Implementing PAFES in Guimaras: A Rapid Appraisal of Agricultural and Fisheries Sustainability

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DOI: https://dx.doi.org/10.47772/IJRISS.2025.915EC0040

Received: 22 April 2025; Accepted: 26 April 2025; Published: 30 May 2025

ABSTRACT

This study explores the potential benefits of implementing the Provincial Agricultural and Fishery Extension System (PAFES) in Guimaras, with a focus on enhancing the productivity and sustainability of the agricultural and fisheries sectors. The province, home to diverse agricultural and fishery communities, faces challenges related to limited access to modern techniques and sustainable practices. By establishing PAFES, the study aims to improve the livelihoods of farmers and fisherfolk by offering tailored extension services, including advanced farming methods and sustainable fishing practices. The research highlights the importance of community-based training, local government collaboration, and continuous monitoring for effective implementation. The findings suggest that PAFES has the potential to significantly increase agricultural yields, improve fishing practices, and create income-generating opportunities. Through a demand-driven, integrated approach, PAFES can address regional disparities and empower local communities, fostering long-term sustainability and contributing to the overall economic growth of Guimaras.

Keywords – extension system, agricultural productivity, field assessment, collaboration, blended strategies, technical training, funding support

INTRODUCTION

The effective conduct of provincial-led agricultural and fisheries extension systems is critical for enhancing agricultural productivity and ensuring sustainable development. The evaluation of such systems can be guided by methodologies and insights derived from various studies, highlighting significant factors impacting extension performance.

A systematic approach to assessing agricultural extension services involves evaluating their effectiveness, which includes the active participation of trained personnel and the provision of tailored incentives for extension workers (Liu & Pei-jun, 2021). This participation fosters a collaborative environment where stakeholders can share knowledge, improving service delivery (Tamang et al., 2020). Agricultural extension services must adapt to context-specific challenges, notably those stemming from differing economic environments across regions, as illustrated by the varying impacts of extension services in different regions of a country (Dai et al., 2024). Addressing these regional disparities often requires innovative methods of delivery and cross-sectoral collaboration, emphasizing the necessity for an integrated approach to education and extension (Raidimi & Kabiti, 2019).

Additionally, the complexity of agricultural extension systems often leads to inefficiencies due to the misalignment of stakeholder interests. Research indicates that profit-driven motives among specific stakeholders can result in a gap between technology access and actual implementation, further marginalizing small-scale farmers (Hu et al., 2024). This disconnect can undermine the foundational goals of extension

systems, necessitating a re-evaluation of operational strategies to serve community better needs through demand-driven approaches that are both culturally and economically relevant (Umar et al., 2015).

Exemplifying the effectiveness of entrenched systems, nations that have successfully implemented legislative frameworks for agricultural extension often show stronger organizational and financial stability (C et al., 2017). Such frameworks typically encourage participatory processes that empower local populations to engage in agricultural planning and policy-making. Comparative case studies indicate that fostering reliance on local knowledge while integrating modern technologies is crucial for enhancing the effectiveness of these extension systems. This trend is echoed in recent findings recommending adopting ICT-based tools, as they can mitigate resource waste and improve overall service delivery (Liao et al., 2023; Paliwal & Kumari, 2024).

Finally, comprehensive evaluation models employing hybrid methodologies can provide a robust framework for assessing the impact of agricultural extension services across multiple dimensions, including environmental, social, and economic factors (Wang et al., 2021). These tools enable stakeholders to ascertain the effectiveness of extension services and inform strategic decisions that align with sustainable development objectives.

In conclusion, the effective management and conduct of provincial agricultural and fisheries extension systems hinge on a multifaceted understanding of the interplay between technology, stakeholder interests, and the economic landscape. A concerted effort to harmonize these elements will facilitate enhanced service delivery, ultimately benefiting agricultural productivity and sustainability.

