

Sustainable Oyster Mushroom Livelihood Development Project for Rural Communities of Ilocos Sur



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ABSTRACT: This research was conducted to determine the contributions of the stakeholders of oyster mushroom livelihood project particularly on their participation on technical services and adequacy/availability of financial services; to determine the challenges encountered in terms of knowledge, willingness, attitude and policy implementation; and develop a framework that can help to address sustainability of the mushroom livelihood project.

Four municipalities in Ilocos Sur Province were selected as research site using an inclusion criteria. A constructed survey questionnaire and an interview guide were used to gather data which were collated and interpreted using the point scale, range of values, and descriptive equivalent.

As prevailed in the research study, there is high participation on the technical support of the LGU in all activities of the mushroom livelihood project. However, the mushroom growers consistently claimed a low to moderate participation of LGUs on the support to development initiatives of the mushroom livelihood project and formalizing involvement of funding agencies and other stakeholders through a MOA. On the area of financial support, LGUs provided highly available/adequate support according to them but mushroom growers mentioned they received moderately available/adequate financial support.

On the knowledge, willingness, and attitude of mushroom growers, there were no challenges encountered. This suggests that they have already the knowledge and capabilities of producing and managing their mushroom livelihood. They just needed enhancement in order to prove more about the technology and its management. On the policy implementation, the LGUs have encountered varied challenges in the area of technical policies, but overall, the LGUs and the mushroom growers revealed that they encountered very serious challenges. On the financial policies aspect, the LGUs encountered a very serious challenge, specifically on the allocation of funds for monitoring activities.

Overall, a low to moderate participation of LGUs on their technical support, a moderately available/adequate financial support, and challenged with the problem on policy implementation prevailed based from the result of the study, hence, the sustainability mechanism and development framework on oyster mushroom livelihood development project is hereby recommended to help achieve sustainable rural community development through participation and empowerment of the stakeholders.

THE PROBLEM

BACKGROUND OF THE STUDY

The Sustainable Development Goals (SDGs) of the United Nations (UN) are a bold commitment to continue what were established from the Millennium Development Goals (MDGs). MDGs, which started a global effort in 2000, aims primarily to establish a measurable and universally agreed objectives for tackling extreme poverty and hunger, improve health services, expanding primary education, and achieve full gender equality, among others. The SDGs, which was conceived in 2012 at the Rio de Janeiro during the Conference of the United Nations regarding Sustainable Development, are committed to tackle some of the more pressing challenges facing the world today, of which there are 17 goals interconnected with each other (UNDP, 2021).

The United Nations is a constant partner of the Philippine government in achieving national development goals including the 17 SDGs. Priorities have been mapped directly and indirectly into the Philippine Development Plan (PDP), focusing on areas where a great impact is no one will be left behind, hence localization of the SDGs are done in order to achieve sustainability from

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the national down to the regional level. This is also done in order to resolve any gaps and achieve complementation among the concerned agencies while strategies and priorities are taken into places. ("The 2019 Voluntary National Review of the Philippines").

A solid framework was laid down by the National Economic Development Authority (NEDA) in achieving the "Ambisyon Natin" for more inclusive growth, a resilient community, and a globally competitive economy by the end of 2022 ("Philippine Development Plan 2017-2022 overall framework"). Hence, the SDGs, being cascaded through the PDP include the development of different sustainable livelihood program which provided different opportunities for the local communities to undertake such as income-generating activities and livelihood development among others (World Bank, 2018).

Many small- and medium-term enterprise and livelihood projects have been introduced both in the rural and urban communities by the national government in partnership with the local units and other stakeholders to help resolve issues on low productivity and low income. One of which is the oyster mushroom livelihood project which generally aims to help the community increase their productivity and income. Rehman and Ghafoor (2021) state that mushroom livelihood is the best source of livelihood to attain sustainable development goals set by the UN.

Globally, mushroom production started in the 1800's. Consumption of mushrooms has increased from 1 to 4.7 kg of cultivated edible mushrooms per capita from 1997 to 2013. Also, in 2013, 63 billion US dollars have been reached in marketing mushrooms (Royse, et.al.2017). The demand of mushroom has been increasing as the population grow while more expansions and developments in the manufacturing of mushroom industries intensify. An analyst of Zion Market Research (2018) said that the global mushroom market in 2015 was capitalized at more than 35.08 billion US dollars with a compound annual growth rate (CAGR) of slightly more than 9.2 percent. A recent study said that global market size in 2021 was valued at 50.3 billion US dollars (Brosas, 2023/agrario.com). It is anticipated to increase at 9.7% CAGR from 2022 to 2030.

Based on the Food and Agriculture Organization (FAO), China, Poland, the US of America, the Netherlands, and Spain were among the top five major producers of mushrooms in the world. Zhang (2014) said that mushrooms have become the products of more than 25 million farmers in China. In 2018, China contributed almost 77% of global production. This showed a rapid growth of mushroom farms and livelihood and contributed to food security and sustainable income source (Wendiro, et.al., 2019).

In the Philippines, its mushroom industry has intensified subsequently in 1995 considering its estimated production of around 27,000 metric tons annually (Brosas, 2023/agrario.com). Chang, et.al. (2014) claimed that growing mushrooms is feasible because of its cheaper production cost, available and free agricultural crop residues while its products' demand is high. With this, it gave the mushroom industry a boost in the rural communities which is vital in creating employment and raise income, particularly the small farmers.

Oyster mushroom livelihood is commonly small in the country but an intensive production of mushroom provides good alternative source of income for small-scale enterprises especially those who have small piece of land. With mushroom consumption increasing, farm lands are decreasing along with drought problem and occurrences of natural calamities, pushed farmers to produce mushrooms. Various studies have been done regarding mushroom production and its marketing and business opportunities. The increasing awareness on the nutritional value and health benefits of oyster mushrooms leads the community to adopt, cultivate, and engage in oyster mushroom production which serve not just as an alternative source of food, income and labor but also as a sustainable livelihood (Sanchez, 2004, cited by Balan, et. al., 2022). It revolutionizes the continuous production of mushrooms to supply the increasing demands of the consumers which can bring a change to the food system and health condition in the community. It helps improve their economic activities and social involvement while increasing their opportunities to have an alternative source of income helping reduce economic challenges as it strengthens livelihoods. (AgriTalk, Manila Bulletin by Medenilla, 2020). However, it was recorded also by Chang, et.al. (2014) that the lowest production volume was 355 metric tons (MT) in 2009. The country has been importing mushrooms from Japan, Thailand, China, Taiwan, Malaysia, Korea due to low production and high demand. Despite that oyster mushroom livelihood project have been introduced in the country its contribution to the market demand is only 10% in 2020. (AgriTalk, Manila Bulletin by Medenilla, 2020).

In the Ilocos Region, the Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development of the Department of Science and Technology (DOST-PCAARRD, 2017) launched and provided a fund support to an oyster mushroom production project which was promoted as an alternative source of livelihood in the three provinces of Ilocos Region. In the Province of Ilocos Sur, the beneficiaries included the different rural communities of San Emilio, Suyo, Lidlidda, Alilem and Cervantes, to generate an alternative livelihood for the vulnerable farmers (Javier, 2019). Mushroom experts and enthusiasts

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claimed that oyster mushroom project can be a sustainable livelihood that provide very good opportunity to develop and sustain living conditions of the rural community as they can utilize their local resources.

According to a survey conducted by Martins (2020), 37% of livelihood say that one of the main reasons development initiatives succeed is seen between the specific initiative and activities and the general goal. However, a greater portion say that livelihood projects are likely failed. This is evident with the issues on food security, poverty and employment that remain as the key problems of which sustainable livelihood should have been addressing. Hence, it is within this context that the researcher wanted to determine the contributions of the Local Government Units of whom development projects were cascaded; and determine the challenges that they met in the implementation of the oyster mushroom livelihood projects.

