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Working Paper

Strengthening food and nutrition security in the Lao People's Democratic Republic

ADB Economics Working Paper Series, No. 770

Provided in Cooperation with:

Asian Development Bank (ADB), Manila

Suggested Citation: Allen, Emma R.; Leuangkhamsing, Soulinthone; Rola-Rubzen, Maria Fay; Sarmiento, Jon Marx Paredes; Zafar, Omer (2025) : Strengthening food and nutrition security in the Lao People's Democratic Republic, ADB Economics Working Paper Series, No. 770, Asian Development Bank (ADB), Manila,
<https://doi.org/10.22617/WPS250045-2>

This Version is available at:

<https://hdl.handle.net/10419/322314>

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STRENGTHENING FOOD AND NUTRITION SECURITY IN THE LAO PEOPLE'S DEMOCRATIC REPUBLIC

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NO. 770

February 2025

**ADB ECONOMICS
WORKING PAPER SERIES**

ADB Economics Working Paper Series

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No. 770 | February 2025

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ISSN 2313-6537 (print), 2313-6545 (PDF)
Publication Stock No. WPS250045-2
DOI: <http://dx.doi.org/10.22617/WPS250045-2>

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ABSTRACT

Two-thirds of people in the Lao People's Democratic Republic live in rural areas, yet agriculture contributes less than one-fifth of gross domestic product. As such, farm incomes remain low and many lack access to safe and nutritious food sufficient to meet dietary needs and risk falling into poverty and food insecurity. Food insecurity has risen to as many as one-in-ten households, with most food-insecure households dependent on rice farming and lacking educational attainment. Gender, household size, and livelihood are also important determinants in whether one is food insecure. Long-term food security challenges relate to agricultural productivity, market infrastructure, and climate factors. In addition, food security is diminished by macroeconomic instability that has elevated inflation and limited fiscal space for investing in health and education services which manifests in high rates of malnutrition. This multidimensional challenge calls for integrated solutions that strengthen foundations for a food and nutrition secure future.

Keywords: food security, Lao PDR, availability, accessibility, utilization, stability, agency and sustainability, recommendations for investment in priority areas

JEL codes: Q10, Q50, H50

1. Introduction

Two-thirds of the Lao People's Democratic Republic (Lao PDR) 7.2 million people in 2020 resided in rural areas, with the number of farm households unchanged over the past 20 years. These households support themselves through agriculture, but the agriculture sector contributes less than one-fifth of gross domestic product (GDP). As such farm incomes remain low, and many people risk falling into poverty and food insecurity.

Food security is defined as access to safe and nutritious food sufficient to meet dietary needs and preferences for an active and healthy life (International Food Policy Research Institute 2023). Agriculture is a primary sector for supporting food security in the Lao PDR, but historically it has faced a range of long-term climate, spatial, technological, and socioeconomic challenges that have lowered yields and production, slowed modernization and commercialization, and left the sector vulnerable to a range of risks.

Macroeconomic imbalances, including debt stress and currency devaluation, exacerbate these long-term challenges, with serious implications for the country's ability to advance its food and nutrition goals. A high risk of debt distress since 2017 and global developments since 2020, including shocks to supply chains that disrupted markets and elevated commodity price inflation worldwide, have complicated macroeconomic management in the Lao PDR. Spillover from these global trends affected domestic prices for fuel, fertilizer, animal feed, and finance, which raised farm input prices, reduced food production, and stoked food inflation. Inflation in double digits between 2022 and 2024 has eroded household purchasing power and worsened food insecurity across the country. Between one in seven to one in ten households were food insecure in over that period. Vulnerability to food insecurity remains high in part because of infrastructure deficits, unequal education levels between women and men, persistent micronutrient deficiency, scant social assistance, and climate change impacts.

This working paper takes stock of the state of food security and nutrition in the Lao PDR, drawing on primary and secondary data. Using a six-pillar framework—availability, accessibility, utilization, stability, agency, and sustainability—it builds a comprehensive understanding of the issues that then follows discussion and identification of priorities in support of appropriate solutions.

2. Current State of Food Security

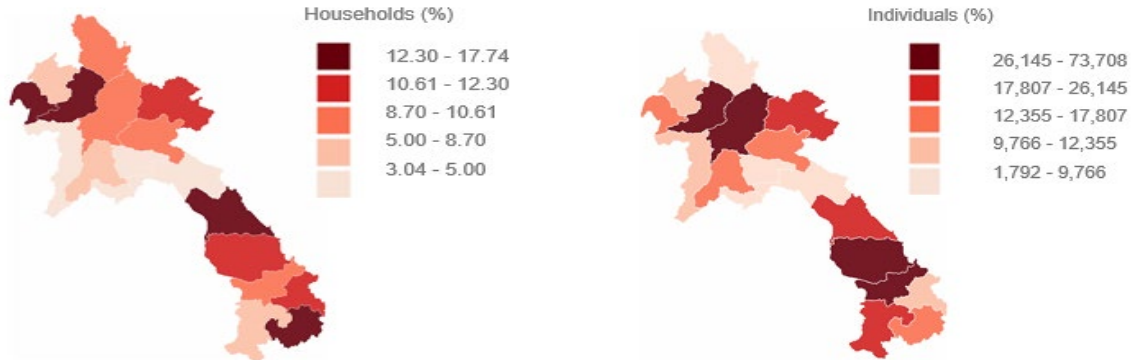
Persistent food insecurity. Agro-ecological characteristics, socioeconomic development, and the occurrence of shocks are among the determinants of this food insecurity. The Lao Statistics Bureau (2021) collected data on food insecurity in a 2020 agriculture census using the Food Insecurity Experience Scale (FIES) of the Food and Agriculture Organization (FAO), which addresses eight gradations of food insecurity: (i) worried about not having enough food, (ii) unable to eat healthy and nutritious food, (iii) eat only a few kinds of foods, (iv) skip a meal, (v) eat less than one should, (vi) run out of food, (vii) go hungry, and (viii) go without eating the whole day. Using this approach, the agriculture census determined that 9.5% of farm households and 9.9% of farm individuals experienced food shortage in 2020 (Figure 1). The provinces of Attapu and Oudomxai had the highest concentration of food shortage for both households and individuals, and Vientiane Capital the lowest. With its large population in agriculture, Salavan province had the largest absolute numbers of households and people experiencing food shortage. Families with more than five members were more vulnerable, as were those in rural areas without road access (Table 1).