Objectives of the Study

1. To assess the current status of agriculture and fisheries in Guimaras Island regarding production, infrastructure, and stakeholder participation.
2. To evaluate the potential benefits of establishing a Province-led Agriculture and Fisheries Extension System (PAFES) in improving agricultural and fisheries productivity, sustainability, and livelihoods in Guimaras.
3. To propose strategies for effective implementation and management of the PAFES in Guimaras based on the findings of the rapid appraisal.

Legal and Conceptual Framework

This study was anchored to the “OneDA Reform Agenda” of the Department of Agriculture based on consolidation, modernization, industrialization, professionalization, and science-based vital strategies to make the agriculture sector competitive. This reform agenda includes strategies such as farm mechanization and infrastructure investments, climate change adaptation and mitigation measures, global trade, export development and promotion, education and training, agribusiness management, youth and women engagement, ease of doing business, and transparent procurement. Province-led Agriculture and Fisheries Extension System (PAFES) was identified as one of the eighteen (18) key strategies for the implementation of the above-mentioned agenda.

Significance of the Study

The result of this investigation is beneficial as baseline data on the technical issues and major policy considerations for rapid appraisal for the establishment of Province-led Agriculture and Fisheries Extension System (PAFES) in Guimaras Island.

METHODOLOGY

The Office of the university's Vice President for Research, Extension, Training, and Innovation managed the project. The team comprised a project leader, assistant project leaders, and project coordinators.

ISSN No. 2454-6186 | DOI: 10.47772/IJRISS | Volume IX Issue XV May 2025 | Special Issue on Economics

Activities were implemented and closely monitored based on the Approved Work and Financial Plan. The inception meeting was conducted at the start of the project and ended with the presentation of the output prior to its submission to DA Region VI.

Both primary and secondary data were collected through Key Informant Interviews (KIIs) and Focus Group Discussions (FGDs) using blended strategies (face-to-face and/or virtual interviews). Secondary data and other relevant documents and materials were taken from the Provincial Office for Agricultural Services, Local Government Units, and the Provincial Government of Guimaras.

The respondents of the study include the LGU personnel (provincial and municipal) legislators in charge of agriculture and fisheries, PPDCS and budget officers and those who are engaged in the agriculture and fisheries sectors such as Agriculturists, Aqua culturists, Veterinarians, Agricultural Technicians, Fisheries Technician, Agricultural Engineers, Agricultural Extension Workers (AEWs), Local Farm Technicians (LFTs), Provincial Agriculture and Fisheries Coordinator (PAFC), Municipal Agriculture and Fisheries Coordinator (MAFC), Farmer Leaders, Farmer Cooperatives and Associations (FCAs), and Fisheries Associations.

An appraisal instrument crafted by GSU based on the objectives of the DA-ATI was utilized to gather relevant data to assess LGUs' resources and capacities in operationalizing the PAFES. Other survey questions were added to the interview process for a holistic assessment.

RESULTS AND DISCUSSIONS

Agricultural Socio-Economic Profile of Guimaras Province

Population

Guimaras Island, with a population ranging from 23,162 in Sibunag to 52,899 in Buenavista, is home to diverse agricultural and fisheries communities. Implementing the Province-led Agriculture and Fisheries Extension System (PAFES) can significantly enhance the productivity and sustainability of these sectors across the island. With tailored extension services, farmers, especially in Nueva Valencia and Jordan, can gain access to modern farming techniques and improved crop varieties, boosting agricultural production. Fisherfolk in Buenavista and Jordan can benefit from sustainable fishing practices, improving their yields while maintaining marine health. Furthermore, the program can enhance livelihoods by increasing income opportunities in areas such as Sibunag and San Lorenzo, where agriculture and fisheries remain key economic drivers.