Statement of the Problem

Despite the bright prospects for oyster mushroom production, production is still low. Even with the local government units (LGUs) development advocacies on oyster mushroom project, there are limitations on opportunity takers on mushroom livelihood to help intensify and sustain for rural communities. It is within this context that the researcher would like to determine the contributions and participation of the stakeholders, identify the problems encountered in achieving sustainable oyster mushroom livelihood, and analyze these in developing a sustainability mechanism towards rural community development.

After identifying these gaps, the researcher was able to determine influencing factors in addressing the concerns in sustaining oyster mushroom livelihood in Ilocos Sur. This research sought to address the following questions:

1. What are the contributions of the stakeholders in sustaining the oyster mushroom livelihood project?
2. What are the challenges met by the stakeholders of oyster mushroom livelihood in terms of knowledge, willingness, and attitude towards sustainability and rural development alongside with policy implementation?
3. How to develop a rural development program mechanism and framework in addressing the challenges in sustaining the oyster mushroom livelihood project in Ilocos Sur?

Significance of the Study

The research result would be beneficial to the local executives in the development of a sustainable livelihood projects for rural communities. It will serve as basis for roadmap in developing sustainable rural and community development. In terms of economic aspect, the local leaders will have clearer perspectives on productivity and profitability enhancement activities in uplifting and contributing the living conditions of farmers and those involved in related livelihoods like mushroom production. In relation to this, financial institutions will be informed to support the initiatives of these local government units as well as other entities implementing livelihood programs in rural communities.

The sustainable mechanism including the development framework could be very helpful in managing projects which could be later validated or replicated in different localities.

In addition, faculty researchers and the students pursuing further research studies could use this as basis for techno-preneurial projects in sustaining support to rural development particularly with rural people and entrepreneurs interested in pursuing an oyster mushroom livelihood focused in achieving and increasing productivity and income.

Scope and Limitation of the Study

The respondents focused on the stakeholders who contributed to the oyster mushroom livelihood project (OMLP) in Ilocos Sur, particularly in rural communities benefitting from the said livelihood including the establishment and utilization of the oyster mushroom production technology. The Municipalities of Narvacan, San Esteban, San Juan, and Sta Catalinain Ilocos Sur served as research sites based on the inclusion criteria and the people's involvement in OMLP and its massive technology diffusion, participation and utilization in boosting the local mushroom industry in the municipality.

Specifically, the general criteria used were 1.) Attendance to trainings on oyster mushroom production, 2.) adoption of mushroom production technology; 3.) Establishment of mushroom farm production area, and 4.) production scales, namely: (a) a large farm area with 2000 fruiting bags and above which produces at least 10 kilograms of fresh mushrooms daily, (b) a minimal production farm area with 1000-2000 fruiting bags and produces at least 5-10 kilograms of fresh mushroom a day, and (c) a low production farm or a beginner with 100-1000 fruiting bags which produces at least 1-5 kilograms of fresh mushroom a day.

Furthermore, the different research sites will be treated as cases in deriving sustainability influencing factors in ensuring that an appropriate modality will be developed specifically for rural communities implementing livelihood programs. Collective community characterization will be done in this study which will not include the profile of oyster mushroom livelihood project farmer/owners.

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REVIEW OF LITERATURE

This chapter presents a comprehensive review of literatures, reviews and researches previously conducted that are useful in understanding the focus of the research on sustainability, program operation and management, and rural development. The theoretical and conceptual frameworks were also presented in this chapter.

Contributions or Influence of Sustainability in relation to Livelihood Development Projects

The sustainable development goals (SDGs) are explicit that they include issues that most likely to affect the living condition of the general people and affirms commitment to end poverty globally (Mensah and Ricart, 2019). They involve participation of all concerns in building not just safer but also a more sustainable and prosperous humanity (UNDP, 2021). The SDGs appeal for action to fight the battle against poverty, protect the environment, and ensure that each of the member of a community can enjoy harmony among men and achieve prosperity (United Nations, n.d.). In terms of the agriculture sector, productivity is given much concern through the development of an integrated agriculture farming system with strengthened collaboration between and among the agencies from the national down to the local agencies, dubbed in the last agriculture program "*matatag, maginhawa at panatag na buhay ang bawat mamayang*" Filipino [strong, comfortable, and tranquil life for every Filipino citizen].

With the growing concern about sustainability of food and income-source, the "Plant, Plant, Plant Program" of the country is recognized as an important pillar to support development programs. Experts have become quite busy with new scientific methods to be implemented, particularly in edible farming. Now that people are more concerned with their health and much more on their accessibility to a sustainable livelihood, every agency tried to take measures on how this "new normal set-up" can be adapted, to which every individual can normally do their task.

In conjunction with this, each Department leader pursued and supported the other means that can provide an ease to the situations arising thereafter. The Department of Agriculture (DA), addressed this big challenge and had taken to promoting "Urban Gardening" or backyard gardening as an easy agricultural practice for women and youth especially, and a suitable income-generating enterprise capable of transforming a country's economy (Dar 2020).

According to Marquez-Ramos and Mourelle (2019), development is equated to sustained economic growth, as manifested by increases in production and investment levels within a locality. Development is often viewed as a dynamic societal change from one current situation to another, with the connotation that the latter is preferable. The development process in the locality increases personal and institutional capacities, mobilizing and managing the resources needed to produce sustainable and justly-distributed improvements to the quality of their lives, which is consistent with their own aspirations.

On the other hand, the view of development as a process that is multidimensional has also been asserted by Chakravarty (2017) as it involves not only reorganizing and reorienting the entire system, both economic and social, but also radical changes in social and administrative structures, in beliefs and attitudes, and even in customs and traditions. Development is the fundamental transformation of man, implying some internal and external changes. By external, it refers to how man is concerned with environment, modernization, and industrialization, and by internal, the transformation of values attitudes and feelings.

De la Rosa (2013) also implies that development is a process that is continuous and dynamic and not a stable state or condition. It recognizes that people should control and have access to resources, but it also considers the limits that it should lead to a sustainable use of physical resources and that it should be within the tenets of justice and equality. It acknowledges that it is the people who can define what they consider as improvements in the quality of life, hence developing the countryside involves strategies that could spur local economy. The goal of development is to create an environment that enables people to enjoy longer, healthier, and more creative lives. This may appear as the simple truth, but it is often neglected since other more immediate concerns are regarded with more importance. Human development is the end goal and not the means in development and progress.

Heshmati, A., et.al. (2015) mentioned that a lot of development policies and strategies aimed at poverty reduction were given in larger enterprises and livelihoods and focused on urbanization which overlooked the crucial role of the local executives. As a result, the majority of the rural community remained sluggish resulting in stagnant development.

Development programs/projects involve bridging the gap between a present state through deliberate courses of action, thus playing a vital role in a livelihood project's growth and success, since these lead the stakeholders on how to respond to every opportunity and challenge. According to a survey conducted by Martins (2020), less than 40% of livelihoods responded that one main reason that strategic initiatives have been successful is that the specific initiative and the activities of the initiative fitted well with the overall goal. The establishment of development programs involves commitment and it has to be seen and felt by the rural community.

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The participation or involvement of all stakeholders in the crafting and establishment of sustainable livelihood programs is very necessary to meet goals and objectives. Aside from the implementers themselves, stakeholders must include the people of the community so that the perceived attributes on sustainability and expectations for the livelihood are met.

Generally, rural development envisions achieving an empowered community for sustainable livelihood. And this is one of the focused agenda of the government for the rural community to be capacitated with entrepreneurial mind-set in order to achieve a sustainable livelihood while creating a sustainable processing and market niche (Taculao, 2020).

For the community in the Philippines, development is a process in which the people's efforts unite with the government agencies to help improve their economic, social and cultural conditions, integrating them into the nation's life, and enables them to contribute fully to the progress of the country, and this view is supported by the United Nations.

Challenges, People's Perspective and Views In Development Program/Project

John Teye (2017) assumes individual preferences to choices that maximize the individual's happiness or helpfulness among alternatives or other options that are available. In other words, individuals often choose the best action based on their personal preferences and any constraints that they face.

Unger (2014) sees that each individual possesses the capability to advance towards an even greater life. "The world is made and imagined" is the conviction at the core of this social thought. For Unger, the market, the state, and human social organization need to be left open for experimentation and revision of technology instead of being set in predetermined institutional arrangements, which is aligned to what applies to a project and for individual and collective empowerment.