One-in-ten households are food insecure. Since the second half of 2022 the World Food Programme (WFP), conducting high frequency surveys to understand food security issues, estimates that one-in-ten households in the Lao PDR are food insecure. Food security is unstable, with high food inflation reducing purchasing power. Food insecurity is geographically unequal and higher in rural than in urban areas. Households without formal education were more vulnerable, and more than half of the population used coping strategies such as less frequent meals and less diverse diets. Most food insecure households were in poor communities farming upland rice.

Hunger comparatively high. In 2022, the Lao PDR ranked 82nd among 121 countries, with a Global Hunger Index score of 19.2 (Figure 2), close to the maximum value under the moderate hunger category (10.0–19.9). While its score has improved from an alarming 44.2 in 2000, Lao PDR still suffers the most pervasive hunger in the Greater Mekong Subregion.

Food insecurity has many determinants. These include agro-ecological characteristics, socioeconomic development, and the occurrence of shocks. Econometric analysis was conducted using FAO household survey data from January 2023, with summary statistics and logit model findings reported in sections 2A and 2B below, followed by a summary of findings.

Figure 1: Share of Farm Households and Individuals Experiencing Food Shortage, 2020



Note: The boundaries, colors, denominations, and any other information shown on this map do not imply, on the part of the Asian Development Bank, any judgment on the legal status of any territory, or any other endorsement or acceptance of such boundaries, colors, denominations, or information.

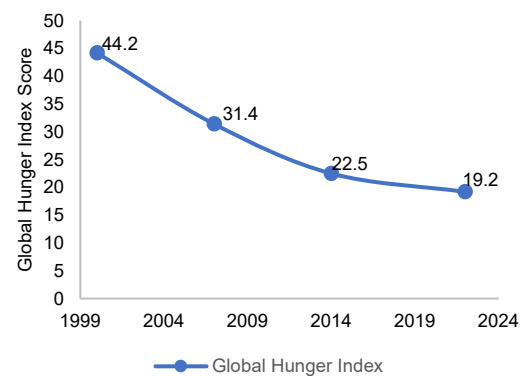
Source: Lao Statistics Bureau. 2021. *The 3rd Lao Census of Agriculture 2019/2020 Volume 1*. Vientiane.

Table 1: Population Share Experiencing Food Shortage by Household Size, 2020

Item	< 5 people	5 people	> 5 people
Urban areas	6.4	5.0	11.8
Rural areas with road access	8.8	5.8	25.1
Rural areas with road access	13.0	9.1	32.7
National	8.8	6.2	22.1

Source: Lao Statistics Bureau. 2021. *The 3rd Lao Census of Agriculture 2019/2020 Volume 2*. Vientiane.

Figure 2: Global Hunger Index Score Trend for the Lao People's Democratic Republic



Source: *Global Hunger Index*. 2022. Lao PDR. <https://www.globalhungerindex.org/laos.html>.

2A. Summary Statistics

Table 2A describes variables used in the econometric model. Summary statistics using weights to calculate proportion and mean values are discussed in four sections: (i) food insecurity, (ii) location profile, (iii) household head profile, and (iv) livelihood profile. Under food insecurity, we calculated three measures of food insecurity. The first two measures refer to dependent variables suggested by the Food and Agriculture Organization (FAO) in 2015. The first dependent variable is food insecurity in general. This pertains to some indication of food insecurity where at least one of the eight FIES questions was answered yes. As 28.5% of the respondents exhibited some measure of food insecurity, the remaining 71.5% were considered food secure, answering all eight FIES questions *no*.

Table 2A: Description of Variables

Variable	Description
Food Insecurity	
Food insecure	1-some indication of food insecurity, 0-food secure
Moderate or severe food insecurity	1-moderate or severely food insecure, 0-food secure or mildly food insecure
Degree of Food Insecurity	
Food secure	1-food secure
Mildly food insecure	2-mildly food insecure
Moderate or severely food insecure	3-moderate or severely food insecure
Location profile	
Agro-ecological zone	
NHUA AEZ	1-Northern highland and upland areas AEZ
NLPA AEZ	2-Northern lowland paddy areas AEZ
VP AEZ	3-Vientiane Plain AEZ (baseline), 0-otherwise
CSHA AEZ	4-Central and southern highland areas AEZ
MC AEZ	5-Mekong corridor AEZ
Northern EC	6-Northern economic corridor
Southern EC	7-Southern economic corridor
Rural area	1-rural area, 0-urban
Household Head Profile	
Female	1-female, 0-male
Education	
No education	1-No education or only religious education
Primary schooling	2-Primary schooling
Secondary schooling	3-Secondary schooling
Higher education	4-Higher education
Female x Education	
Male with no education	1-Male with no education or only religious education
Male with primary schooling	2-Male with primary schooling
Male with secondary schooling	3-Male with secondary schooling
Male with higher education	4-Male with higher education
Female with no education	5-Female with no education or only religious education
Female with primary schooling	6-Female with primary schooling
Female with secondary schooling	7-Female with secondary schooling
Female with higher education	8-Female with higher education
Age	
18 to 40	1-18 to 40
41 to 65	2-41 to 65
Over 65	3-over 65
Married	1-married, 0-otherwise
Household size	1-15 (ordinal variable with max value of 15 and above)
Livelihood profile	
Livelihood activity	
Staple crop production	1-Staple crop production
Other crop production	2-Other crop production
Livestock production	3-Livestock production
Fish production	4-Fish production
Other agricultural livelihood	5-Other agricultural livelihood

Continued on the next page

Variable	Description
Nonagricultural livelihood	6-Nonagricultural livelihood
No income	7-No income
Shock	1-household faced natural hazard or crisis in the last 6 months, 0-otherwise
COVID-19	1-household affected by COVID-19 restrictions, 0-otherwise

AEZ = agro-economic zone, COVID-19 = coronavirus disease, CSHA = central and southern highland areas, EC = economic corridor, MC = Mekong corridor, NHUA = northern highland and upland areas, NLPH = northern lowland paddy areas. VP = Vientiane Plain.

Source: Authors.

The second dependent variable is moderate or severe food insecurity. This pertains to respondents experiencing at least four of the eight food insecurity dimensions. As 6.37% of the samples were considered at least moderately food insecure, the remaining 93.63% were considered either mildly food insecure or food secure. FAO (2015) recommended a third dependent variable—severe food insecurity—but as fewer than 1% of the samples identified themselves as severely food insecure, a reliable and meaningful model cannot be generated that can predict their conditions under severe food insecurity.

