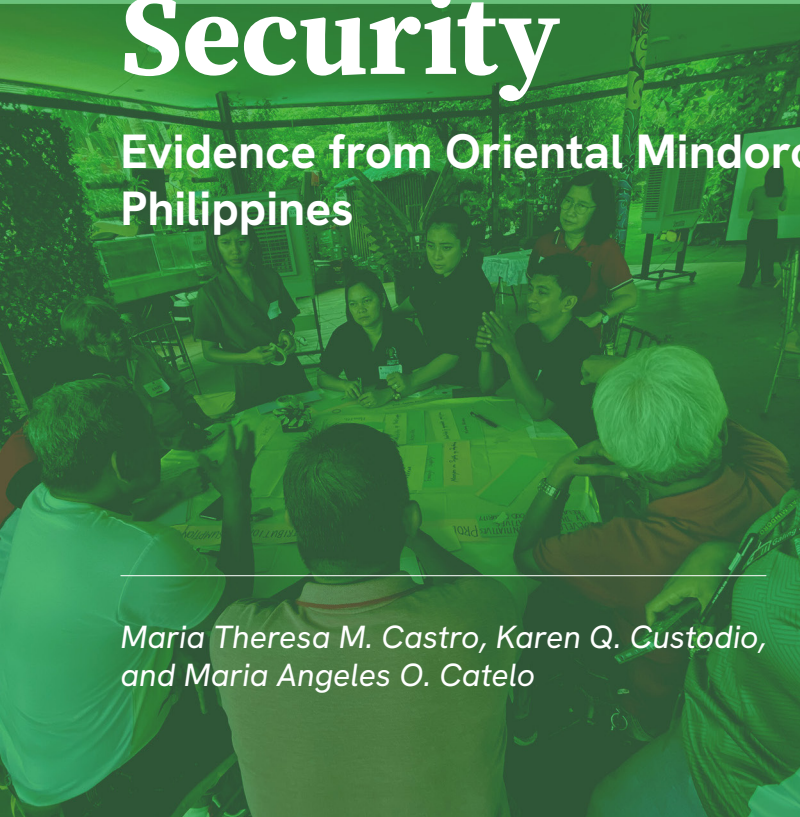


■ FOOD SECURITY PROGRAM

# Leveraging Cooperatives to Improve Food and Nutrition Security

Evidence from Oriental Mindoro, Philippines

*Maria Theresa M. Castro, Karen Q. Custodio,  
and Maria Angeles O. Catelo*



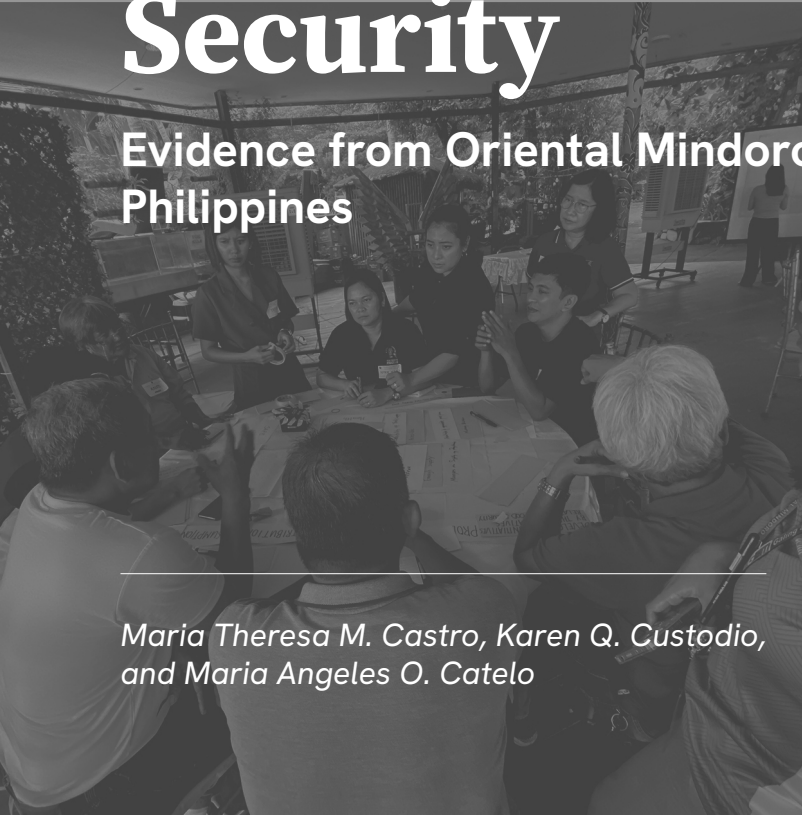
■ PROGRAM ON FOOD SECURITY

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"Cooperative Leaders Sharing Their Contributions to Food and Nutrition Security"

Photo taken by: Ms. Darlene Pearl C. Ramos, the project's Senior Office Assistant  
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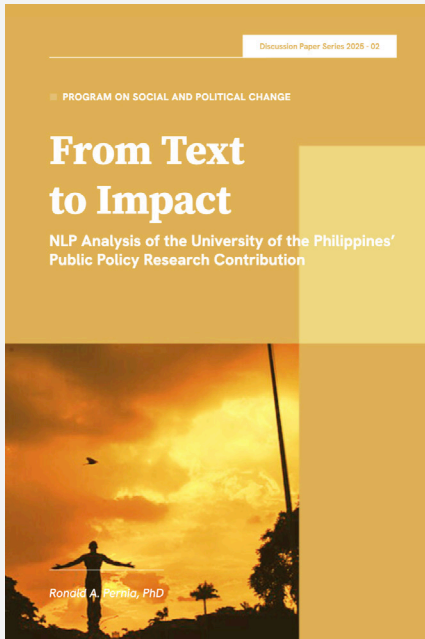
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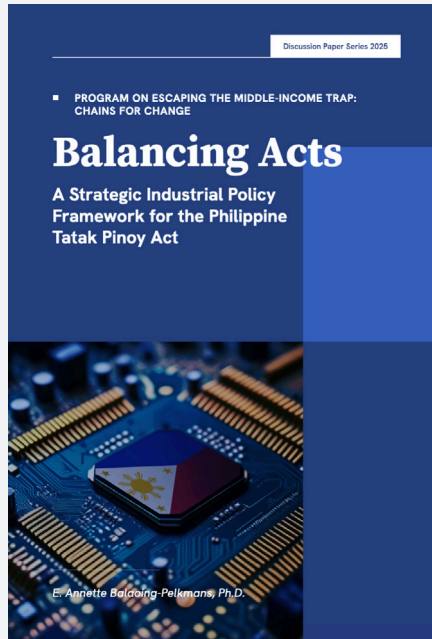
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# LEVERAGING COOPERATIVES TO IMPROVE FOOD AND NUTRITION SECURITY

Evidence from Oriental Mindoro,  
Philippines<sup>1</sup>

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Maria Theresa M. Castro<sup>2</sup>, Karen Q. Custodio<sup>3</sup>, and  
Maria Angeles O. Catelo<sup>4</sup>

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## ABSTRACT

This study examined the role of cooperatives in improving food and nutrition security in Oriental Mindoro, Philippines, highlighting their contributions across the components of the sustainable food system - production, processing, distribution, consumption, and waste management. While cooperatives empower smallholder farmers by enhancing inclusivity and bargaining power, challenges such as limited capital, market access, and policy gaps hinder their full potential. In addition, the imbalance in development interventions, with more focus on production and processing, limits the effectiveness of increased production on food and nutrition security. The experience in Oriental Mindoro offers valuable lessons for national policy, suggesting that targeted interventions and reforms are needed to leverage cooperatives as effective institutions for improving food and nutrition security in the Philippines. This study recommends consolidating efforts among farmers, cooperatives, local government units, private sector, and development organizations, strengthening micro cooperatives through mergers and collaborations, gathering comprehensive data, building private sector partnerships, and implementing trade policies to protect local producers, especially in island provinces like Oriental Mindoro.