Competencies are known as the behavioral level of one's capability, which is created with the help of the work on leadership and management (National Research Council Canada, 2019), which encompasses knowledge, skills, attitude, and actions. These competencies play a vital role in adopting and implementing mushroom production technologies relative to the knowledge and traditional personality traits of the individual or people in order to meet desired results.

According to Leeuwis (2021), there are four aspects to consider in terms of people's participation and technology adoption: knowledge, willingness, ability. These are helpful in appreciating rural community's capacity at a given time for contributing to change and innovation. Farmers would have to compare the claims over benefits before they adopt an innovation. Growers will employ a technology if they already fully comprehended the advantages and disadvantages related to it.

Oyster mushroom production technology. The cultivation of edible mushrooms has been considered as a most economically viable process specifically for the biological conversion of ligno-cellulosic wastes (Kumla, et.al. 2020). Particularly, *Pleurotus* spp. or the oyster mushroom can be easily grown, especially by women in rural areas, with the least efforts.

Oyster mushroom cultivation can become an alternative source of income, providing employment in semi-urban and rural areas and uplifting the living standard of low-income farmers. It can also be an additional source of high-quality protein in their daily food intake, eradicating problems such as malnutrition, and uplifting not only the economic and social status of rural people and families but also their nutritional status.

With improvements and innovations in technology, livelihood in oyster mushroom production continues to expand and generate economic growth, a boundless opportunity for rural farmers. The poverty status of small farmers are also managed through the help of more sustainable agricultural practices (Vinita Rajput and Ravika, 2020).

As Prabhakar et al. (2021) cited, oyster mushroom production provides an additional or alternative income especially to those farmers who are looking for value-added products. The utilization of by-products or co-products of other crops can be a way for them to supplement their farm income. It improves their economic activities and social involvement while increasing their opportunities to have an alternative source of livelihood. This helps in reducing their vulnerability to falling into poverty. It also strengthens their livelihood when a quick-yielding, nourishing food source and a reliable income source are generated. Ultimately, mushroom production has a high market demand, but its contribution is only 10% in 2020, thus supply is still limited (Medenilla, 2020).

However, Asian Development Bank (2018) mentioned that there are numerous economic policies and strategies that have previously been introduced in addressing poverty and generating equitable growth but attention was turned to bigger enterprises, urban and urbanizing communities, and centralized planning, thus the fact that local executives can play a crucial role had been missed. This also resulted in the rural economy remaining slow-moving, affecting the Filipinos who live and worked in these areas and contributing to the continued as well as increased poverty incidence and poorer quality of life for these Filipinos.

Mushroom farming has been giving a large share to household income of many farmers over the past thirty years since it has been primary carried out by many people in the rural community. This is most particularly concentrated in tropical and warm places where small-scale enterprises have captured the regional supply market centers. The Chinese Edible Fungi Association, for

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instance, has listed a production of 95% being produced by small-scale growers which consequently became a sustainable livelihood up to the present (Thakur, 2020).

According to Ongoche (2019) mushroom farming contributed to rural development in Kenya. It provided the small farms to improve and sustain their small-scale enterprise. The Kenya Institute of Organic Farming (KIOF) envisions achieving a sustainable livelihood among the rural communities empowered with skills and knowledge to achieve rural development. Among these skills include mushroom production.

An expansion of the oyster mushroom livelihood has been seen in Nepal. The community became aware of the health benefits of adding mushroom in their diet, hence there is an increased in market demand. Because of this growing consciousness, mushroom cultivation one of the most sought livelihoods among the farming communities. Moxley et al. (2022) added to his findings that the net income and production obtained by the mushroom growers make mushroom livelihood a sustainable one. Accordingly, oyster mushroom livelihood gains acceptance among farmers because of the social, economic and environmental impact it can derive.

Sustainable livelihoods

According to the UN (2019), sustainable livelihood is a key agenda for ensuring the capabilities, assets and activities required to cope for the present situation where farming families are most affected. This came as a revolutionary development concept in the 1990s drawing from the crises such as poverty, food scarcity, and unemployment which is felt by the general people up to now. Hence a livelihood is called sustainable when it can cope from the crisis which comprised the capabilities, material and social assets, and activities prioritizing development and providing means to surpass economic issues, particularly on increasing income and productivity.

Considering the impacts of climate change such as management of natural and indigenous resources, eradicating poverty and fostering inclusive societies help reduce inequality and help economies prosper, hence the greatest chance to help improve the living status of the global community while sustaining the production of needs of the future generation.

The concept of sustainability emerged from the "Global Agenda for Change" which aimed to safeguard and meets the needs of today in consideration of tomorrow's generations and able to provide for their own needs (World Commission on Environment and Development, n.d.). This concept internationally influence economic, social, and environmental issues (United Nations Economic Commission for Europe, 2017 as cited in Physiopedia, n.d.).

Sustainability involves resources being efficiently and equitably distributed, wherein socio-economic activities are confined within a finite environment (Bova and Lin, 2022). Sustainability in rural development envisions achieving empowered communities, with the skills and knowledge of traditional farming needed for a more sustainable livelihood. In extension to this, sustainable rural livelihood means that households have food security, due to the utilization of innovations in agriculture. This also addresses the issue of reaching a competitive structure, increasing job opportunities and development in agriculture, as a majority of the lower income classes are found in or employed mainly on family-run farms.

Also, many of the enterprise development and alternative livelihoods interventions are implemented simultaneously with resource conservation or management initiatives creating conflict or less appreciation of the enterprise or livelihood initiatives. It is critical (5) to have clear project or program objectives that are locally specific but that are coherent with larger economic, social and environmental policy guided by the UN's SDGs cascaded through the PDP down to the mainstream.

Most development agencies adopt the Chambers and Conway (1992) definition of livelihoods (or some slight variation on this) which holds that: A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living: a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the long and short term (da Silva Junior, 2020).

Oyster mushroom livelihood program is characterized as a shift of farmers' activities from their on-farm activities, which offers an additional income to households thru widening their options (Gautam et al., 2016). According to Loison in 2015, smallholders who have sufficient assets are more successful in establishing a livelihood program because they are eager to learn new technologies and are excited to accept opportunities.

Sustainable livelihood framework, which is implemented by the stakeholders, is a way to organize thinking and use as a guide on sustainability as well as policy, support services management, and monitoring and evaluation of activities to sustain development outcomes in larger population (Center for Design and Research in Sustainability, n.d.). It is a tool developed by the Sustainable Rural Livelihoods Advisory Committee, to improve understanding of livelihoods for the poor and vulnerable. According to the Department for International Development, now the Foreign Commonwealth Development Office (2020), this framework

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is a simple and adaptable framework which presents the indicators that affect livelihood sustainability. This framework is very important in formulating new plans and activities and helps in the assessment leading to livelihood sustainability. Among the factors include people’s participation, technology trends, and production trends.

Theoretical Framework

Behavioral theory explains that a human behavior is analyzed through the antecedents and consequences that is present in an individual’s general environment which a person acquired through experiences (Angell, 2013).

Community dynamism portrays community structure where change and development may occur over time. It gives valuable insight on how community feel about their environment which help them decide about which services are offered in a particular location. It aims to cater the primary needs of the community before implementing any development services. This will help boost the success implementation of services to the community (Blogger, 2018). A community is said to be dynamic when people are brought together to create an advocacy whereby supporting each other to overcome challenges.

Rogers’ (1962) Diffusion of Innovation suggests that people must recognize that the impact of technology depends on individual preferences and these could play major roles in their participation and adoption. Rogers argued that any technology or innovation that is apparently as new by any person could be considered an innovation available for observation, testing and creation of awareness. It also describes the patterns at which new innovations spread through a group of people (Halton, 2021).

As shown in Figure 1, if modernization takes place there are innovations introduced and development project established in the rural community considering that this livelihood is community-based system where comparative advantage is recognized and the behavior of the different stakeholders are also considered so that community and social dynamism would take into place, hence, these perspectives and principles are inherent for a productive and profitable livelihood achieving a sustainable oyster mushroom production in the rural community.