The first set of independent variables explaining degrees of food insecurity is the location profile. Two location variables were considered; the agro-ecological zone (AEZ) and the type of locality, either urban or rural. Seven AEZs were considered: northern highland and upland areas with 16.12% of the population, northern lowland paddy areas with 17.99%, Vientiane Plain 21.13%, central and southern highland areas 4.48%, Mekong corridor 20.74%, northern economic corridor 5.9%, and southern economic corridor 13.65%. The last AEZ is the Bolovean Plateau, but it was excluded in the sampling design. In terms of locality, 52.28% of the respondents resided in rural areas, and the remaining 47.72% urban.

The second set of independent variables is the household head profile, with 88.33% of households headed by males and only 11.67% by females. Education was ordinal data expressed as no education or only religious education at 5.96%, primary schooling 22.47%, secondary schooling 31.38%, and higher education 40.19%. Breaking down the household head gender and education profile, the 36.99% of respondents who were male heads of households with higher education were the biggest group, followed by male heads of households with secondary schooling at 28.89%, male heads of households with primary schooling 18.13%, female heads of households with primary schooling 4.34%, male heads of households with no education or only religious education 4.29%, female heads of households with higher education 3.19%, female

heads of households with secondary schooling 2.49%, and female heads of households with no education or only religious education 1.68%.

By age, 28.04% were 18–40, 65.74% 41–65 years old, and 6.22% over 65. An overwhelming 87.97% of household heads were married, with only 12.03% of respondents single, either never married, separated, divorced, or widowed. The next independent variable, household size, was expressed as ordinal data from 1 to 15, the maximum value including households with more than 15 members. Most households had 5 or 6 members.

The last set of independent variables is the livelihood profile, which has potential to influence the household food insecurity. Respondents' livelihood activities fell into seven categories, with 21.01% engaged in crop production, which involved the production and sale of staple crops, vegetables, fruit, or cash crops. The second category was livestock production at 24.00%, which included the production and sale of livestock and their products. Next was fish production, at 3.16%, which involved the production and sale of fish and fish products. Other sources of agricultural livelihood— agricultural trade excluding production, daily wage-earning on farms and other casual farm employment, and stable employment in agriculture—were lumped into one category, at 3.85%. Nonagricultural livelihoods, at 47.77%, included nonagricultural self-employed or professions such as doctor, architect, lawyer, or restaurant worker; off-farm daily wage-earner and other off-farm casual employment; stable employment outside of agriculture; public employment; income not derived from work such as charity, welfare transfers, pension, humanitarian aid, and remittances; and other income.

The last category was no income, which included the 0.22% of respondents who had no income in the past 6 months and lived mainly on savings or debt. Respondents were asked if their household or community faced in the past 6 months any particular natural hazard or crisis that affected their ability to earn an income and/or produce food for self-consumption. This shock could be economic, crop and livestock, intra-household, a natural hazard, or human-made, and 25.09% of respondents experienced at least one of them. Last, respondents were asked if they or anyone in their household had been affected by movement restrictions or social distancing to contain COVID-19 in the past 12 months, and 12.55% said they were.

2B. Logit Models

Two models with two specifications for each model were used to identify factors affecting the degree of food insecurity using weights and linearized standard errors (Table 2B). In the first model, the dependent variable was expressed as whether the household was food secure (0) or showed some indications of food insecurity (1). In the second model, the dependent variable was expressed as food secure or mildly food insecure (0) or moderately or severely food insecure (1). Two specifications were also tested. The first used gender and education as independent variables. The second used a detailed combination of gender and education variables. This was performed to capture the effect of educational attainment across gender. In both models, logit analysis was performed.

We first tested the multicollinearity of the independent variables. With a maximum variance inflation factor of 2.18 (less than the rule of thumb of 10), we found no degrading multicollinearity issue. We then tested the other two assumptions using the procedure outlined by the University of California Los Angeles (2023). We first tested for specification error using the linktest command in STATA. The linear predicted value was significant (p-value = 0.00 for Models 1a and 1b, and p-value = 0.02 for Model 2a and 0.01 for Model 2b), indicating that the model had meaningful predictors. The square of the linear predicted value was not significant (p-value = 0.50 for Model 1a, p-value = 0.67 for Model 1b, p-value = 0.72 for Model 2a, and p-value = 0.79 for Model 2b), which suggests that there was no specification error in the model.

Moreover, using the Box-Tidwell test, we subjected the continuous variable household size to a nonlinearity assumption, and the results suggest no significant outcome (p-value = 0.18 for Model 1a, p-value = 0.14 for Model 1b, p-value = 0.93 for Model 2a, and p-value = 0.91 for Model 2b), which supports the null hypothesis that the household size variable is a linear term.

The last assumption of logit model relates to its fitness. With Model 1a having an F-value (23,1,625) = 4.15 and p-value = 0.00, Model 1b having an F-value (26,1,600) = 3.94 with p-value = 0.00, Model 2a having an F-value (23,1,603) = 5.11 with p-value = 0.00, and Model 2b having an F-value (26,1,600) = 4.82 with p-value = 0.00, all the models were deemed significant. In addition, Hosmer and Lemeshow statistics were not significant (p-value = 0.37 for Model 1a, p-value = 0.49 for Model 1b, p-value = 0.57 for Model 2a, and p-value = 0.11 for Model 2b), suggesting that the model was fit. Finally, the models have high prediction rates, with 72.02% of

them correctly classified in Model 1a, 72.14% in Model 1b, 93.1% in Model 2a, and 93.16% in Model 2b.

Since all models pertain to the degree of food insecurity, a positive coefficient indicates more food insecure households while a negative coefficient indicates more food secure households. The results showed eight variables affect the degree of food insecurity across the models. Respondents located in the northern highland and upland areas AEZ were more food insecure than those residing in the Vientiane Plain AEZ. Households headed by people who had no more than a primary education were more food insecure. In particular, relative to male-headed households with higher education, male-headed households with no more than primary schooling and female-headed households with no education were more food insecure. Larger households were more food insecure. Relative to staple crop producers, those producing livestock and fish were more food secure. Households who experienced external shocks and those affected by COVID-19 restrictions were more food insecure.