Key words: *cooperatives, food security, sustainable food systems*

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## RATIONALE

Food insecurity continues to pose a significant challenge globally, hindering the progress towards achieving the Sustainable Development Goals (SDGs), particularly SDG 2 (Zero Hunger) and SDG 3 (Good Health and Well-being). Persistent food insecurity undermines economic growth (Deaton and Lipka 2015; Alam, Alam, and Mushtaq 2018; NEDA 2024), exacerbates social inequalities (Pollard and Booth 2019; Knowles et al. 2016), threatens political stability (Deaton and Lipka 2015; Sova and Zembilci 2023), and may even compromise the adoption of sustainable agricultural practices leading to environmental degradation.



In Southeast Asia, the Philippines had the highest prevalence of food insecurity from 2021 to 2023. During this period, approximately 6.8 million Filipinos (5.9 percent of the total population) were severely food insecure, while 51 million Filipinos (44 percent of the total population) experienced moderately severe food insecurity. An estimated 6.9 million or 6.0 percent of the total population suffered from undernourishment (FAO 2024, 204). Food insecurity is more prevalent in the rural areas, where approximately 25 percent of agricultural households were food insecure in 2021, compared to only 9 percent of non-agricultural households (WFP 2022).

Various factors hinder the ability of agricultural households to produce and access food (Abdullah et al. 2019; Davis et al. 2022). These limiting factors include lack of resources, education, market volatility, trade policies, and environmental challenges like drought and land degradation. Household food vulnerability highlights the need for strategies to support the livelihoods and enhance the food and nutrition security of families in agricultural communities. Existing literature suggests that cooperatives, as an institution founded on the principle of collective action, may serve as an effective mechanism for enhancing food and nutrition security among households and communities (Bacon et al. 2014; Cishe and Shisanya 2019; Gyau et al. 2013; Halimi and Subramanian 2024; Hardy et al. 2016; Zeweld et al. 2015). In a broader context, collective action approach has become an increasingly promising strategy in and practical application to development processes (USAID 2022). Collective action has been recognized as a valuable strategy for addressing poverty, food insecurity, and environmental sustainability (Bowen et al. 2017). In the Philippines, collective action through cooperatives plays a pivotal role in ensuring food and nutrition security, as outlined in the Philippine Development Plan (PDP) 2023–2028. Collective action is manifested through joint projects and resource sharing among public sector, private industry, civil society, and communities. With collective action at the core of every cooperative, positioning them as instruments for achieving food security is expected to create positive impacts.

Cooperative enterprises, grounded on collective action principles, have been identified as a key strategy in addressing food insecurity and promoting sustainable food systems (Zeweld et al. 2015). Through collective action and resource pooling, cooperatives significantly improve the productivity of small-

scale farmers (Cishe and Shisanya 2019), which is a critical factor in enhancing food availability and accessibility at the household level. Furthermore, cooperatives are found to enhance farmers' market access (Bacon et al. 2014; Gyau et al. 2013), increase bargaining power (Bacon et al. 2014; Hardy et al. 2016), facilitate access to resources and services (e.g. credit, training, and technology) (Bacon et al. 2014; Halimi and Subramanian 2024), and promote sustainable agricultural practices (Bacon et al. 2014; Dantas 2019). Interestingly, research has also underscored the capacity of cooperatives to strengthen the resilience of vulnerable communities to food-related shocks and stresses, such as natural disasters, market fluctuations, and other disruptive events (Cishe and Shisanya 2019; Zeweld et al. 2015). Therefore, understanding how cooperatives contribute to food security is crucial for developing effective policies, though a context-specific approach is needed due to regional variations in challenges and needs.

Despite the consensus among researchers and policymakers about the significant role of cooperatives and institutions in fostering food and nutrition security, past literature mostly focused on the food availability pillar of food security or were conducted from the producers' perspective only. Moreover, extant studies conducted in the Philippines are still limited despite the national government's continued call to support and empower (agricultural) cooperatives in the country.

Based on the study of Department of Science and Technology - Food and Nutrition Research Institute (DOST-FNRI 2022), the region of MIMAROPA remains to be part of the top 5 regions with problems on stunting at 33.4% and wasting at 7.2% among children who are below 5 years old. In particular, Oriental Mindoro has the highest prevalence rate of underweight and severely underweight children under 5 years from 2020–2022 in MIMAROPA. Meanwhile, the percentage of households in Oriental Mindoro who are experiencing food insecurity (mild, moderate, and severe) is 54.8%. Using the case of Oriental Mindoro, this study sought to:

1. determine how cooperatives contribute to food and nutrition security across multiple dimensions;
2. identify key policies and programs where cooperatives play a vital role;

3. analyze the factors facilitating and hindering the cooperatives from contributing to food and nutrition security; and
4. offer recommendations to enhance cooperatives' potential in improving food and nutrition security in the Philippines.

The PDP 2023–2028 highlights a fragmented and uncoordinated approach among relevant agencies, underscoring the need for effective collective action strategies. Thus, understanding the contextual factors is crucial for designing and implementing effective collective action-based food security initiatives. Particularly, in this study, cooperatives, as a form of collective action, offer a potential development strategy towards building a more food secure and sustainable food system in the Philippines.

The findings contribute to the advancement of knowledge and understanding of how agricultural institutions, particularly cooperatives, can effectively aid in food and nutrition security initiatives as a conduit, beneficiary, and mechanism for government and other stakeholders. Furthermore, the results inform and improve current and future policies and development schemes designed to leverage the potential of cooperatives to enhance food and nutrition security in the Philippines. With over 20,000 cooperatives and around 12 million members nationwide (CDA 2023), engaging cooperatives in food security initiatives can greatly enhance national and local food and nutrition security.