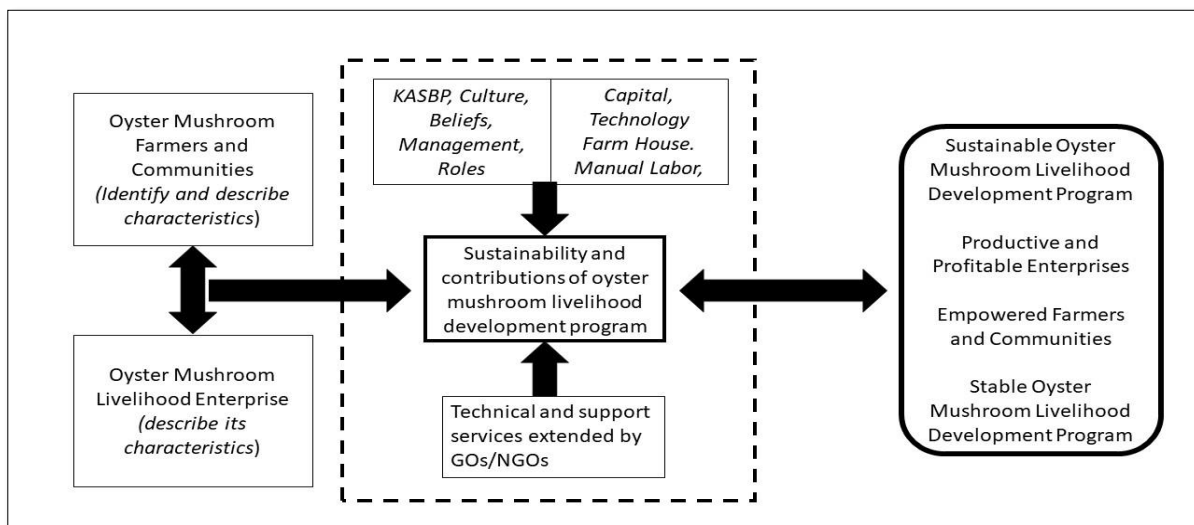


Figure 1. The different influencing factors of sustainability as determined in the different theories of rural community development

Conceptual Framework

This research was designed to analyze the conditions and situations of the oyster mushroom livelihood projects and communities in the identified research sites in Ilocos Sur. It is focused on two intertwined factors in relation to the factors of sustainability. This will be done through a case documentation and analysis of the four rural communities to determine further the appropriate sustainable mechanism and possible

Moreover, the interrelationship of factors in the sustainability of the oyster mushroom livelihood projects in the different rural communities were documented to help farmers, growers, enthusiasts and the interested individuals to have an additional or alternative source of income and production while they are engaging into a livelihood enterprise in obtaining a stable production and secured profit in a sustainable way.

Other factors such as the rural communities’ knowledge, attitude, skills, behavior, culture, roles and management or policy implementation are the important considerations to rural development and the whole community.

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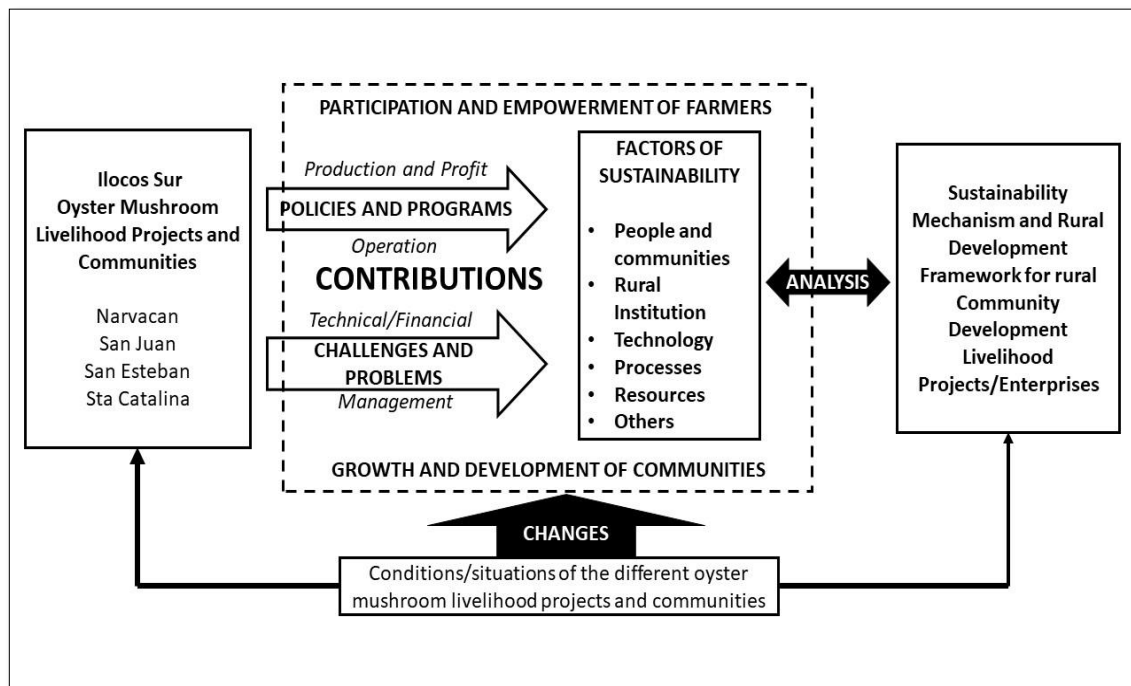


Figure 2. Research paradigm of the study.

Also, there is a need to consider the resources in the community such as capital, technology on oyster mushroom production, farm house and the labor force. The participation and empowerment of the stakeholders and the key players along with the support provided by the government and non-government offices and other institutions play also a vital role in order to meet sustainability of oyster mushroom livelihood development program.

There are also many challenges involve in oyster mushroom livelihood which can directly affect the sustainability of the development program such as inclusion of the business operation at the local level, delivery of the technical and financial support services by partner agencies and the management of the oyster mushroom production as a livelihood since it involves different key-players and stakeholders. With all these considerations, a sustainable oyster mushroom livelihood development project can be achieved looking into its productivity and profitability while farmers and communities are empowered and maintained the processes of sustainable development and rural community development.

Sustainable mushroom livelihood is a promising way to overcome challenges on food insecurity, malnutrition, and pollution. It is an efficient way for the utilization of agro-industrial wastes and ensures food security. It is also the easiest and cheapest source to address malnutrition and, it supports the local communities' economic activities through a sustainable mushroom livelihood development project. Hence, the economic and social condition of farmers can be improved by adding this commodity into their existing agricultural systems and livelihood activities.

METHODOLOGY

This chapter describes the methodology employed in the research study, the research design, locale of the study, population and sampling procedure, research instruments, data gathering procedure, statistical treatment and ethical considerations.

Research Design

The mix-methodology research approach was used in the study combining quantitative and qualitative methods. Specifically, the case analysis method was used to support the documentation and description of the oyster mushroom livelihood project activities. This was supported by qualitative and quantitative research methods in obtaining comprehensive understanding of specific situations and the different cases of each respondent and rural community.

Also, this research study formulated a sustainability mechanism and framework based on the activities of a government institution that creates and introduce new development process. The different processes include planning, development and validation and modification of the sustainability framework (investopedia.com/Kenton, 2022).

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Locale of the Study

Figure 4 shows the location of the four municipalities in the province of Ilocos Sur, namely: Narvacan, San Esteban, San Juan and Sta. Catalina.

Narvacan is a second-class municipality with 34 barangays. It belongs to the second district of Ilocos Sur with a total population of 46,234 (2020). The main source of income is farming which includes rice, corn tobacco plus livestock and poultry. Fishing is another income source since Narvacan is situated near the coastline.

San Esteban is a 5th class municipality with a total population of 8,381 (2020). Farming and fishing are the main source of livelihood in the municipality with a farming system such as rice-corn/vegetables+fishing, rice-corn/tobacco+fishing.