Table 2B: Logit Models of Food Insecurity in the Lao People's Democratic Republic

Variable	Model 1						Model 2					
	Model 1a			Model 1b			Model 2a			Model 2b		
	Coef.	LSE		Coef.	LSE		Coef.	LSE		Coef.	LSE	
Agro-ecological zones (base = VP AEZ)												
NHUA AEZ	(0.65)	0.29	**	(0.64)	0.29	**	(0.22)	0.47		(0.24)	0.48	
NLPA AEZ	(0.46)	0.28		(0.40)	0.28		(0.75)	0.49		(0.73)	0.48	
CSHA AEZ	0.23	0.30		0.27	0.30		0.80	0.64		0.78	0.65	
Mekong Corridor AEZ	(0.37)	0.29		(0.36)	0.29		0.31	0.46		0.28	0.47	
Northern economic corridor	(0.13)	0.28		(0.10)	0.28		(0.70)	0.57		(0.66)	0.54	
Southern economic corridor	(0.35)	0.33		(0.32)	0.33		(0.30)	0.51		(0.34)	0.52	
Rural area	0.16	0.20		0.17	0.19		0.30	0.31		0.36	0.30	
Female	(0.06)	0.31					0.09	0.45				
Education (base = higher education)												
No education	0.72	0.32	**				2.02	0.51	***			
Primary schooling	0.36	0.23					1.18	0.42	***			
Secondary schooling	0.21	0.23					0.44	0.46				
Female x Education (base = male with higher education)												
Male with no education				0.38	0.37					1.61	0.59	***
Male with primary schooling				0.28	0.23					1.20	0.43	***
Male with secondary schooling				0.22	0.24					0.37	0.48	
Female with no education				1.34	0.57	**				2.73	0.72	***
Female with primary schooling				0.48	0.57					0.56	0.79	
Female with secondary schooling				(0.53)	0.56					0.71	0.83	
Female with higher education				(0.41)	0.66					(1.23)	0.94	
Age (base = 18–40)												
41–65	0.05	0.18		0.04	0.18		(0.06)	0.34		(0.08)	0.34	
> 65	0.25	0.36		0.23	0.36		0.53	0.70		0.56	0.70	
Married	0.46	0.41		0.50	0.43		0.91	0.56		0.88	0.58	

Continued on the next page

Variable	Model 1						Model 2					
	Model 1a			Model 1b			Model 2a			Model 2b		
	Coef.	LSE		Coef.	LSE		Coef.	LSE		Coef.	LSE	
Household size	0.07	0.04	*	0.07	0.04	*	0.17	0.06	***	0.16	0.06	***
Livelihood activity (base = staple crop production)												
Other crop production	(0.34)	0.35		(0.30)	0.35		(0.27)	0.53		(0.22)	0.52	
Livestock production	(0.41)	0.23	*	(0.40)	0.23	*	(0.43)	0.35		(0.36)	0.35	
Fish production	(0.94)	0.46	**	(0.93)	0.45	**	(1.23)	0.75	*	(1.17)	0.72	
Other agricultural livelihood	(0.31)	0.56		(0.30)	0.56		0.83	0.74		0.96	0.73	
Nonagricultural livelihood	0.06	0.25		0.05	0.24		(0.15)	0.36		(0.08)	0.36	
No income	(0.22)	0.61		(0.28)	0.63		(1.72)	1.53		(1.72)	1.53	
Shock	1.18	0.19	***	1.19	0.19	***	0.86	0.29	***	0.88	0.29	***
Coronavirus disease	0.88	0.24	***	0.85	0.24	***	1.29	0.35	***	1.25	0.35	***
Constant	(2.07)	0.64	***	(2.09)	0.66	***	(5.57)	0.89	***	(5.53)	0.92	***

() = negative, * = $p < 0.10$, ** = $p < 0.05$, *** = $p < 0.01$, AEZ = agro-economic zone, Coef. = coefficient, LSE = least square estimates, CSHA = central and southern highland areas, NLPH = northern lowland paddy areas, NHUA = northern highland and upland areas, VP = Vientiane Plain.

Notes: Model 1a: N=1,632; F(23,1,625)=4.15; p-value = 0.00; Model 1b: N=1,632; F(26,1,600)=3.94; p-value = 0.00; Model 2a: N=1,632; F(23,1,603)=5.11; p-value = 0.00; Model 2b: N=1,632; F(26,1,600)=4.82; p-value = 0.00.

2C. Summary of Findings

Among the many food insecurity dimensions in the Lao PDR—agro-ecological, socioeconomic (i.e., educational attainment, gender, household size, and livelihood profile), and shocks such as the pandemic, terms of trade, and climate—several factors stood out as affecting food insecurity across the various econometric models. Table 2C summarizes the results, as verified by the literature. In sum, the most food-insecure households are in poor communities dependent on upland rice farming, notably in the northern highland and the upland agro-economic zones.¹ Higher education reinforces household food security, leaving households headed by women with no education behind. Diversifying livelihoods from staple crops to livestock and fish can strengthen food security. Movement restrictions during the pandemic crimped livelihoods for many, causing food insecurity in particular for those who lost jobs or were heavily affected by mobility restrictions.

¹ For analysis, the current study divides the Lao PDR into five agro-economic zones: Northern highland and upland areas, northern lowland paddy areas, Vientiane Plain, central and southern highland areas, and Mekong corridor.

Table 2C: Summary of Findings

Key Findings	Assessment Summary
Worse food insecurity in the mountains.	The northern highlands and upland areas suffer worse food insecurity than the Vientiane Plain. Highland communities broadly suffer food insecurity, but their particular indicators need to be considered to improve community food security. ^a Rural areas in northern Lao People's Democratic Republic (Lao PDR) suffer insufficient food stores and only minimal cash income or access to educational and medical resources. ^b To improve food security in northern Lao PDR, efforts should be made to raise income, improve road access, address the seasonality of food security by cushioning shocks and reducing postharvest losses, empower women to make more household decisions, and address behavioral constraints. ^c
Higher education consistently strengthens household food security.	Education empowers human capital and can improve income and thus food security. In some models, food security is strengthened not only by higher education but also by secondary and even primary education. Expanding and improving rural education is crucial to boosting household income and food security in the Lao PDR—and for strengthening sustainably and biodiversity, as education can reduce dependence on forest and water resources. ^d
Households headed by men or women with no education more vulnerable to food insecurity.	As men in Lao PDR farm communities are more likely than women to have some education other than religious training, lack of education as a variable causing food insecurity particularly affects households headed by women. ^e The way to narrow the gender gap in food security is to enhance the educational attainment of women and girls, among other gender-based interventions.
Larger households more food insecure than smaller ones.	The literature from many countries shows a large number of children significantly worsening household food insecurity. ^f While a large household can provide many hands for farm chores, large family size seems to increase consumption and expenditure even more. This was evident in the Lao PDR, particularly in Khammouan. ^g
Food security strengthened by diversification toward livestock and fish.	Most livestock products in the Lao PDR come from smallholder farmers who practice indigenous livestock rearing without inputs, which often translates into inadequate nutrition, minimal animal health care, and low output. Livestock has potential to reduce poverty among upland farmers and improve their food security, but only if quality and food safety standards are met, livestock disease is controlled through effective vaccination programs, and cattle and buffalo are more effectively fattened in fattening stalls, rather than left free-range. This would allow upland farmers to meet rising domestic demand for animal products in the Lao PDR and for export, especially to the People's Republic of China, Thailand, and Viet Nam. Agricultural diversification could help the Lao PDR cope with external shocks to food security.
Worsening food insecurity for those who lost their jobs in the pandemic.	Most COVID-19 restrictions limited movement, sometimes inducing product scarcity, price hikes, and the closure of food markets or other businesses such as restaurants, slaughterhouses, food processors, and dairy cooperatives. The closure of international borders decimated tourism and trade, worsening unemployment. Consumer price inflation was the top reason households in the Lao PDR cited for their struggles to meet food needs during the pandemic. ^h Such price shocks directly affect purchasing power and agricultural production.