## **METHODOLOGY**

### **Study Area**

This study focused on the region of MIMAROPA, specifically on one of its most food-insecure provinces, Oriental Mindoro. Despite its designation as the 'food basket' and 'rice granary' of MIMAROPA as well as its national recognition as a leading producer of bananas and calamansi, Oriental Mindoro exhibited a high prevalence of chronic food insecurity. The Integrated Food Security Phase Classification (IFSPC) (2020) estimated that 60 percent of Oriental Mindoro's population, approximately 516,000 individuals, experienced medium to high levels of chronic food insecurity between 2015 and 2020. Limited food access and its vulnerability to recurring natural hazards and risks were the major

limiting factors affecting agricultural production and the stability of food systems in the region (IFSPC 2020). Thus, this paradox of food abundance and variety coexisting with food insecurity problems presented a compelling case study for investigating factors influencing food security in the province.



■ **Figure 1.** Location and municipalities/city of Oriental Mindoro  
Source: © Roel Balingit, 2012

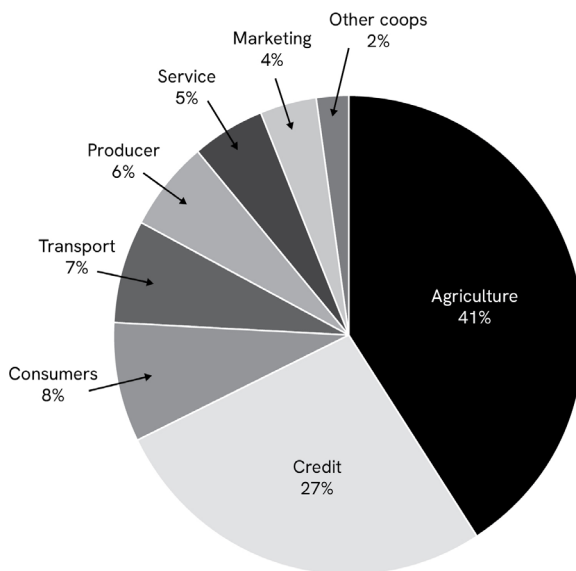
Six areas were selected to represent the two districts of Oriental Mindoro: Calapan City, Naujan, and Victoria in the First District; and Pinamalayan, Bansud, and Bongabong in the Second District (Figure 1). These areas were selected based on their population size, volume of production of the staple food, rice, and the presence of agricultural cooperatives.

The combined total number of cooperatives, population, and rice production of these six areas represent 64 percent, 57 percent, and 78 percent of the provincial total respectively (Table 1). As of December 2023, there were 211 existing cooperatives in the province, multipurpose agricultural cooperative and credit cooperatives being the most common types of cooperatives (Figure 2). This cooperative characteristic implies a strong focus on and importance of both agricultural production and financial services within the cooperative sector, which is critical to ensuring food and nutrition security.

**TABLE 1. CHARACTERISTICS OF ORIENTAL MINDORO**

MUNICIPALITY	NUMBER OF COOPERATIVES (2023) <sup>a</sup>	POPULATION (2020) B (NUMBER, SHARE TO TOTAL) <sup>b</sup>	VOLUME OF RICE PRODUCTION (2023) C (METRIC TONS, SHARE TO TOTAL) <sup>c</sup>
Calapan City	53	145,786 (16.0%)	76,448 (16.5%)
Naujan	16	109,587 (12.1%)	161,626 (34.9%)
Victoria	20	52,175 (5.7%)	35,785 (7.7%)
Pinamalayan	19	90,383 (10.0%)	32,094 (6.9%)
Bansud	10	42,671 (4.7%)	25,248 (5.4%)
Bongabong	16	76,973 (8.5%)	28,500 (6.2%)
Baco	7	39,817 (4.4%)	17,215 (3.7%)
Bulalacao	17	44,366 (4.9%)	5,853 (1.3%)
Gloria	14	50,496 (5.6%)	23,006 (5.0%)
Mansalay	3	59,114 (6.5%)	11,842 (2.6%)
Pola	5	35,455 (3.9%)	13,756 (3.0%)
Puerto Galera	6	41,961 (4.6%)	nil (0%)
Roxas	17	58,849 (6.5%)	15,376 (3.3%)
San Teodoro	3	19,121 (2.1%)	1,501 (0.3%)
Socorro	5	41,585 (4.6%)	15,160 (3.3%)
<b>Total</b>	<b>211</b>	<b>908,339</b>	<b>463,410</b>

- <sup>a</sup> Source: CDA
- <sup>b</sup> Source: PSA
- <sup>c</sup> Source: PhilRice



■ **Figure 2.** Percentage distribution of cooperatives according to type of services and product

## Data Collection and Analytical Methods

Data was collected through focus group discussions (FGDs), an online survey, and a validation workshop. Two FGDs were held in Calapan, Oriental Mindoro, on August 28 and 29, 2024. The first FGD included 25 participants from various government and non-government agencies, while the second had 14 participants from agriculture and producer cooperatives. A list of participating institutions and cooperatives is provided in Table 2. The FGDs focused on three areas: role of cooperatives in the sustainable food system, challenges and opportunities in ensuring food and nutrition security, and their involvement in policies and programs.

An online survey was also conducted to further enrich the findings. The survey, conducted online from September 15 to October 15, 2024, via Google Form, aimed to validate the findings from the FGDs on cooperatives' role in food and nutrition security. A semi-structured questionnaire was distributed to local cooperatives in the project site. The survey received 53 responses from cooperative members in Oriental Mindoro, representing 26 cooperatives

across various sectors: agricultural (36%), marketing (4%), transport (6%), consumer (2%), credit (8%), and multipurpose (44%). Table 3 outlines the socio-demographic characteristics of the respondents.

To refine the information from the FGDs and survey, a validation workshop was then held on October 16, 2024. Fourteen participants, including cooperative members and officers from four cooperatives (see Table 2), as well as two representatives from academia and an NGO, attended. The workshop clarified ambiguous responses and provided a deeper understanding of the data.

Following the guidelines of Braun and Clarke (2013), the study adopted a reflexive thematic analysis approach in assessing the data collected for the project. This analytical approach allows flexibility in interpreting qualitative data and is suitable for exploring complex social phenomena. Moreover, a social constructionist lens informed the interpretation of the data. Constructivist approach highlights the process of constructing knowledge through active, experience-based engagement and its integration within social contexts (Gerstenmaier and Mandl, 2001).