San Juan, formerly named Lapog, belongs to the 3rd class municipality and has 26,674 total population according to the 2020 census. It is also called the Buri Capital of Ilocos Sur since they produce goods that are made of buri leaves. Rice is the main crop in the municipality followed by corn or garlic-onions and vegetables as added municipality commodities for production and profit. There are a few small-scale livelihood activities noted including oyster mushroom farming.

Sta. Catalina is a 5th class and the smallest among the 34 municipalities of Ilocos Sur in terms of land area but is the only one which has an urban status. It has 14,493 total population in 2020 census. Sta Catalina is just 4 kilometers away from Vigan City, the center of commerce and trade where most of the residents go and buy their households' needs and merchandise. Farming is the main source of households' income which include rice-corn/vegetables plus animal production. This also accounted Sta. Catalina as the vegetable bowl of the north because they are known for their cabbage, cauliflower and other prime vegetables sold in many markets especially in the Ilocos Province. Next to farming is fishing and small-scale businesses.

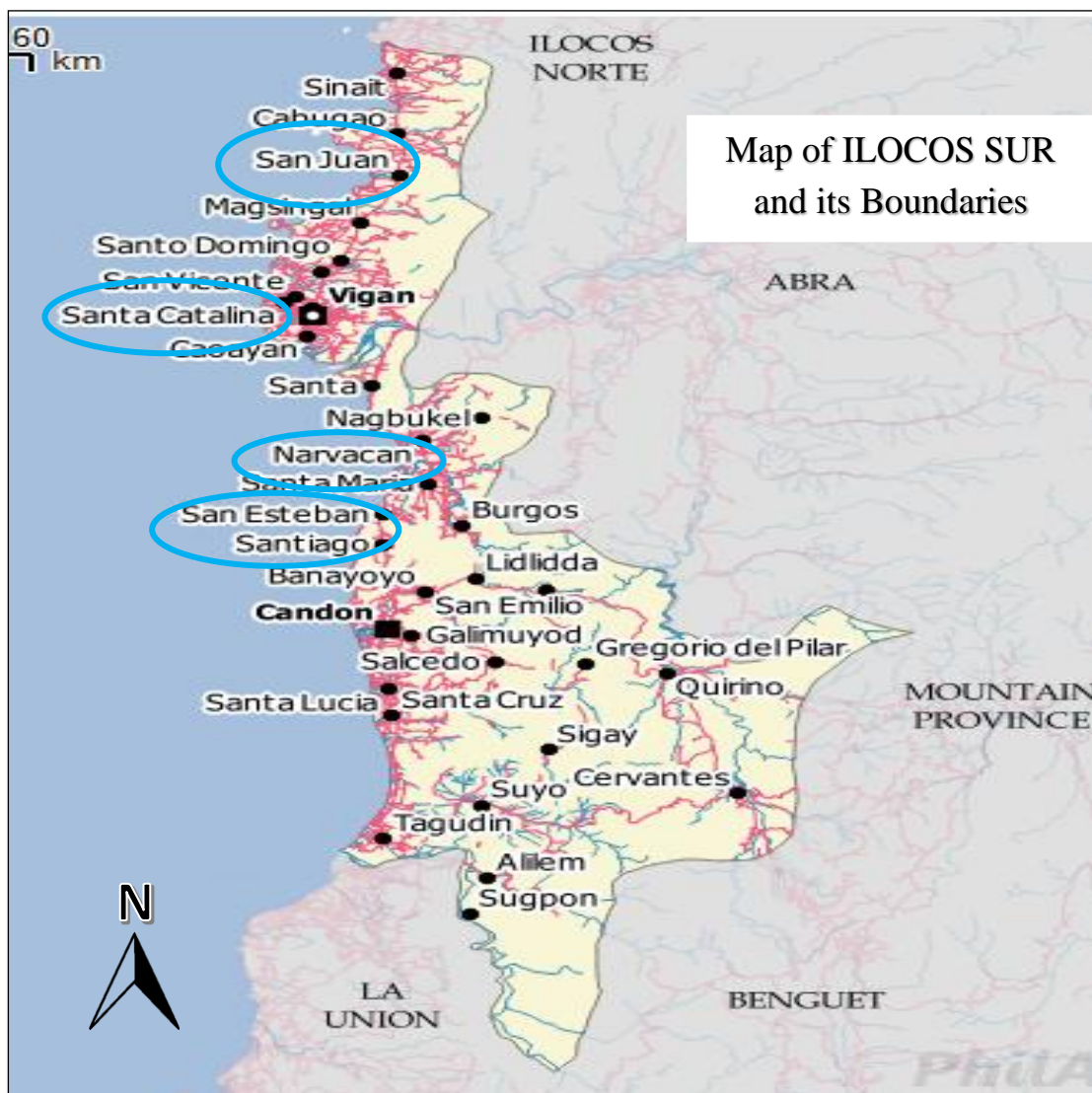


Figure 3. Map of the Province of Ilocos Sur Showing the Location of the Four Selected Municipalities as Research Sites. (Source: philatlas.com/luzon/r01/ilocos-sur.html)

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Population and Sampling Procedure

The stakeholders who have contributed to the oyster mushroom livelihood such as the implementers from each selected local unit, the mushroom growers/farmers who established and utilized the oyster mushroom production technology, and the rural communities which adopted the technology and benefitted from it were the major entities in this research.

For this case analysis, a purposive sampling technique was employed. From the municipalities of Ilocos Sur, four were chosen based on the inclusion criteria where one respondent (1 mushroom grower) per selected municipality was interviewed.

Respondents from Narvacan, San Esteban, San Juan and Sta. Catalina were selected based from the inclusion criteria which includes attendance to trainings on oyster mushroom production, adoption of mushroom production technology; establishment of mushroom farm production area, and the number of production as either large farm area with 2000 fruiting bags and above which produces at least 10 kilograms of fresh mushrooms daily, (b) a minimal production farm area with 1000-2000 fruiting bags and produces at least 5-10 kilograms of fresh mushroom a day, and (c) a low production farm or a beginner with 100-1000 fruiting bags which produces at least 1-5 kilograms of fresh mushroom a day. Age range, sex/gender, civil status, educational attainment, and occupation are not included as criteria.

For the stakeholders from the government institutions include two respondents were from the DA-RFO I (1 Regional Technical Director and the project leader); three respondents from each selected municipalities (Municipal Mayor/Administrator, the Municipal Agriculturist and the project leader); five beneficiaries of the mushroom livelihood project or adopters of the production technology who also attended hands-on training on mushroom production.

Table 1. The distribution of respondents from the four selected municipalities of Ilocos Sur

Selected Municipalities	LGU	Mushroom Growers	Total Respondents
Narvacan	3	5	8
San Esteban	3	5	8
San Juan	3	5	8
Sta. Catalina	3	5	8

Research Instruments

There were two sets of research instruments used to gather data and information, namely the survey questionnaire and interview guide which was complemented by an interview checklist of questions administered personally or through face-to-face by the researcher. The rural community characteristics were documented including the different oyster mushroom livelihood projects which served as the cases analyzed in relation to sustainability and rural community development.

Data Gathering Procedure

When permission to administer a survey was obtained from the concerned authorities, the researcher distributed and administered the questionnaire to the respondents. It was also explained that their responses were treated with utmost confidentiality and was clearly defined that the respondents voluntarily provided their responses according to their knowledge, without coercion, and that they can withdraw anytime from the research study.

This research gathered primary data such as the lists of beneficiaries, project design support services and other necessary data and information regarding the oyster mushroom development project established. The face-to-face process of gathering information was done which facilitated a more comprehensive exchange of knowledge and ideas for each respondent.

An English survey questionnaire was prepared to collect pertinent data of the research. This was translated in Iloko language to facilitate an easier gathering of data from the farmer/owner. Prior to the formal conduct of the research, request letters to the concerned authorities were prepared to secure permission to conduct the research and to request for needed documents.

Statistical Treatment of Data

Data gathered were organized, tabulated, analyzed, and interpreted accordingly using the appropriate statistical tools such as frequency counts, percentage and weighted means were used in analyzing data on the contributions of stakeholders in terms of technical and financial support services and were presented in tables and matrices.