As discussed by Wungo et. al. (2023), effective agricultural extension services are contingent upon a thorough understanding of the demographic structure within the province. Targeted programs can, therefore, be developed by analyzing population data to discern specific needs, such as employment opportunities and income generation in the agricultural sector (Wungo et al., 2023). Such an approach is necessary to maximize food availability and improve food security, especially in regions facing significant land-use conflicts due to urbanization or policy changes like those observed in West Java (Wungo et al., 2023). Conversely, neglecting to incorporate population metrics could lead to policies that fail to address the actual needs of agricultural communities and result in adverse social and economic outcomes (Sharp et al., 2011).

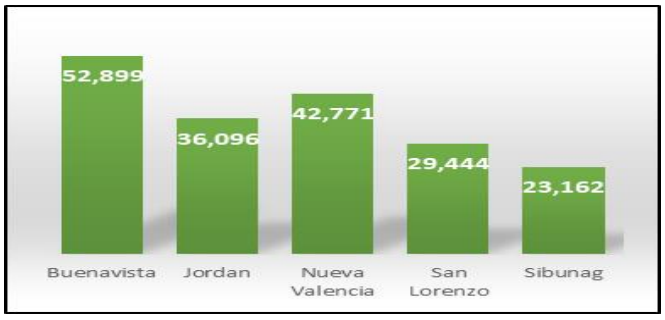

Figure 1. The population of Guimaras per municipality.

Source: 2023 Cities and Municipalities Competitive Index

Population in the Agri-fishery sectors

The agricultural and fishery sectors in Guimaras, as reflected in the data, are composed of significant populations engaged in various sectors, with the largest group being farmers/fisherfolks, followed by fisherfolk, rice farmers, and specialized growers such as corn farmers, cassava farmers, and mango growers. These sectors are vital to the island's economy, providing many families with food, income, and employment. Implementing the Provincial Agricultural and Fishery Extension System (PAFES) can greatly benefit these communities by improving productivity, sustainability, and livelihoods. The system would offer specialized training, enabling farmers and fishers to adopt more efficient and sustainable practices. For instance, rice farmers could benefit from techniques to increase yields, while fisherfolk could learn sustainable fishing methods to boost their harvests. PAFES would also enhance market access for specialized growers and create opportunities for knowledge-sharing within communities.

As supported by Unal et al. (2009) that extension services must enhance cooperative and collaborative frameworks within the agri-fishery sector. For instance, improving the performance of fishery cooperatives through targeted government and academic support can uplift local fishers and foster more sustainable practices. Additionally, training in sustainability practices and market access for small-scale farmers and fishers is key in empowering these stakeholders, which is vital for implementing effective agricultural and fishery extension systems (Tell et al., 2016; Saracutu, 2023).

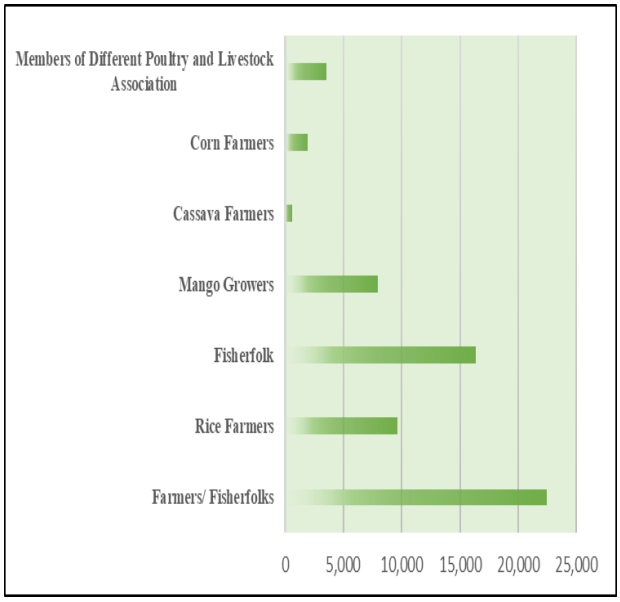

Figure 2. The Agri-fishery sector.

Land Area

Guimaras's agricultural and fishery sectors are spread across its five municipalities, each contributing significantly to the province's land use and water resources.