**TABLE 2. LIST OF PARTICIPATING INSTITUTIONS AND COOPERATIVES PER PROJECT ACTIVITY**

<b>FGD 1 (AUGUST 28)</b>	<b>FGD 2 (AUGUST 29)</b>	<b>VALIDATION WORKSHOP (OCTOBER 16)</b>
Provincial Cooperative Development Office - Oriental Mindoro	United Farmers and Irrigators Agriculture Cooperative (UFaIrCo)	Cooperative Development Office - Calapan
Provincial Social Welfare and Development Office- Oriental Mindoro	Naujan United Farmers Agriculture Cooperative (NUFARCO)	Cooperative Development Authority - MIMAROPA
Cooperative Development Authority - MIMAROPA	Farmers Organization for the Rural Upliftment of Mindoro Agriculture Cooperative (FORUM)	Mindoro State University
Cooperative Development Office - Naujan	Gabay sa Kaunlaran Agriculture Cooperative	Agriterra

<b>FGD 1 (AUGUST 28)</b>	<b>FGD 2 (AUGUST 29)</b>	<b>VALIDATION WORKSHOP (OCTOBER 16)</b>
Cooperative Development Office - Bongabong	Mindoro Dairy Cooperative	Provincial Cooperative Development Office - Oriental Mindoro
Cooperative Development Office - Calapan	Calapan Labor Service Development Cooperative (CALSEDECO)	Oriental Mindoro Seed Producers Multipurpose Cooperative
Cooperative Development Office - Victoria	Calapan Vendors Multipurpose Cooperative (CVMPC)	Salika Agriculture Cooperative
Provincial Agriculturist Office - Oriental Mindoro		Society of Entrepreneurial Advocate for Common Access on Trading (SEACAT) Marketing Cooperative
DOST Provincial Science and Technology Office - Oriental Mindoro		United Farmers of Oriental Mindoro Agriculture Cooperative (UFOMAC)
Municipal Government of Victoria		
Mindoro State University		
National Economic and Development Authority - MIMAROPA		
Provincial Health Office - Oriental Mindoro		
City Nutrition Action Office		

**TABLE 3. CHARACTERISTICS OF THE SURVEY RESPONDENTS  
(N=53)**

<b>DESCRIPTION</b>	<b>COUNT</b>	<b>PERCENTAGE</b>
<b>Municipality</b>		
Bongabong	10	19
Bulalacao	5	9
Calapan	14	26



DESCRIPTION	COUNT	PERCENTAGE
Gloria	4	8
Mansalay	4	8
Naujan	15	28
No response	1	2
<b>Average Age (in years)</b>	27	
<b>Sex</b>		
Female	33	62
Male	20	38
<b>Civil Status</b>		
Single	14	26
Married	32	60
Widow/Widower	5	9
Others	2	4
<b>Highest Educational Attainment</b>		
High School (7-10 years of schooling)	5	9
College (11-14 years)	35	66
Vocational (11-12 years)	5	9
Post-graduate (more than 14 years)	8	15
<b>Occupation</b>		
Unemployed/Not Working	6	11
Employed	36	68
Self-employed (business)	11	21
<b>Household Head</b>		
Yes		
No		
<b>Household Monthly Income</b>		
Below PHP12,000	16	30
PHP12,001 - PHP24,000	13	25
PHP24,001 - PHP48,000	8	15
PHP48,001 - PHP84,000	7	13
PHP84,001 - PHP145,000	8	15
Above PHP145,000	1	2

DESCRIPTION	COUNT	PERCENTAGE
<b>Cooperative Membership (in years)</b>		
less than 1 year	3	6
1 to 2 years	13	23
3 to 5 years	12	25
6 to 10 years	9	17
more than 10 years	16	30

## THE ROLE OF COOPERATIVES IN ENSURING FOOD AND NUTRITION SECURITY — A FOCUS ON ORIENTAL MINDORO

The Sustainable Food Systems Framework (FAO 2018) is an integrated approach to managing food systems for long-term environmental, social, and economic sustainability. It recognizes the interconnectedness of food systems and advocates for a unified strategy to ensure fairness, resilience, and the ability to meet current and future needs. Developed through a wide range of inputs from the different global organizations and research bodies, it is a flexible, evolving concept shaped by ongoing discussions on food security, environmental concerns, and social justice.

Using the sustainable food system framework, the roles of cooperatives across production, processing, distribution, consumption, and waste management were identified and categorized based on its level of intervention—micro, meso, meta, and macro—to highlight their functions and contributions to food and nutrition security.

Data shows that cooperatives are present in all the components of a food system and they operate across a spectrum of interventions from enhancing individual livelihoods to influencing national policy. Their broad involvement highlights their potential contribution to food and nutrition security. The FGD and workshop results are summarized in Figure 3 and discussed in the following sections.

	PRODUCTION	PROCESSING	DISTRIBUTION	CONSUMPTION	WASTE
MICRO / FIRM LEVEL	Increase production (i.e. clustering, home backyard farming)	Food and processing (value addition)	Consolidation, purchase, and selling of individual producers' commodities (market)	Increased food variety/choices	Waste reduction through processing
	Production/ supply and procurement of agri-inputs		Supplier in government procurement (e.g. KADIWA program)	Food suppliers in government feeding programs	Organic fertilizers from animal wastes
MESO LEVEL	Machinery equipment/ facility rental/ services		Storage and transportation of food		
	Training, seminars, and other capacity-building programs (i.e. on farming, gardening, enterprise development, and building resilience)				
	Loans/credit services				
META & MACRO LEVEL	Advocacy, educational, and promotional campaigns supporting food security				
	Facilitate partnership/collaborations and access to gov't and non-gov't programs				
	Support governance of the food systems; implementation and adoption of food security-related policies				
	Representation in the Congress; Lobbying for government support and protection				

■ **Figure 3.** Roles of cooperatives across food systems component and level of intervention

## Role of Cooperatives by Level of Intervention and Food System Component

### 1. Cooperatives' roles at the micro level

Cooperatives contribute to the production of key food commodities like rice, corn, fruits, and vegetables by boosting productivity through farm clustering, home farming programs, and sustainable practices. They also provide affordable agricultural inputs such as seeds, fertilizers, and pesticides through agri-stores, leveraging collective bargaining to reduce production costs and increase profitability for members.

Cooperatives are also engaged in food processing activities including packaging and labelling of products. These value-adding activities are made possible by cooperative investments in machinery, equipment, and technology, which individual farmers might find too expensive to invest in and too costly to operate. By enabling their members to process raw produce

into marketable goods, cooperatives create opportunities for higher-value agricultural production, product diversification, and higher income.

Cooperatives play a key role in marketing and distribution by acting as direct buyers, purchasing produce from members, and consolidators, aggregating products to access larger markets. In Oriental Mindoro, some cooperatives supply KADIWA stores with member-sourced commodities. These stores are the result of the KADIWA ni Ani at Kita program that seeks to ensure the availability and accessibility of food commodities in areas with high consumer demand, especially for low-income families. The objective is achieved by involving the private sector, strengthening farmer cooperatives and associations, and engaging community organizations in the food supply distribution system (Department of Agriculture, 2020). This collective distribution improves market access, bargaining power, and ensures fairer prices. Cooperatives also supply food for Department of Social Welfare and Development (DSWD) feeding programs, generating stable income for members and improving food access for vulnerable populations as well as reinforcing food and nutrition security outcomes in the community. Their activities enhance food variety and availability, promoting better dietary diversity and supporting local food systems for healthier, sustainable diets.

Lastly, cooperatives contribute to reducing post-harvest food losses through food preserving processes. These extend the shelf-life of perishable commodities. Additionally, many cooperatives engage in organic fertilizer production by utilizing by-products and recycling agricultural wastes. These practices promote circularity, reduce environmental impact, and create additional income-generating opportunities for cooperative members. By integrating waste management into their operations, cooperatives enhance sustainability and resilience within the province's food systems.