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In analyzing the data gathered during the interview with the mushroom growers, the researcher used the thematic analysis and closely examined the data focusing on the details which helped the researcher in constructing insights and information based on how the data was used.

The challenges encountered by the respondents on the policy implementation (technical and financial) of the oyster mushroom livelihood project were measured through the degree of seriousness.

Ethical Considerations

Prior to the conduct of the research, the research process and ethical considerations were reviewed and evaluated by the MMSU's University Research Ethics Review Board (URERB).

The researcher assured the respondents that they and their responses were treated with utmost reverence, privacy, and confidentiality as specified in the letters of consent clearly stated on the defined voluntary participation of the respondents according to their knowledge, without any coercion and that they can withdraw anytime from the research study. Information about the institutional affiliation and other necessary information of the researcher were indicated in the request letter. No minors nor vulnerable groups were included as respondents in the research study.

The gathered data were treated with utmost confidentiality which were kept for six months as they were analyzed and interpreted. Such filled-up documents shall be destroyed after the printing of the book/manuscript.

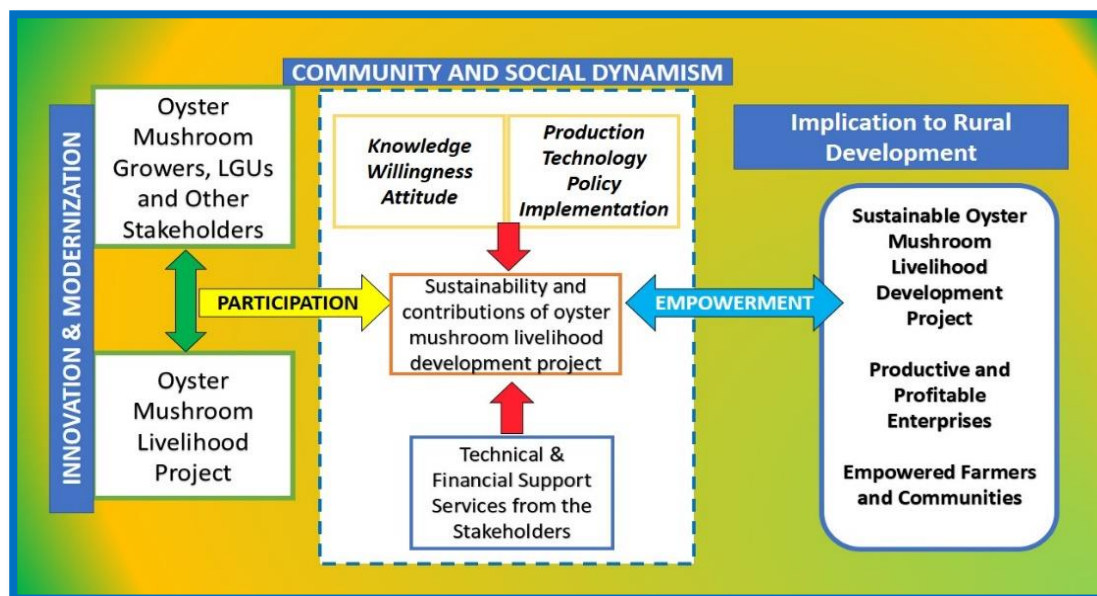


Figure 5. Reconceptualized framework of sustainability mechanisms and development framework showing the interrelationship of factors towards achieving sustainability of the oyster mushroom livelihood development project

SUMMARY, FINDINGS, CONCLUSION AND RECOMMENDATIONS

This chapter presents the summary, findings, conclusions drawn and recommendations which were based from the objectives, theoretical and conceptual frameworks of this research study.

Summary

Oyster mushroom livelihood project is one of the development projects of the Department of Agriculture RFO I that is implemented in collaboration with local government units to help farmers, growers, enthusiasts and the interested individuals to have an additional or alternative source of production and income while they are engaging into a livelihood enterprise of which they could obtain a production and profit that is sustainable for their household.

This research study was conducted to determine the contributions of the stakeholders of the oyster mushroom livelihood on the technical and financial services provided by the development institutions, the challenges met by the stakeholders in terms of knowledge, willingness and attitude and the policy implications towards the oyster mushroom livelihood, and the sustainability framework to address the challenges in sustaining the oyster mushroom livelihood project in Ilocos Sur.

A constructed survey questionnaire and interview guide were used in the data gathering which were collated and interpreted using frequency means, weighted means and through case analysis method.

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Findings

Participation in terms of technical support according to the LGU. Narvacan responded that their participation as to technical support was highly participated implying that they have been doing their jobs as specified in their mandates just like the regional office because this livelihood project was coordinated to them for proper implementation. Specifically, there is high participation on the technical support in all activities of the mushroom livelihood project which include crafting of concepts, conducting consultation/seminars/meetings, promoting awareness and taking appropriate action on implementation issues, and on assisting and coordinating with the regional unit and other funding agencies on the implementation of the livelihood project.

San Esteban highly participated in almost all the indicators although the lowest mean was derived in terms of support to development initiatives and formalizing involvement of funding agencies and other stakeholders which means that the LGU moderately participated on these two indicators.

LGU San Juan has a very high participation in almost all the indicators which tends to suggest that they would participate to any development advocacies such as the mushroom livelihood project more so if an individual entity imply his intention to get support from their LGU.

Sta. Catalina participated very highly in terms of active participation in all the activities of the livelihood project but its involvement with funding agencies and stakeholders through a MOA obtained a moderate participation.

Generally as the table reveals, the respondents in San Juan indicated a high participation to the mushroom livelihood project as compared to Narvacan and San Esteban which have the lowest mean. In terms of variable mean, the highest was on the involvement in crafting the concepts of the oyster mushroom livelihood project. This implies that it was highly participated across all LGUs. And the lowest variable mean was in formalizing the involvement of funding agencies and other stakeholders through a MOA which was moderately participated implying that MOA is not necessary to the LGUs.

Participation in terms of Technical Support according to the Mushroom Growers. Looking at the mushroom growers responses that LGU Narvacan has a low participation in formalizing their involvement through a MOA with other funding agencies and stakeholders and in all activities of the livelihood project. This suggests that the mushroom growers were not able to receive the intended participation from the LGU.

This was different from that of the LGU San Esteban wherein mushroom growers said that they very highly participated in terms of all activities of the livelihood project. This suggests that San Esteban actually received support from their LGU. San Juan has a very high participation according to the mushroom growers implying that they have witnessed the LGUs dedication with their mandate which contributed to the attainment of the LGUs goal in implementing the mushroom livelihood project in San Juan.

In Sta. Catalina, mushroom growers said that their LGU moderately participated in all activities of the mushroom livelihood project which means that the LGU could probably cannot provide time to monitor or inspect their livelihood project.

Generally, mushroom growers said that LGU San Juan has a very high participation in terms of technical support to the oyster mushroom livelihood project. And the lowest mean was Narvacan. In terms of the variables, active participation in all activities and organizes/facilitates the conduct of consultations/seminars/meetings were the highest in variable mean which means that all the LGUs acknowledged the importance of conducting consultation/seminars and meetings with the stakeholders. The lowest mean was seen on the formalization of involvement of funding agencies and other stakeholders through a MOA. Across all the LGUs, this suggests that they do not prioritize crafting and signing a MOA as part of their undertakings.

Availability/Adequacy of financial support according to the LGUs. Local Unit of Narvacan said that their financial support were highly available/adequate through fund allocation and provision of logistics while all other indicators were moderately available/adequate. But a moderately available/adequate support was revealed in conducting promotional activities for the community-based oyster mushroom project,

In San Esteban the support from the LGU were highly available/adequate through allocation of funds, conducting hands-on training and other necessary seminar /lecture and serving as linkage between and among stakeholders. But all other indicators were moderately available/adequate such as on conducting hands-on training and other necessary seminar /lecture needed in the conduct /implementation of the project, setting up a feedback mechanism to facilitate flows of information, serving as linkage between and among stakeholders, supporting the continued development of the nationwide campaign of oyster mushroom's implementation and adoption, supporting the collaboration and partnership in the execution of projects, and monitoring and evaluating the implementation of the project.