^a B. Limnirankul, P. Promburom, and K. Thongngam. 2015. Community Participation in Developing and Assessing Household Food Security in the Highlands of Northern Thailand. *Agriculture and Agricultural Science Procedia*. 5. pp. 52–59. <https://doi.org/10.1016/j.aaspro.2015.08.008>.

^b M. S. Roberts. 2015. Understanding Farmer Decision Making in Northern Lao PDR. *Culture, Agriculture, Food and Environment*. 37 (1). pp.14–27. <https://doi.org/10.1111/cuag.12044>.

^c P. Santos et al. 2022. Improving Food Security in the Northern Uplands of Lao PDR: Identifying Drivers and Overcoming Barriers. Final Report. Canberra: Australian Centre for International Agricultural Research. <https://www.aciar.gov.au/sites/default/files/2022-07/ASEM-2012-073-Final-Report.pdf>.

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^d T. T. Nguyen, T. L. Do, and U. Grote 2018. Natural Resource Extraction and Household Welfare in Rural Laos. *Land Degradation & Development*. 29 (9). pp. 3029–3038. <https://doi.org/10.1002/ldr.3056>.

^e Lao Statistics Bureau. 2021. [The 3rd Lao Census of Agriculture 2019/2020 Volume 1](#). Vientiane.

^f E. Grimaccia and A. Naccarato. 2019. Food Insecurity Individual Experience: A Comparison of Economic and Social Characteristics of the Most Vulnerable Groups in the World. *Social Indicators Research*. 143. pp. 391–410. <https://doi.org/10.1007/s11205-018-1975-3>.

^g P. Phami et al. 2020. Exploring the Determinants of Food Security in the Areas of the Nam Theun2 Hydropower Project in Khammuan, Laos. *Sustainability*. 12 (2). p. 520. <https://doi.org/10.3390/su12020520>.

^h J. R. Head, Phetsavanh Chanthavilay, Helen Catton, Ammaline Vongsitthi, Kelley Khamphouxay, Niphone Simphaly. 2022. Changes in Household Food Security, Access to Health Services and Income in Northern Lao PDR during the COVID-19 Pandemic: A Cross-Sectional Survey. *BMJ Open*. 12 (6). e055935. <http://dx.doi.org/10.1136/bmjopen-2021-055935>. Source: Authors.

3. Six-Pillars of Food Security: Availability, Accessibility, Utilization, Stability, Agency, and Sustainability

Food security issues in the Lao PDR are linked with macroeconomic challenges and sectoral issues over the short and long term. To understand the multiple dimensions of food security in the country, a review is undertaken of trends related to the availability of sufficient quantities of food, how accessible it is to the population, its utilization to support a nutritious diet, and its adequacy of supply at all times. In addition, issues of agency are examined, along with consideration of sustainability, including the long-term adaptive ability of food systems provide for future generations. The analysis draws on data from the 2020 agriculture census, as well as high frequency surveys in 2023 and time series data over the last two decades.

Agricultural output has moderated. In food availability, time series data show that the volume of cereal production, particularly rice, has been decreasing, while livestock production has increased (Figure 3). Crop exports have also grown, particularly cassava, banana, and coffee (Figure 4). The supply of food to meet daily calorie requirements is adequate, but diet quality is a concern, with nutritious foods and healthy diets are beyond the reach of most. In 2020, the share of the population who could not afford a healthy diet was 74.3%.²

² See Global Alliance for Food Security. Global Food and Nutrition Security Dashboard: <https://www.gafo.info/country-profiles/?state=Advice&country=LAO&indicator=IPCC> (accessed 7 November 2023).

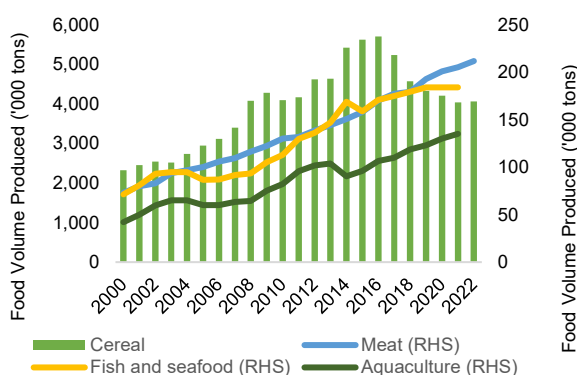
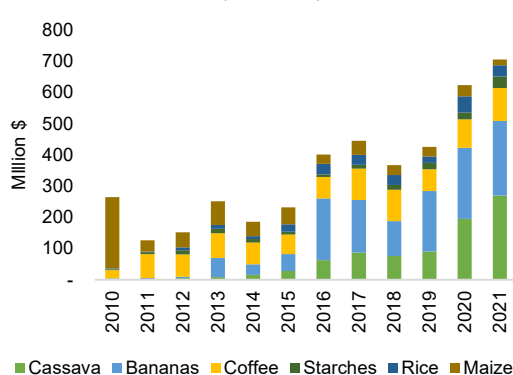
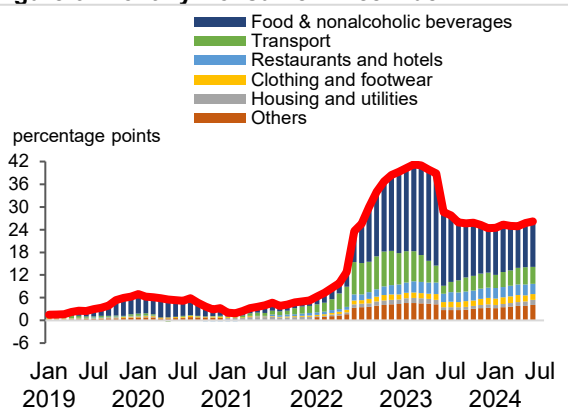
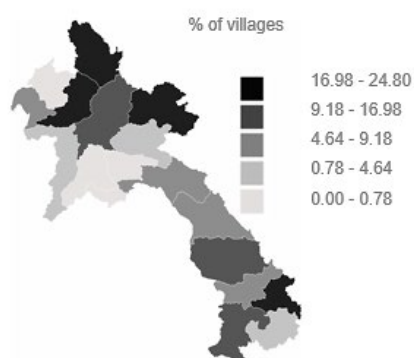