## *2. Cooperatives' roles at the meso level*

Cooperatives provide a range of support functions and services that bolster agrifood value chain activities in Oriental Mindoro. These meso-level roles span across various components of the food system, enhancing the coherence, efficiency, and complementarity of efforts that ensure food and nutrition security.

## ■ **Financial Services**

Access to financial services is a major challenge for smallholder farmers. Cooperatives address this by offering loans and credit facilities, enabling farmers to invest in production, adopt improved practices, and boost productivity. This supports economic stability, ensures a steady food supply, and helps agricultural households maintain access to nutritious food. Cooperatives also provide financial access to household consumers, offering loans with lower interest rates than traders, fewer requirements, and faster processing than banks, helping members afford food during financial shortages or emergencies.

## ■ **Machinery and Equipment Rental Services**

Agricultural machinery and equipment are often beyond the financial reach of smallholder farmers. Cooperatives play a critical role by offering machinery and equipment rental services to their members, supporting both production and processing activities. This service enhances agricultural productivity, fosters crop diversity, and improves value-added opportunities for farm households. Additionally, cooperatives are often eligible for grants or subsidies to acquire machinery and equipment from agencies like from the Department of Science and Technology (DOST) and the Philippine Center for Postharvest Development and Mechanization (PhilMech), and the Department of Agriculture (DA). There were already cooperatives in Oriental Mindoro such as the Bansud Goat Raisers and Other Ruminants Association (BAGORRA) and the Mabini Farm Family Multi-Purpose Cooperative (MABINI) that received farm machinery and equipment under DA's Philippine Rural Development Project, which have been benefitting agricultural producers in local municipalities.

Cooperatives even modify the machinery and/or equipment to ensure its appropriateness to its intended purpose and make it accessible not only to their members but also to non-members within their operational areas. One example is a drum seeder that was modified by a cooperative in the province for the benefit of its farmer members. The shared access reduces capital barriers for small-scale producers, strengthening their agricultural productivity and consequently, contributing to improving food and nutrition security.

### ■ **Logistics and Distribution**

Efficient logistics and distribution are vital to maintain food quality and reduce post-harvest losses. Cooperatives offer facilities for safe storage and reliable transportation of food products. These services optimize distribution networks, minimize waste, and ensure the delivery of high-quality products to consumers and retail markets. Calapan Labor Service Development Cooperative (CALSEDECO) is one of those cooperatives that have been identified to provide logistics support to smaller cooperatives in Oriental Mindoro. By improving the efficiency of food distribution, cooperatives enhance market access for small-scale producers and strengthen food system resilience.

### ■ **Capacity Building**

Cooperatives empower farmers through access to free training and seminars, often in partnership with government agencies like the Provincial Agriculture Office, Department of Trade and Industry (DTI), DOST, and private institutions. These sessions cover sustainable practices in agriculture and aquaculture, processing, (e.g., calamansi and dairy processing and packaging, surimi production, as well as banana chip production) and postharvest activities. For example, dairy farmers in Mindoro Dairy Cooperative received training in production and processing. Cooperatives offer governance and financial management training, helping members gain technical and managerial skills, adapt to market changes, and improve food security in the province.

## 3. *Cooperatives' roles at the meta level*

At the meta level, cooperatives influence community behaviors and attitudes to boost food and nutrition security and promote sustainable food systems. Beyond production and support services, they engage in advocacy, education, and campaigns to encourage sustainable practices and ecological stewardship. Cooperatives raise awareness and advocate for policies that support food and nutrition security.

Cooperatives play a vital role in community-level food systems governance with democratic, inclusive decision-making, ensuring effective policy

implementation. For example, SEACAT Marketing Cooperative and Salika Agricultural Cooperative in Oriental Mindoro implemented the "Pahingang Paisdaan" program, which is supported by the Department of Labor and Employment (DOLE). It promotes responsible resource management and provides alternative livelihoods to fisherfolk such as surimi production. By creating and nurturing a community of practice and promoting transparency, accountability, and shared responsibility, cooperatives foster trust and collective action. Grounded in strong moral values, they shift mindsets from donor dependency to self-help, driving progress toward equitable food and nutrition security.

#### *4. Cooperatives' roles at the macro level*

Cooperatives influence policy and advocate for equitable food security and systemic change in food systems. Among the roles identified include partnerships, governance, and advocacy, all of which contribute to food security.

Cooperatives serve as bridges between various stakeholders in the food system, including government agencies, NGOs, and private sector actors. By fostering partnerships and collaboration, cooperatives leverage resources, expertise, and networks to strengthen the food system as a whole. These collaborations create synergies that improve resource allocation, enhance service delivery, and build a more integrated and inclusive food system.

As community-based organizations, cooperatives further contribute to food system governance by actively participating in the design, adoption, and implementation of policies at the local level. They advocate for smallholder farmers, traders, retailers, and consumers through political engagement, including legislative representation and lobbying. National party lists like AGAP and Coop-NATCCO represent cooperatives and advocate for policies that support cooperatives as food producers, distributors, and consumers, addressing challenges like limited resources, market constraints, and climate vulnerabilities.

## Role of Cooperatives by Food Security Pillar and Food System Components

The findings of this study are further substantiated by the results of the online survey conducted with cooperative members. From a food security framework perspective, Figure 4 illustrates how cooperatives contribute to the four pillars of food security (availability, access, utilization, and stability) across various components of the food system (production, distribution, consumption, and waste management). The responses of cooperative member-respondents were consistent with the insights gathered from focus group discussions and workshops.

All survey respondents affirmed the positive contribution of cooperatives to their household food security. Analysis of open-ended responses regarding how cooperatives enhance food security, categorized by food system component and cross-tabulated with the four pillars of food security (availability, access, utilization, and stability), revealed that cooperatives engage in activities that demonstrably contribute to each pillar.

Survey results, combined with the FGDs and workshop findings, show that cooperatives play a multifaceted role in food and nutrition security. Their contributions go beyond production, extending to access, utilization, and stability. Key contributions, such as credit/financial services, lower food prices, and livelihood opportunities, were frequently mentioned (see Figure 4). Cooperatives enhance food availability by supporting production, facilitating access to government programs, and providing essential inputs. They also improve food access by offering financial services, lower prices, and livelihood opportunities, ensuring affordability and economic accessibility.

Though responses on food security pillars like utilization and stability were minimal, these components remain vital for long-term food security. Utilization involves ensuring food nourishes individuals and communities. In Oriental Mindoro, cooperatives supply organic fertilizers, promoting sustainable farming and the production of safe, nutritious food. They also encourage vegetable gardening and organic farming, fostering self-sufficiency and healthier eating habits. Cooperatives directly supply nutritious food, such as dairy milk, fresh produce, and quality rice, supporting initiatives like the



DSWD's Feeding Program to address nutritional needs and improve the well-being of vulnerable groups.

