org/10.1002/ldr.691.

Ceptureanu, Sebastian & Ceptureanu, Eduard & Luchian, Cristian & Luchian, Iuliana. (2018). Community-Based Programs Sustainability. A Multidimensional Analysis of Sustainability Factors. Sustainability. 10. 870. 10.3390/su10030870.

Fahad, Shah & Naushad, Mahnoor & Faisal, Shah. (2020). Analysis of Livelihood in the World and Its Impact on World Economy. SSRN Electronic Journal. 10.2139/ssrn.3717265.

Garrity, D. & Mercado, A. (1998). The Landcare approach: a two-pronged method to rapidly disseminate agroforestry practices in upland watersheds', Bogor, Indonesia: International Centre for Research in Agroforestry, Southeast Asian Regional Research Programme.

Latawiec, A. & Agol, D. (2015). Sustainability Indicators in Practice. Warsaw, Poland: De Gruyter Open Poland. https://doi.org/10.1515/9783110450507

Lozano, R., Barreiro-Gen, M., & Zafar, A. (2021). Collaboration for organizational sustainability limits to growth: Developing a factors, benefits, and challenges framework. Sustainable Development, 29(4), 728-737. https://doi.org/10.1002/sd.2170

Mccool, S. & Stankey, G. (2004). Indicators of Sustainability: Challenges and Opportunities at the Interface of Science and Policy. Environmental management. 33. 294–305. 10.1007/s00267-003-0084-4.

Metcalfe, J. (2004). STORIES OF PEOPLE AND PLACES Landcare in the Philippines— https://www.aciar.gov.au/sites/default/files/legacy/node/582/landcare-partoneweb version.pdf.

Nanthagopan, Yogarajah. (2011). Impact of Networking and Linkages on Organizational Performance, A Comparative Study between the Local and International Non-governmental Organizations in Vavuniya District, Sri Lanka. Journal of Science and Management – Vol – 03, Vavuniya Campus of the University of Jaffna, Sri Lanka.

Parul, M., Jain, M., & Shandliya, K. (2013). A survey paper on a comparative study between Principal Component Analysis (PCA) and Exploratory Factor Analysis (EFA). International Journal of Computer Science and Applications, 6(2). http://www.researchpublications.org/IJCSA/NCAICN-13/240.pdf.

Pender, J., F. Place, and S. Ehui, eds. Strategies for Sustainable land management in the East African highlands. Washington, D.C.: International Food Policy Research Institute.
DOI: 10.2499/0896297578

Putri, Cut & Indriani, Mirna & Indayani, Indayani. (2022). The Role of Member Participation and Governance on Sustainability: Evidence from Cooperatives in South Aceh.

Shediac-Rizkallah, M. C., & Bone, L. R. (1998). Planning for the sustainability of community-based health programs: conceptual frameworks and future research, practice, and policy directions. Health education research, 13(1), 87–108. https://doi.org/10.1093/her/13.1.87

Van Driesche, J., & Lane, M.B. (2002). Conservation through Conversation: Collaborative planning to reuse a former military property in Sauk County, Wisconsin, USA Plan.Theory Pract.3:133–153.Natural Resource Management Governance Principles1001.

Villamor, M. (2019). Sustainability of People's Organizations: The Case of Member Participation in the Pawa Women Mangrove Guardians Association Inc. of Brgy. Pawa, Masbate City. 10.13140/RG.2.2.14376.83202.