Figure 4: Value of Major Agricultural Exports
(\$ million)



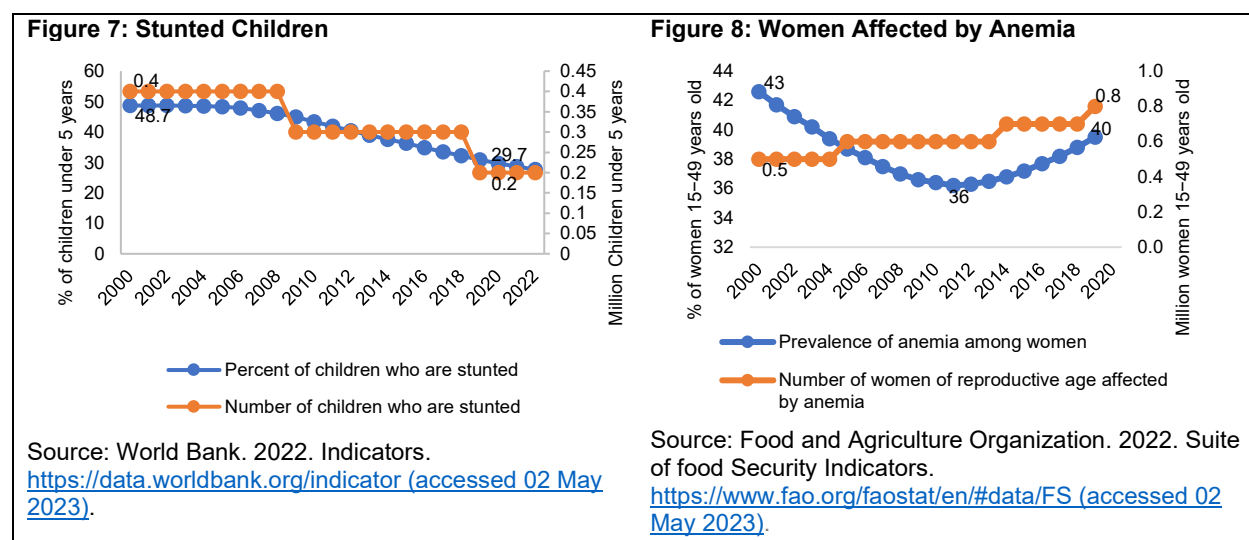
Source: United Nations. 2022. UN Comtrade database.
<https://comtradeplus.un.org>.

Food accessibility in the Lao PDR is hampered by inadequate roads and access to markets, particularly among rural villages (Figure 5). A lack of credit remains a key constraint on agriculture. High inflation has affected the cost for agricultural inputs for farmers and food prices for almost all Lao families, exacerbating food accessibility and increasing risk of undernourishment (Figure 6). Food security has been worsened by macroeconomic instability linked to currency depreciation and high inflation that increased prices for agriculture inputs and food items.



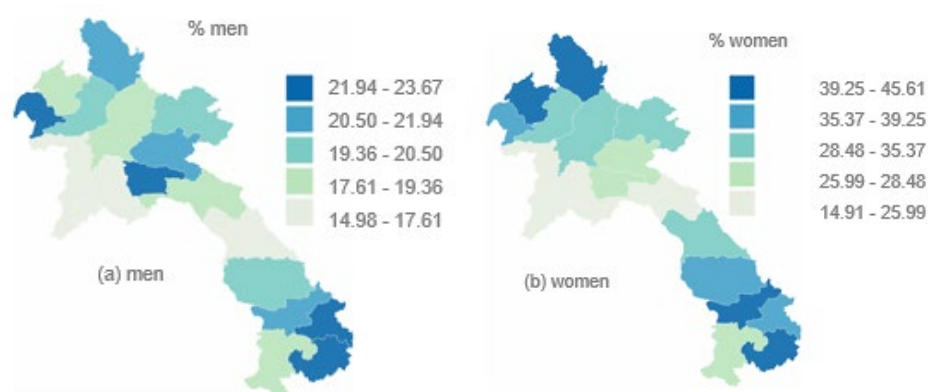
Source: Lao Statistics Bureau. 2021. *The 3rd Lao Census of Agriculture 2019/2020 Volume 1*. Vientiane; Lao Statistics Bureau. 2023. *Consumer Price Index*. Vientiane.

One in three children under 5 years old is stunted, and almost half of women of reproductive age suffer anemia. Food utilization is a serious concern in the Lao PDR, with poor health outcomes representing losses to human capital. Wasting, stunting, and being underweight are common conditions caused by malnutrition, with the incidence of stunting in the Lao PDR the highest in the Greater Mekong Subregion (Figure 7). Few targeted social assistance programs exist to address these problems. Meanwhile, obesity and overweight are worsening problems affecting both children and adults. Moreover, almost half of women of reproductive age in the Lao PDR suffer anemia (Figure 8). Women's food security, including micronutrient intake, is compromised by poor access to productive resources and maternal health-care services. Scant social assistance increases the risk of food insecurity, especially for the poor, households headed by women, and other vulnerable populations. Deficits persist in safely managed drinking water supply and sanitation services.



Inequality is a major issue, with women less educated than men and having less access to and control over productive resources. Women's empowerment is a major challenge for agriculture, as fewer farmwomen than men have control over productive resources, even though almost half of the agricultural workforce is female. Farmwomen have lower educational attainment than men, and gender gaps in education tend to worsen food insecurity (Figure 9). Approximately one-third of women have not attended school at all, but only one-fifth of men. Low educational attainment in mothers is concerning as it is associated with food insecurity and child undernutrition (Hwang, Lee, and Yang 2020).

Figure 9: Men and Women Farmers with No Formal Education (%)



Note: The boundaries, colors, denominations, and any other information shown on this map do not imply, on the part of the Asian Development Bank, any judgment on the legal status of any territory, or any other endorsement or acceptance of such boundaries, colors, denominations, or information.

Source: Lao Statistics Bureau. 2021. *The 3rd Lao Census of Agriculture 2019/2020 Volume 1*. Vientiane.