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Also, the local executives in San Juan provided a very highly available/adequate financial support. Sta. Catalina LGU said that their financial support were highly available/adequate in almost all indicators. But the financial support in the conduct of promotional activities was moderately available/adequate.

Generally, LGU-San Juan contributed the highest financial support to the oyster mushroom livelihood project while Narvacan has the lowest contribution. In terms of the variable, two were highly available/adequate. This implies that all the LGUs' financial support in conducting hands-on training and serving as linkage among stakeholders were highly available/adequate.

Availability/adequacy of financial support according to the mushroom growers. As revealed by the mushroom growers, LGU Narvacan provided their financial support moderately across all indicators. This would mean that the financial support participated by the LGU is sometimes unappreciated by the mushroom growers. This may be due to the fact that the latter is expecting more monetary allocation.

The mushroom growers in San Esteban said that LGU provided a very highly available/adequate financial support in terms of conducting promotional activities. And moderately available/adequate support for continuous development of nationwide campaign of the livelihood project, collaboration and partnership among stakeholders and in monitoring or evaluating the implementation of the project. These could be attributed to the significant change on the usual agricultural development priorities of the LGU in San Esteban.

Also revealed in LGU-San Juan a very highly available/adequate financial support as proven by the mushroom growers who benefitted from it. This was also seconded by the individual grower that without their financial support he was not able to start and establish their own livelihood. This would indicate that the LGU acknowledges the need of the mushroom growers as to establishing their own oyster mushroom livelihood. Also, it is the mandate of the LGU to support the development initiatives where they could offer their support in terms of funds.

Mushroom growers in Sta. Catalina said that LGU has provided a moderately available/adequate financial support. This signify the fact that growers were not satisfied with the financial support their LGU is providing. The mushroom growers being in an association expected more funds to be allocated for their livelihood project. But being an individual grower is more advantageous than that of being a recipient as stated by an individual grower.

Generally, San Juan has provided the highest financial support according to the mushroom growers while Narvacan obtained the lowest financial support. This denote that LGU San Juan is more supportive with their livelihood project. Narvacan could possibly prioritized other development project during the Covid pandemic

The challenges encountered by the stakeholders in terms of knowledge level of mushroom growers. Narvacan oyster mushroom growers were extremely knowledgeable which implies that the mushroom growers already tried and proven the attributes as they pursued oyster mushroom production as their livelihood. Same extreme ratings were garnered in San Esteban mushroom growers. Only that they were moderately knowledgeable on the presence of market linkages. Also, San Juan and Sta Catalina mushroom growers were extremely knowledgeable in all indicators.

Generally, Narvacan mushroom growers has the highest knowledge level and San Esteban has the lowest. Although all of the mushroom growers were extremely knowledgeable. In terms of variable mean, the highest was on the knowledge of the mushroom growers particularly knowing that this oyster mushroom production is a livelihood that can be adopted. The lowest variable means were on the knowledge that oyster mushroom livelihood is funded by the regional and local government; and market linkages are present. This implies that there were no challenges that encountered by the mushroom growers in all the municipalities. This could also mean that they were empowered growers with skills and knowledge in oyster mushroom farming. This was also explained by the Food and Agriculture Organization (fao.org) that a livelihood includes the capabilities and activities required for a means of living. This is said to be sustainable when it can cope with and recover from challenges and problems and maintain its capabilities and activities now and in the future.

The Willingness-related challenges encountered by the stakeholders. The mushroom growers of Narvacan, San Esteban, San Juan and Sta. Catalina were extremely willing in almost all the indicators.

San Esteban and Sta. Catalina were extremely willing in attending seminars, lectures and other activities. Both municipalities were also very willing to take the risk to pursue this livelihood

Generally, Narvacan has the highest rate in terms of willingness while San Esteban and Sta. Catalina has the lowest according to the mushroom growers. This implies that Narvacan were extremely willing to do all the indicators because they have already experienced the benefits of pursuing mushroom production as a livelihood and they wanted to be partners with the LGU to reach more people in the community and pay forward to other interested individuals. Across all variables, the willingness to

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attend seminar/lectures and other activities was the highest variable mean and taking the risks to pursue the livelihood was the lowest.

Nevertheless, all of the mushroom growers in the four municipalities were extremely willing hence, this suggests that they would pursue their oyster mushroom livelihood. Also, this implies that there were no indication of any challenges.

The Attitude-related challenges encountered by the stakeholders The attitude of Narvacan were exposed as the mushroom growers strongly disagree that contamination is hard to prevent. This means that they attended a hands-on training so they knew already how to prevent contamination. Also, they extremely agree that this livelihood needs more laborers because it is a labor-intensive livelihood and needs adequate time and attention in order to sustain it. This also was extremely agreed by the San Esteban mushroom growers. They moderately agree that they lack technical know-how and no available source of spawn. These attitude of the growers in San Esteban greatly affects as to how they can sustain their livelihood.

San Juan fairly disagree that mushroom livelihood needs big facilities, hard to sell the produce, unaffordable by consumers, no available source of spawn and hard to prevent contamination. They moderately agree that it needs laborers because it is a labor-intensive livelihood. This could be attributed by the fact that they only produce minimal number of fruiting bags so they don't need many laborers yet.

Sta. Catalina extremely agree that this livelihood need adequate time and attention but strongly disagree that it does not need big facilities in order to produce oyster mushroom.

Generally, Narvacan has the lowest mean that they fairly disagree. This suggests that they have already the knowledge and capabilities of producing and managing their mushroom livelihood. San Esteban has the highest among the LGUs. They were very agree with the indicators which denotes that they have the knowledge already. They just need enhancement in order to prove more about the technology and management. But generally. Hence, no challenges encountered. Only on the issue of providing adequate time and attention in pursuing the mushroom livelihood because it is a labor-intensive technology.

Technical Challenges on policy implementation encountered by the stakeholders

The Ilocos Sur Local Government Unit

The DA-Region I said that they experienced very serious challenges which include availability of service vehicle to facilitate monitoring, record keeping and management. This implies that at their level, they experienced these problems very seriously. Considering the challenges encountered in oyster mushroom livelihood project, Narvacan and San Esteban were moderately serious according to the responses of the LGU on the area on interpersonal skills to interface with the different stakeholders. But for San Esteban it was a fairly serious problem. San Juan's stakeholders said that challenges encountered were generally not serious. Sta. Catalina encountered moderately serious problems in the policy implementation such as in the formulation of policies that are not aligned to the priority project and absence of feedback on the status of resolution/policies forwarded but records management were not serious problems to them.

Across the LGUs, Narvacan has the highest mean which encountered moderately serious problems while the lowest was San Juan which did not experienced serious challenges. This means that challenges were partners of every LGU because these served as motivations to them and as reference to do more with their development livelihood projects.

In terms of the variables, the following were the highest: knowledge/skills in the formulation of resolution & other policies regarding the conduct or implementation of oyster mushroom livelihood project, action on the policies/guidelines presented to concerned stakeholders, and feedback on the status of resolutions/policies/guidelines forwarded to stakeholders. The lowest was on record keeping and management. Technically, this implies that LGUs moderately experienced challenges which served as guidance for them to execute the project better.

Mushroom Growers

In Narvacan, mushroom growers encountered very serious problems of which these possibly affected their mindset of how policies should be implemented by their LGUs. San Esteban experienced very serious problems on the advocacy materials preparation and record keeping and management. They met moderately serious challenges on the updates on existing laws, ordinances and other policies and interpersonal skills to interface with the different stakeholders

But for the mushroom growers in San Juan, there were no serious problems so policies were implemented accordingly. Sta. Catalina experienced moderately serious problems All the rest of the variables were fairly serious.