Buenavista, with a land area of 11,560.17 hectares, holds 19.40% of the total land area, with 6,320.75 hectares designated as agricultural zones and 15,265.83 hectares of municipal waters.

Jordan's land area is 11,488.46 hectares (19.27% of the land area); 6,485.34 hectares are used for agriculture, and 11,617.04 hectares are used for municipal waters.

Nueva Valencia is the largest municipality in terms of land area, covering 13,258.58 hectares (22.24%). It has the most expansive agricultural zone, covering 7,865.19 hectares and 99,355.08 hectares of municipal waters.

ISSN No. 2454-6186 | DOI: 10.47772/IJRISS | Volume IX Issue XV May 2025 | Special Issue on Economics

San Lorenzo, covering 10,622.62 hectares (17.82%), dedicates 7,481.74 hectares to agriculture, with 12,134.26 hectares of municipal waters. Finally, Sibunag, with 12,680.77 hectares (21.27%), has 7,943.75 hectares of agricultural land and 21,830.47 hectares of municipal waters.

Given the substantial land and water resources in each municipality, PAFES can offer tailored extension services that address the unique needs of each area, from improving crop yields in agricultural zones to promoting sustainable fishing practices in municipal waters.

As reported by Ihsan & Gunawan (2024), incorporating carefully structured agricultural zones alongside municipal waters fosters the development of integrated farming systems, which combine crop cultivation, animal husbandry, and fisheries. Such systems promote sustainability by optimizing resource use and minimizing environmental impacts. The notion of integrated systems draws on ecological harmonization where various agricultural components support one another, leading to improved productivity and reduced risk of resource depletion (Fatima et al., 2023).

TABLE 1 Land Area, Agricultural Zone, and Municipal Waters

Municipality	**Land Area**	**Agricultural Zone**	**Municipal Waters**
	(in Hectares)		
Buenavista	11,560.17 (19.40%)	6,320.75	15,265.83
Jordan	11,488.46 (19.27%)	6,485.34	11,617.04
Nueva Valencia	13,258.58 (22.24%)	7,865.19	99,355.08
San Lorenzo	10,622.62 (17.82%)	7,481.74	12,134.26
Sibunag	12,680.77 (21.27%)	7,943.75	21,830.47

Registered Farmers and Fisherfolks Association

The number of registered farmers and fisherfolk organizations in Guimaras varies across its municipalities, reflecting the province's diverse agricultural and fishery activities. In Sibunag, there are fewer registered organizations, while San Lorenzo and Nueva Valencia have the highest numbers. Buenavista and Jordan have a moderate number of registered organizations. These organizations include groups of corn farmers, cassava farmers, mango growers, rice farmers, and fisherfolk, each contributing to the local economy and livelihood of the residents.

To ensure a successful implementation, strategies should include community-based training tailored to each organization's specific needs, leveraging the knowledge and support of local government units and agricultural agencies. Furthermore, monitoring and continuous feedback mechanisms should be in place to assess and adjust the program's impact as necessary, ensuring that all organizations benefit from the extension system.

ISSN No. 2454-6186 | DOI: 10.47772/IJRISS | Volume IX Issue XV May 2025 | Special Issue on Economics

According to Ayesha et al. (2024), the empowerment aspect of collective action argues that organized farmer groups are more resilient and better able to face agricultural challenges, including market fluctuations and climate adversities. Furthermore, cohesive groups enhance the members' ability to demand and utilize agricultural extension services efficiently, improving productivity and income levels (Danso-Abbeam et al., 2018; Agole et al., 2021). The cooperative dynamics of such groups promote knowledge sharing and provide a platform for training, essential for adopting modern agricultural techniques and improving fisherfolks' practices (Wang et al., 2023).