Agricultural productivity is constrained by insufficient irrigation and high dependence on rivers to supply water. Food stability has declined. Good agricultural land is in short supply, and progress on expanding irrigation has been slow (Figure 10). Food stability has also been affected by the high dependence on streams, rivers, and lakes as irrigation sources (Figure 11). Farmers use machinery but have yet to shift to a more extensive suite of modern technologies. The sustainability of food security is affected by the high share of land with small farms that are more likely to plant temporary crops for subsistence (Figure 12).

Figure 10: Agricultural Land and Percentage Irrigated

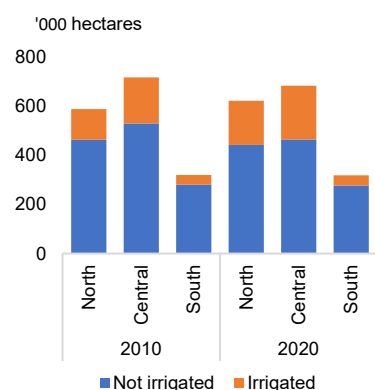


Figure 11: Farm Households Using Streams, Rivers, and Lakes for Irrigation (%)

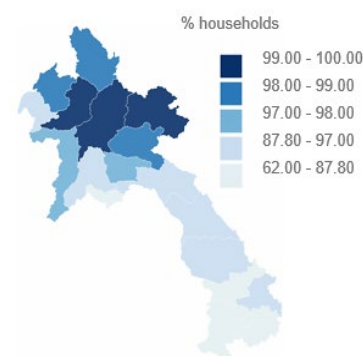
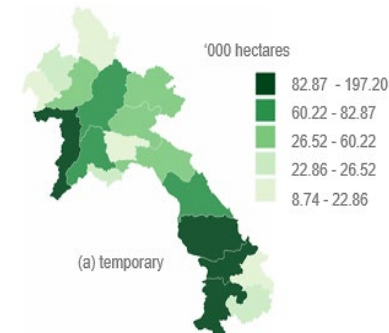


Figure 12: Land Area under Temporary Crops ('000 hectares)



Note: The boundaries, colors, denominations, and any other information shown on this map do not imply, on the part of the Asian Development Bank, any judgment on the legal status of any territory, or any other endorsement or acceptance of such boundaries, colors, denominations, or information.

Source: Lao Statistics Bureau. 2021. *The 3rd Lao Census of Agriculture 2019/2020 Volume 1*. Vientiane.

More than half of farm households have been hit by disasters. With more than half of farm households affected by natural hazards annually, food production and supply per capita are becoming more volatile (Figure 13). These events include flooding, drought, pest infestations, and animal disease, the latter of which is worsened by low rates of livestock vaccination. Two-thirds of cattle and buffalo are not vaccinated, and vaccination rates are much lower for pigs, goats, and poultry (Figure 14). With high-dependence on climate-sensitive natural resources along with low climate adaptive capacity and frequent natural hazards, climate risk is a major concern. Food sustainability has been further weakened by the pandemic, which highlighted strong links between human health, animal health, and environmental health. It has been weakened further by macroeconomic instability, which has been linked to food inflation.

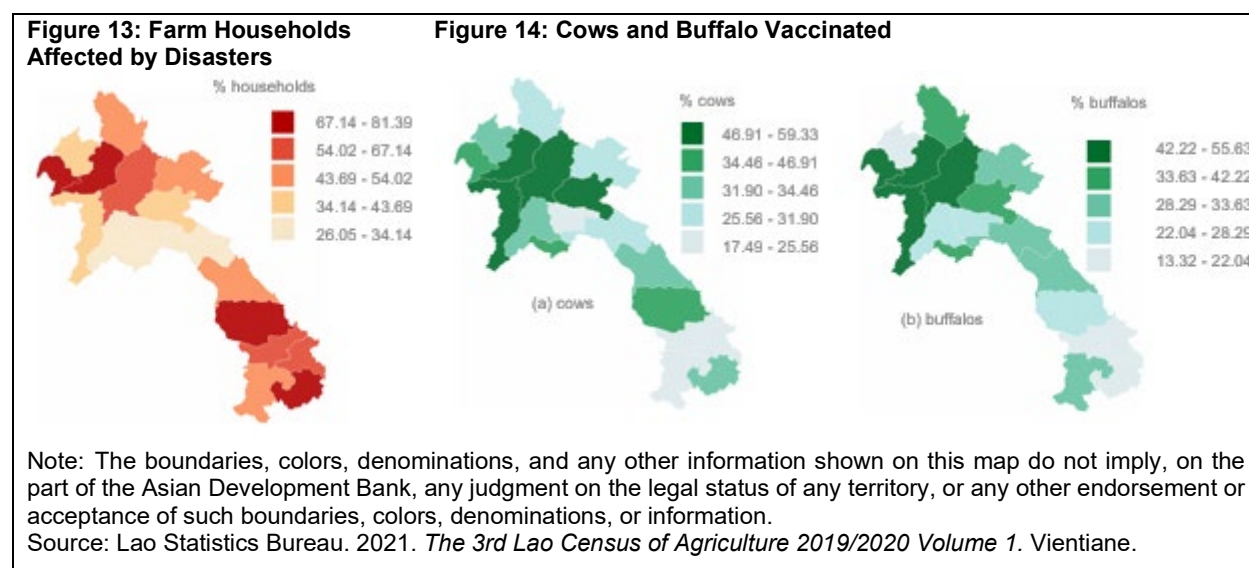


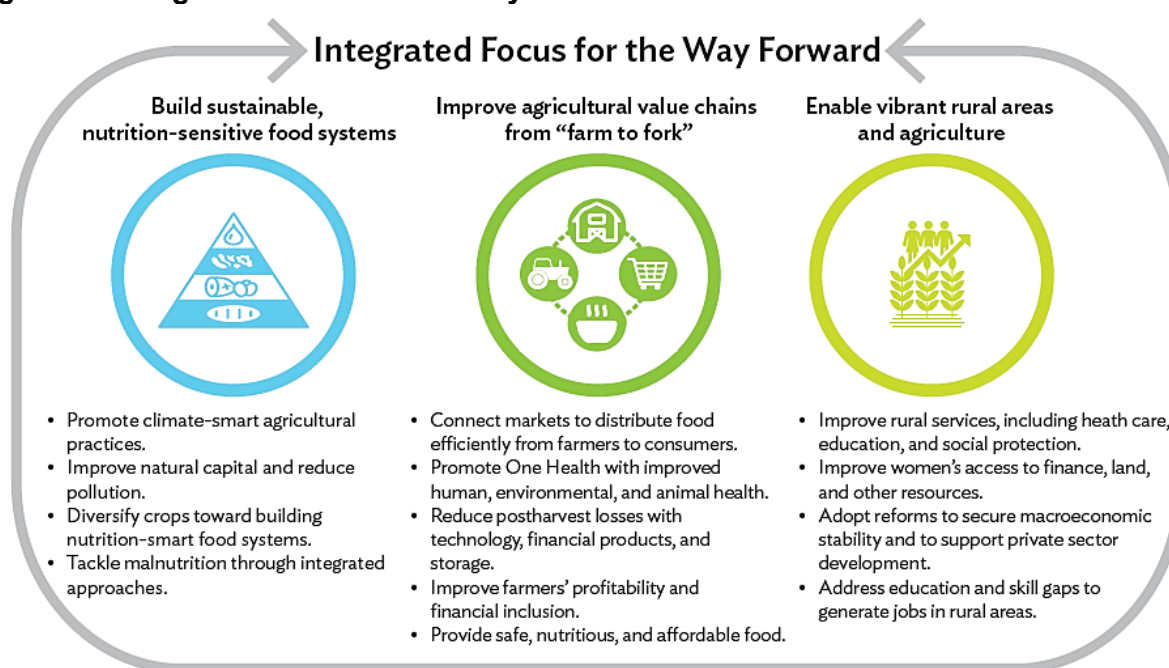
Figure 15: Food Security Challenges in the Lao People's Democratic Republic