	PRODUCTION	PROCESSING	DISTRIBUTION	CONSUMPTION	WASTE
AVAILABILITY	<ul style="list-style-type: none"> <li>- Provide access to government programs</li> <li>- Increase availability of food supply through production</li> <li>- <b>Provide credit and financial services</b></li> <li>- Provide initial capital</li> <li>- Give access to trainings/ seminars for farmers</li> <li>- Give access to production and processing facilities and technologies</li> </ul>	<ul style="list-style-type: none"> <li>- Value-adding activities - processing</li> </ul>	<ul style="list-style-type: none"> <li>- Fast and safe transportation of food</li> </ul>	<ul style="list-style-type: none"> <li>- Increase variety of food choices (e.g., through processing)</li> </ul>	
ACCESS			<ul style="list-style-type: none"> <li>- Establishment of co-op stores and providing consumer services</li> <li>- Providing a sure market/serving as a trading partner for individual producers</li> </ul>	<ul style="list-style-type: none"> <li>- <b>Offering lower food prices</b></li> <li>- <b>Loans/Credit services</b></li> <li>- <b>Providing livelihood, employment, and other income opportunities, including patronage refunds and dividends</b></li> </ul>	
UTILIZATION	<ul style="list-style-type: none"> <li>- Supply of organic fertilizers</li> <li>- Teaching vegetable home gardening and organic farming</li> </ul>	<ul style="list-style-type: none"> <li>- Supply nutritious food (dairy milk, fresh and organic produce, quality rice)</li> </ul>		<ul style="list-style-type: none"> <li>- Improve household nutrition (e.g., by supplying dairy milk)</li> </ul>	
STABILITY	<ul style="list-style-type: none"> <li>- Educational campaign on supporting locally produced goods</li> <li>- Teaching members to produce their own safe and nutritious food and sell surplus to co-members at a reasonable price</li> <li>- Educational campaign on agricultural production and importance of agriculture</li> </ul>				
	Implementation/Adoption of local and national policies (e.g., administrative codes, municipal ordinances related to environmental protection, waste management, etc.)				

■ **Figure 4.** Role of cooperatives according to the food security pillar and food system components

Stability component, meanwhile, refers to the long-term resilience and sustainability of food system, ensuring that all the other food security pillars remain constant even during disruption or crisis (Food Security Cluster Handbook 2023). In the case of Oriental Mindoro, cooperatives promoted local consumption and agricultural production through educational campaigns. Supporting locally produced goods strengthens local economies and reduces reliance on external markets. In addition, raising awareness about the value of agriculture and promoting sustainable practices contributes to the long-

term well-being of the local community. Cooperatives also encourage their members to produce their own food and sell their surplus to co-members at a reasonable price. This strategy also fosters self-reliance and creates a localized food system.

It is also noteworthy that food security pillars and the sustainable food system are inherently connected, as shown in Figure 4. Cooperative engagement in production activities enhanced food availability. Providing access to government programs, increasing production through various initiatives, as well as offering credit and financial services can all directly contribute to a greater food supply. As shown in Figure 5, the connection between food availability and production component is further facilitated by various government programs and initiatives that directly support agricultural production.

Food access was improved through more effective distribution networks in which cooperatives played a crucial role. Distribution activities of cooperatives, such as establishing co-op stores, providing market access for producers, and ensuring fast and safe food transportation, are crucial for improving food access. These activities bridge the gap between production and consumption, making food physically and economically available to consumers. Cooperatives in Oriental Mindoro serve as either or both partner and beneficiary of programs related to food distribution. For instance, the "Establishment of Oriental Mindoro Consolidation and Trading Facility" and "KADIWA on Wheels" programs, aimed to streamline the process of aggregating and distributing agricultural products, potentially reducing costs and improving the efficiency of the supply chain, thus making more food at affordable prices.

Cooperatives enhance consumption patterns, which are influenced by utilization factors (i.e. food preparation, food processing, food storage, feeding practices, and sharing of food). Cooperatives supply nutritious food, promote home gardening, and improve the overall nutrition of the household. These generate better food utilization and healthier diets. For instance, the "One Town, One Product" program focuses on promoting local products (DTI, n.d.). Nevertheless, the OTOP Program also implicitly encourages local consumption of these local products. Cooperatives served as partner in the program, providing assistance to capacitate micro, small, and medium-scale

enterprises (MSMEs), as well as sell (as market channel) of the local products. Showcasing and branding local products can stimulate demand and increase consumption within the community and in other areas, requiring improved food preparation, process, and storage.

Furthermore, the inclusion of waste management practices by cooperatives demonstrate its connection to food stability. Implementing policies and practices related to waste reduction ensure resource efficiency and long-term sustainability of the food system. This connection, though not as extensively detailed as the others, highlights the importance of considering waste management as an integral part of food security.

## **FACILITATING AND HINDERING FACTORS**

### **Facilitating Factors**

#### *1. Policies related to cooperatives*

Government policies and legislation demonstrably support cooperative development, fostering poverty reduction and socioeconomic growth at the local level. While not directly addressing food security, these policies and laws lay the groundwork for cooperative growth and viability, which can contribute to improved food systems.

The Republic Act (RA) No. 9520 (the Philippine Cooperative Code of 2008) promotes cooperatives as vehicles for self-reliance and poverty reduction, potentially impacting food security by empowering communities. The RA Nos. 11364 and 11535 do not explicitly offer a source of funding for cooperative programs, nor do they serve as formal mechanisms for cooperatives' collaboration with provincial and local government units in programs and activities related to food security. Yet these laws do establish a supportive framework for such initiatives by strengthening the institutional capacity for cooperative development and integration within local governance.

Republic Act No. 11364 (2019) strengthens the CDA as the primary agency for cooperative development and regulation in the Philippines. Republic Act No. 11535 (2021) mandates the appointment of Cooperative

Development Officers in local government units, improving the sector's ability to address local needs, including food security. Joint Memorandum Circular No. 2019-01 promotes cooperative development through inter-agency collaboration, while Memorandum Circular 2021-07 highlights cooperatives as key partners in environmental sustainability, supporting practices that contribute to poverty reduction, food security, biodiversity conservation, and climate change resilience.

Overall, these laws and regulations create a supportive environment for cooperative development, which can play a crucial role in enhancing food security through various initiatives like improved production, processing, distribution, and access to food.

## *2. Food security policies and programs involving cooperatives*

While policies provided a foundation for cooperative development, targeted efforts are needed to integrate cooperatives into food security initiatives. Various food security-related policies, programs, and projects specifically engaged cooperatives as beneficiaries, partners, and/or implementers.

Figure 5 highlights the diverse roles of cooperatives in the sustainable food system, categorized as beneficiaries, partners, or both. Key observations include frequent benefits from production programs (e.g., "Halina't Magtanim ng Prutas at Gulay"), processing initiatives (e.g., "SMART & Sustainable Communities/Cities Program"), and distribution infrastructure (e.g., "Farm-to-Market Roads"). This focus on production, processing, and market access enhances cooperatives' capacity for efficiency and competitiveness. However, fewer initiatives addressed marketing/distribution, consumption, and waste management, indicating a potential imbalance in government priorities across the food system.