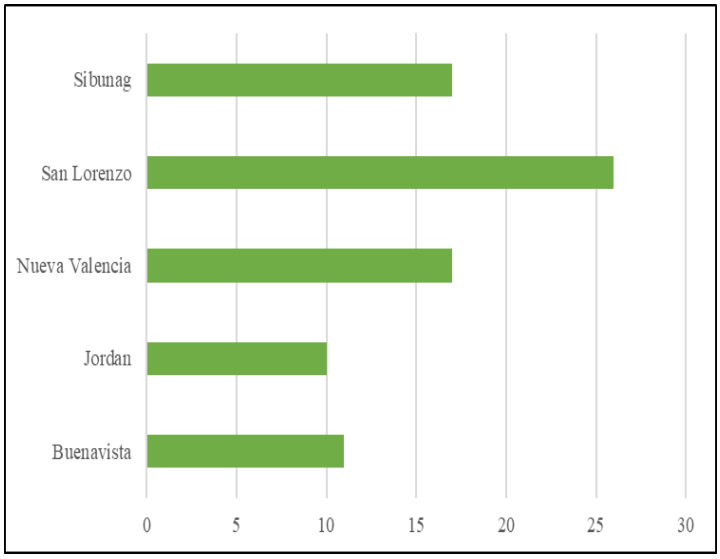

Figure 3. Several registered farmers and fisherfolk organizations.

CONCLUSIONS

Implementing the Provincial Agricultural and Fishery Extension System (PAFES) in Guimaras holds significant potential to enhance the agricultural and fisheries sectors, which are vital to the province's economy. Guimaras, with a population ranging from 23,162 in Sibunag to 52,899 in Buenavista, is home to diverse agricultural and fisheries communities. The agri-fishery sector in Guimaras comprises significant numbers of registered farmers and fisherfolk, with the largest groups being farmers/fisherfolks, followed by rice farmers, corn farmers, cassava growers, and mango growers. These sectors are distributed across the province's five municipalities, each with varying land and water resources. For instance, Nueva Valencia has the largest land area (13,258.58 hectares), with 7,865.19 hectares designated as agricultural zones and 99,355.08 hectares of municipal waters. Municipalities like Buenavista and Jordan have smaller land areas but contribute significantly to agricultural production and fishery activities. With many registered farmers and fisherfolk organizations, particularly in municipalities like San Lorenzo and Nueva Valencia, PAFES can provide targeted training and resources to increase crop yields, improve fishing practices, and promote sustainable livelihoods across the island. The successful implementation of PAFES can provide these communities with advanced farming techniques, sustainable fishing practices, and better access to markets, ultimately improving productivity and livelihoods.

It recommended therefore that the implementation of the Provincial Agricultural and Fishery Extension System (PAFES) in Guimaras can be structured into actionable phases, with short-term and long-term priorities based on feasibility and stakeholder involvement. In the short term (1-2 years), the focus should be on stakeholder engagement through community-based training and awareness campaigns for local farmers, fisherfolk, and government units, ensuring they understand the benefits and roles in the system. Pilot programs should be launched in select municipalities, such as Buenavista and Jordan, to test sustainable farming techniques and improved fishing practices, with continuous monitoring and feedback mechanisms to assess the progress. Additionally, capacity-building initiatives for agricultural extension workers (AEWs) and local farm technicians are crucial to ensure they possess the necessary skills to implement these programs effectively. In the long term (3-5 years), the system should be expanded to cover all municipalities, with a particular focus on areas like Nueva Valencia, which have extensive agricultural zones. The integration of ICT tools for better

data management and decision-making will be essential for streamlining operations and improving the effectiveness of PAFES. A sustainable financing mechanism, through government grants, private sector partnerships, and local cooperatives, will be necessary for long-term success. Finally, policy advocacy at the national level should be pursued to secure legislative support for PAFES, ensuring that it aligns with the broader agricultural reform agenda. These phases, while progressively ambitious, will allow PAFES to enhance agricultural and fisheries productivity and sustainability across Guimaras, benefiting local communities and promoting long-term growth

ACKNOWLEDGEMENT

The authors would like to thank the university for funding this research study.

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