Technically, mushroom growers in San Esteban has the most serious problems in terms of policy implementation while growers in San Juan said they did not seriously met challenges. In terms of the variables, action on the policies/guidelines presented to concerned stakeholders has the highest mean while the lowest mean were on the updates on existing laws, ordinances and other policies and interpersonal skills to interface with the different stakeholders. This implies that performances

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in terms of technical policies differs from each LGU since they have different priorities and strategies in implementing their policies. Also implies that the mushroom growers failed to appreciate the implementation strategies of the LGUs.

Financial Challenges on policy implementation encountered by the stakeholders

Ilocos Sur Local Government Units

In Narvacan, they encountered moderately serious challenges. San Esteban said all were moderately serious but a fairly serious challenge was on being initiative to source-out funds.

San Juan also experienced fairly serious challenge on the reliance to the support of funding agencies and other stakeholders. They were not seriously challenged on the preparation of plan and guidelines to utilize funds sourced-out from other agencies and other stakeholders, allocation of funds in conducting meetings/discussions and for monitoring activities. These policies have been implemented smoothly in San Juan since they were very supportive from the start of the project. In Sta. Catalina, all variables were fairly serious and only one was not serious in terms of allocation of funds for monitoring activities.

This study also revealed that the LGUs have encountered varied challenges as to policy implementation on the area of technical and financial policies. LGUs and the mushroom growers revealed that they encountered very serious challenges. These include the knowledge/skills in the formulation of resolution & other policies regarding the conduct or implementation of oyster mushroom livelihood project, action on the policies/guidelines presented to concerned stakeholders, alignment of formulated policies/ guidelines to the priority projects, Feedback on the status of resolutions/policies/guidelines forwarded to stakeholders, access to information regarding the resolution/policies/guidelines, social marketing skills to conduct advocacy activities, advocacy materials preparation, information on the existing projects of the regional and local units, availability of service vehicle to facilitate monitoring, and record keeping and management.

Across the variables, cooperation among the stakeholders to seek additional funds and preparation of plan and guidelines to utilize the funds as sourced-out from other agencies and other stakeholders were the two variables with the highest mean but these were fairly serious problems.

Mushroom Growers

Narvacan mushroom growers experienced very serious problem on the reliance of LGUs on the support of funding agencies and other stakeholders while all other indicators were moderately serious. San Esteban mushroom growers encountered a very serious problem on the initiative to source-out funds while all other indicators were moderately serious. In San Juan, mushroom growers did not encounter any serious problem. Sta. Catalina experienced fairly serious problems on the reliance on the support of funding agencies and other stakeholders, initiative to source-out funds and cooperation among the stakeholders to seek additional funds according to the mushroom growers.

On the area of financial support as to policy implementation, the DA-RFO I encountered a very serious challenge specifically on the allocation of funds for monitoring activities. Generally, mushroom growers in San Esteban has the highest weighted mean and San Juan has the lowest. The LGUs also encountered moderately serious problems which include reliance on the support of funding agencies and other stakeholders, initiative to source-out funds, cooperation among the stakeholders to seek additional funds, preparation of plan and guidelines to utilize the funds as sourced-out from other agencies and other stakeholders, allocation of funds in conducting meetings/discussions, and allocation of funds for monitoring activities. This would mean that efforts have been made by the LGUs to improve their commitments and their mutual accountability and transparency in delivering tangible services aligned with their priorities but undoubtedly the mushroom growers were unconvinced and they want more.

CONCLUSION

Based on the findings, the conclusions were drawn according to the objectives of the research study.

As prevailed in the research study, the contributions of the stakeholders of the oyster mushroom livelihood were the following:

On technical services; the LGUs participation include crafting concepts, conducting consultation/seminars/meetings, promoting awareness, and taking appropriate action on implementation issues, and on assisting and coordinating with the regional unit and other funding agencies on the implementation of the livelihood project.

But low participation in the support of development initiatives of the mushroom livelihood project and formalizing involvement of funding agencies and other stakeholders through an MOA.

On financial services, LGUs provided fund allocation and provision of logistics for the mobilization of the implementers, conducts hands-on training and other necessary seminar /lecture needed in the conduct /implementation of the project, and

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serve as a linkage between and among stakeholders. But moderately provided support in conducting hands-on training and other necessary seminar /lecture needed in the conduct /implementation of the project, setting up a feedback mechanism to facilitate flows of information, serving as a linkage between and among stakeholders, supporting the continued development of the nationwide campaign of oyster mushroom's implementation and adoption, supporting the collaboration and partnership in the execution of projects, and monitoring and evaluating the implementation of the project.

On the knowledge, willingness, and attitude of mushroom growers, there were no challenges encountered.

On policy implementation, LGUs have encountered varied challenges to policy implementation in the area of technical policies. These include the knowledge/skills in the formulation of resolution & other policies regarding the conduct or implementation of the oyster mushroom livelihood project, action on the policies/guidelines presented to concerned stakeholders, alignment of formulated policies/ guidelines to the priority projects, feedback on the status of resolutions/policies/guidelines forwarded to stakeholders, access to information regarding the resolution/policies/guidelines, social marketing skills to conduct advocacy activities, advocacy materials preparation, information on the existing projects of the regional and local units, availability of service vehicle to facilitate monitoring, and record-keeping and management.

On the area of financial policies, the DA-RFO I encountered a very serious challenge specifically on the allocation of funds for monitoring activities. The LGUs also encountered problems which include reliance on the support of funding agencies and other stakeholders, initiative to source-out funds, cooperation among the stakeholders to seek additional funds, preparation of plan and guidelines to utilize the funds as sourced-out from other agencies and other stakeholders, allocation of funds in conducting meetings/discussions, and allocation of funds for monitoring activities.

Hence, participation to technical and financial services plus the strategies in policy implementation of the LGUs are very important contributions to attain sustainability of livelihood project along with the knowledge, willingness, and attitude of the mushroom growers.

Implication to rural development. Oyster mushroom livelihood project in Ilocos Sur is not yet sustainable based on the findings of the research. Evidences were the low participation of stakeholders as to technical and financial support services. Also, the four municipalities depict only themselves so the sustainability mechanisms and development framework were applicable only to the four LGUs and can only be utilized by them.

Since the researcher focused only on the technical, financial, and social aspects of the mushroom livelihood project, there were no wider perspectives as to the scope of the research is concerned.

The economic aspect such as value-chain analysis should be reviewed to have a wider picture of what mushroom program/project is doing now in Ilocos Sur. LGUs must have the capacities to manage their participation in the implementation of livelihood projects which are very important contributions to plan, implement, monitor and evaluate these projects to perform analysis and transform the lives of the rural communities.

LGUs could provide the ideal, authority, infrastructure, policy and planning procedures to maximize the benefit for its communities. LGUs play a major role in a community's development, provide the links between the people and government, address its community's problems and concerns, enforce policies and hold influence over its communities. The LGUs are also intermediaries in channeling the framework of government into each individual community in order to create a beneficial outcome.

RECOMMENDATION

Sustainable livelihood on oyster mushroom help address concerns on food security, regular source of productivity and employment. Hence, the sustainability mechanisms and development framework on oyster mushroom livelihood development project is hereby generally recommended for the four LGUs as the research sites. Sustainable livelihood can help achieve rural community development through participation and empowerment of the stakeholders by:

1. Sustaining provision of technical support services which will include hands-on trainings, value-adding of produce, local and international market opportunities and values formation; increasing guidance and mentoring during consultative meetings and round table discussions;
2. Enhancing partnership and linkages and formalizing involvement among the stakeholders and legitimize through a MOA;
3. Increasing funds support for monitoring and evaluation purposes and provision of logistics;
4. Empower local implementers, facilitators and coordinators by providing incentives and recognition;
5. Refining planning and execution of guidelines in sourcing-out and utilization of funds;
6. Increase provision of advocacy material and awareness seminar;

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7. Increase the opportunities of the beneficiaries, end-users or the rural community's involvement in policy formulation in order to determine and address their real need to pursue livelihood; and
8. Encourage the participation of other significant stakeholders such as the academe and the NGOs while expanding the number of beneficiaries to reach more people in the community.
9. Further research study is recommended to include the processing and marketing aspects of the oyster mushroom livelihood project while validating and evaluating the developed sustainability mechanism and rural community livelihood framework.

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