While the findings provided a valuable overview, further analysis could explore the impact of these initiatives on food and nutrition security outcomes. Investigating the effectiveness of different programs, the challenges faced by cooperatives, and the potential for scaling up

successful models would provide a more comprehensive understanding of their contribution to food and nutrition security. Additionally, exploring the specific roles of cooperatives in different commodity chains and regions could reveal further insights.

## Hindering Factors

Challenges faced by cooperatives in enhancing food and nutrition security existed at multiple levels - micro, meso, macro, and meta-level. At the micro/firm level, these challenges included high initial capital requirements, limited expansion capital, restricted access to lucrative markets, mismanagement and member delinquency, as well as competition with imported goods. Meso-level challenges encompassed limited access to funding/grants (often due to proposal writing capacity limitations), underdeveloped local markets, low awareness of government programs, and weak inter-cooperative collaboration. Macro-level challenges included a lack of protective local trade policies, stringent Cooperative Development Authority (CDA) and Food and Drug Administration (FDA) requirements, production-biased food security policies, and weak policy coherence. Finally, at the meta-level, challenges included a dependent mindset, underutilized cooperation among cooperatives, and a lack of entrepreneurial thinking. These multi-level challenges underscored the need for targeted interventions to strengthen cooperative capacity and foster a more enabling environment for their contribution to food and nutrition security.

While numerous food and nutrition security-related programs, policies, and development schemes have focused on increasing commodity production, initiatives targeting distribution/marketing, consumption, and waste management remain limited. This imbalance had resulted in a paradoxical situation: despite increased production levels, the local market faces a shortage of high-quality, locally-produced commodities. A significant portion of produce is exported, limiting domestic availability and contributing to Oriental Mindoro's reliance on imported goods to meet local demand, despite high agricultural production levels. This highlights the need for a more balanced approach to food and nutrition security, emphasizing the strengthening of local markets, improving distribution systems, and promoting domestic consumption.

PRODUCTION	PROCESSING	DISTRIBUTION	CONSUMPTION	WASTE
SMART & Sustainable Communities/Cities Program	"Foodtrip" or Food on the road innovation and processing	Construction of Farm-To-Market Roads	One Town, One Product (OTOP)	Small Enterprise (SETUP 3.0)
MC No. 2023-001 Implementation of the Halina't Magtanim ng Prutas at Gulay (HAPAG) sa Barangay Project	Manufacturing productivity extension (MPEX) Program	Training on Food Safety Management		Food waste composting machines/ programs
Rice Competitiveness Enforcement Fund (RCEF) Mechanization Program	Establishment of the Provincial Agriculture Center (PAC)	Establishment of Oriental Mindoro Consolidation and Trading Facility		Establishment of vermicomposting facility
High Value Crops Development Program	Establishment of the Food Innovation Center (FIC-MIMAROPA)	KADIWA on Wheels		Waste water treatment system integrated in the PA
Grains Production Enhancement Program	Training on Value Addition of Banner Commodities of Oriental Mindoro	Digital Transformation	Feeding Program	MC 2021-07 Guidelines for sound environmental practice for cooperatives
Integrated Fisheries and Aquaculture Development Program	Distribution of Rice Processing System			
Fisheries Regulatory & Law Enforcement Program	Others: financial subsidy for farmers and processors; local ordinances			
Farm and Fisheries Clustering and Consolidation (F2C2) Program				
Agro-Enterprise Clustering Approach Program				
Others: Trainings; Demo farms; local policies; establishment of other infrastructure				
Consultancy for Agricultural Productivity Enhancement (CAPE) Program				
Community Empowerment through S&T (CEST)				
Adoption of RPAN (Regional Plan of Action for Nutrition)				
Organic Agriculture Value Chain Development Program				
Adoption/Implementation of the Province-led Agri-Fisheries Extension Systems (PAFES)				

Coop as BENEFICIARY
Coop as PARTNER
Coop as BENEFICIARY and PARTNER

■ **Figure 5.** Cooperative involvement across the sustainable food system in Oriental Mindoro

## CONCLUSION

This study examined the role of cooperatives in enhancing food and nutrition security in Oriental Mindoro, Philippines. Results showed that cooperatives play a vital role across various components of the sustainable food system, from input supply to market access and policy advocacy. Depending on their type and focus, cooperatives contribute as input suppliers, producers, consolidators, processors, distributors, and service providers. They also act as intermediaries between government agencies and local communities, facilitating policy implementation and advocating for food and nutrition security initiatives.

Cooperatives also played a vital role in fostering inclusivity and participation among individual producers and farmers' groups in the food security programs and policies, and food systems as a whole. By providing a platform for collective action, cooperatives amplified the voices of smallholder farmers and enable them to effectively articulate their concerns and advocate for their interests and needs. This collective identity fostered by cooperatives strengthened their bargaining power, facilitated access to resources and markets, and enhanced their ability to influence policy decisions.

While numerous policies, programs, and projects address food insecurity, most development interventions had been directed toward enhancing production and processing capacities, with fewer initiatives focused on distribution, marketing, consumption, and waste management. This imbalance led to a situation where increased production does not necessarily translate into improved local food security, as a significant portion of produce is exported, leading to reliance on imported goods. A more balanced approach, encompassing strategic investments across the entire food system, is therefore recommended to ensure that increased production translates into tangible improvements in food security outcomes.

Although cooperatives are involved in various commodity sectors, engaged with a range of stakeholders across the value chain, and interact with different levels of governance and interventions, not all cooperatives met their full potential in contributing to food and nutrition security. Several factors hinder cooperatives to ensure food and nutrition security. These include challenges at the micro/firm level (e.g., capital limitations, market access, management

issues), meso level (e.g., underdeveloped markets, limited funding access), macro level (e.g., policy gaps, trade policies), and meta-level (e.g., dependent mindset, limited inter-cooperative collaboration). Addressing multi-level constraints is essential to unlock the full potential of cooperatives and enable them to play a more effective role in ensuring food and nutrition security. Targeted interventions, capacity-building programs, and policy reforms are needed to foster an environment for cooperative development and empower cooperatives to aid in sustainable and equitable food systems.

The growing number of cooperatives highlight their key role in improving food and nutrition security. This expansion enables cooperatives to provide access to resources, social capital, markets, government support, and capacity-building activities. Organized by sectors, cooperatives make specialized or integrated contributions to various food system components. Their unique practices offer opportunities to address both national and local food and nutrition security challenges.

Overall, the experience of Oriental Mindoro can serve as a valuable case study for informing national policy development related to food and nutrition security and cooperative development. By analyzing the successes, challenges, and lessons learned in Oriental Mindoro, policymakers can gain insights into effective strategies to strengthen local food systems, promoting cooperative development, and enhancing food and nutrition security across the Philippines.

## **RECOMMENDATIONS**

The following recommendations offer strategies to maximize cooperatives' potential in achieving this objective.

### **1. Promote community-based collaborative action for an improved and integrated response to food and nutrition security challenges**

Addressing food and nutrition security challenges requires integrated, multi-stakeholder collaboration. This approach necessitates uniting the efforts of key actors, including farmers, cooperatives, local government units, government agencies, and development organizations. While cooperatives can effectively link farmers with both the government and



non-government sectors, academia must intervene to strengthen these connections, facilitate communication, promote knowledge sharing, and foster collaborative action among stakeholders.

The Province-led Agriculture and Fisheries Extension Systems (PAFES) provides a framework for coordinated efforts and resource sharing among stakeholders, enhancing program effectiveness and promoting sustainable, equitable food security. Agritourism offers another opportunity for public-private partnerships, leveraging cooperatives' agricultural strengths in tourist destinations, especially in island provinces. Further research should explore these collaborations, identify best practices, and assess their impact on food and nutrition security.

## **2. Foster food systems hybrid governance through cooperatives and the government sector linkages**

Leveraging cooperatives as partners in food systems governance is recommended by this study. The predominantly small-scale nature of cooperatives fosters participatory, inclusive, and equitable approaches to addressing food security challenges. This community-based, small-scale structure facilitates a shared understanding of challenges and reduce power imbalances, promoting more effective collective action. The localized approach enables tailored solutions and empowers community members to actively participate in food and nutrition security initiatives.

Cooperatives, with their inherent community-based structure, can serve as catalysts for the emergence of hybrid governance arrangements. These collaborative partnerships between communities and government entities can foster more effective and context-specific food security interventions.

## **3. Enhance capacity of cooperatives and its stakeholders to increase access to resources, support services, and other opportunities**

Strengthening cooperatives' capacity requires a multifaceted approach focused on developing key entrepreneurial and managerial skills. This includes targeted training and development programs designed to enhance their capabilities in several critical areas, including

entrepreneurial skills development, business planning and management, negotiation and advocacy, and project implementation and management.

By investing in these targeted skill development initiatives, cooperatives can enhance their operational efficiency, improve their market competitiveness, and contribute more effectively to food security. This capacity-building approach should be complemented by supportive policies and programs that foster a more enabling environment for cooperative development.

**4. Promote collaborations among cooperatives to enable them to access bigger funding and increase their impact**

Strengthening collaboration among cooperatives is essential to maximize their impact on food security. Embracing the principle of "Cooperation among Cooperatives" can unlock significant potential by enabling access to larger funding opportunities and facilitating more effective collective action. Larger, well-established cooperatives can play a crucial role in supporting smaller cooperatives through mentorship and resource sharing. Programs like the "Koop Kapatid Program" exemplify this approach, fostering mutually beneficial partnerships between larger and smaller cooperatives. This collaborative model can enable smaller cooperatives to participate more effectively in food security initiatives, leveraging the resources and expertise of their larger counterparts.

Promoting cooperative mergers and consolidations can enhance capacity, financial stability, and market access. The implementation of the Cooperative Development Authority Memorandum Circular-2023-18, which offers incentives and assistance (up to Php 500,000) to newly consolidated cooperatives, encourages micro and small cooperatives to merge. This strategic approach fosters stronger, more resilient cooperatives. Further research should explore the impact of inter-cooperative collaboration on food security, identify best practices, and assess the effectiveness of merger initiatives.

**5. Harmonize government support from different agencies and align with the cooperative development plan to support food and nutrition security initiatives**

Effective government support for cooperative-led food and nutrition security initiatives requires harmonized action and strategic alignment with the Cooperative Development Plan. This necessitates a coordinated approach involving various government agencies, ensuring that their efforts complement and reinforce each other. Collaboration among LGUs, cooperative development councils and offices, CDA, and relevant line agencies such as the DA, Department of Interior and Local Government (DILG), DOST, and DTI is crucial for effective convergence.

Establishing platforms for dialogue and policy discussions is equally important. These platforms can provide opportunities for cooperatives to engage directly with policymakers, share their experiences and perspectives, and advocate for policies that support their food security initiatives. This participatory approach can ensure that government policies are responsive to the needs and priorities of cooperatives, fostering a more enabling environment for their contributions to food security.

**6. Improve coordination and coherence of food security initiatives of cooperatives and target support to cooperatives' specific roles in these initiatives**

Maximizing the effectiveness of cooperative involvement in food and nutrition security initiatives requires strategic coordination and targeted support based on their specific roles and capacities within agricultural value chains. Cooperatives exhibit significant diversity in terms of size, operational capacity, services provided, and commodities handled. This diversity presents opportunities for synergistic collaboration, enabling cooperatives to complement and support each other throughout the value chain.

Comprehensive scoping and profiling of cooperatives are essential to understand their current status, capacity, and needs. This "business intelligence" can inform targeted support strategies, ensuring that resources and interventions are aligned with the unique characteristics of each cooperative. This approach can optimize resource allocation and maximize the impact of cooperative engagement.

Furthermore, access to robust production and market data related to cooperatives is crucial for informed decision-making and effective program design. Increased scholarly research in this area can provide valuable insights into the dynamics of cooperative involvement in food security, identify best practices, and inform policy recommendations. This data-driven approach can enhance the effectiveness of cooperative-led food security initiatives and contribute to more sustainable and equitable food systems.

## **7. Strengthen partnerships with the private sector**

Strategic partnerships with the private sector can enhance food security initiatives by leveraging corporate social responsibility programs and NGO projects. Collaborations between cooperatives and private entities offer mutual benefits, with cooperatives providing local access and market insights, while the private sector offers financial support and expertise. Channelling these resources requires a clear partnership framework and identifying synergies.

## **8. Develop and strengthen island province-wide trade policies**

Island provinces, like Oriental Mindoro, face challenges in food and nutrition security due to geographical isolation and reliance on external markets. The influx of cheap imported foods and increased exportation of local products disrupts local food systems, threatening long-term food security. Therefore, establishing comprehensive trade policies is crucial to regulate trade, strengthen local food systems, and ensure sustainable access to nutritious food.

Policies should focus on protecting local food producers by creating a competitive market through mechanisms like tariffs and quotas. They should also strengthen local food marketing, improve distribution networks, and promote domestic consumption of local goods. This integrated approach can boost local producers' competitiveness, market access, and overall food and nutrition security in island provinces.

**9. Conduct more empirical studies on cooperative-food and nutrition security nexus to further expand the empirical evidence base in the Philippines**

Given the limitations of this study and the dearth of empirical evidence in the literature, scholars can build on this research to further examine the role of coops in food security. Opportunities for future research may include replicating this study in other areas in the country with food and nutrition security challenges, making a cross-province comparative study, scaling the study at regional and national levels, and conducting empirical studies using quantitative analysis.

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## THE PROGRAM

Like many developing countries in Southeast Asia, food security in the Philippines remains a tall order. Challenges continue to abound in food availability, access, utilization and their stability over time. The adverse weather condition, political instability and economic factors such as unemployment, eroding income levels and rising food prices have proven to impact negatively on food security. Interventions to improve the food systems' resilience and farm production of a more diverse mix of food, as well as attempts to increase farm income necessary for purchases of vital and wider array of food have generally fallen short of targets especially among vulnerable and marginalized groups.

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