1. Availability	2. Accessibility	3. Utilization	4. Stability	5. Agency	6. Sustainability
<ul style="list-style-type: none"> • Agriculture productivity • Food production • Healthy diet 	<ul style="list-style-type: none"> • Market access • Input cost • Access to finance 	<ul style="list-style-type: none"> • Malnutrition • Social assistance • Public health 	<ul style="list-style-type: none"> • Macroeconomic management • Price volatility • Infrastructure deficits 	<ul style="list-style-type: none"> • Education and training • Women's empowerment • Access to services 	<ul style="list-style-type: none"> • Climate risks • One Health • Sustainable resource management

Source: Authors.

Growth in agriculture is seen to advance food security and nutrition, which is a top priority. Advancing agriculture growth and food nutrition goals requires that the country address multiple pressing issues. The most urgent challenge is addressing the country's economic and financial challenges in line with the vital five reforms for securing macroeconomic stability outlined in the "Reform Roadmap" (World Bank and ADB 2021). Following this, there are both new challenges and long-standing problems, such as infrastructure deficits, scant technical knowledge, and underdeveloped agricultural extension systems, which require attention through a range of public policy interventions and market-based solutions. As food insecurity is multidimensional, progress is needed on all six pillars—availability, accessibility, utilization, stability, agency, and sustainability—and should be presented as integrated solutions (Figure 16).

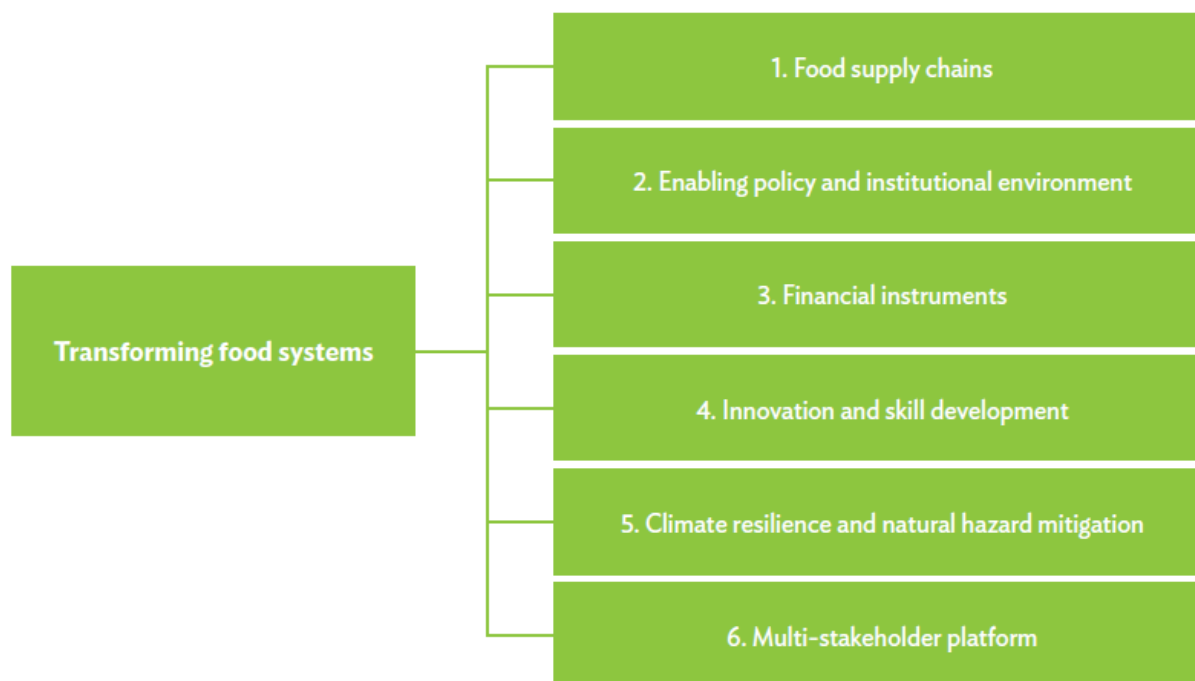
Figure 16: Integrated Focus for the Way Forward Areas



Source: Authors.

Sustainable, nutrition-sensitive food systems. A broad set of measures is required to transform and scale up food systems in the Lao PDR (Figure 17). First, holistic solutions covering entire food supply chains should be designed, from input supply and production to marketing, processing, and logistics. Second, support should be provided to create a policy and institutional environment that enables food system improvement, with appropriate incentives and services to boost food availability, access, utilization, and stability, while ensuring improved nutrition, environmental sustainability, climate resilience, and consumer health. Third, financial instruments are needed to unlock private investment in sustainable and resilient food systems by financing producers, enterprises, and agribusinesses along the supply chain. Fourth, support is required to promote innovation and skill development for clean, resilient, and diversified agricultural systems and sustainable food supply chains. Fifth, instruments are required to improve climate resilience and mitigate natural hazards for all supply chain actors. Finally, a multi-stakeholder platform should be established to transform food systems through joint action by the government, development partners, the private sector, technology providers, and community organizations representing farmers.

Figure 17: Measures to Transform and Scale Up Food Systems



Source: Authors.

Agricultural value chains from farm to fork. Support for structural change ranges from production and productivity measures to addressing road and irrigation infrastructure deficits and investing in digital technology and financial products for agriculture. Also needed is investment in animal health that will improve veterinary services and develop livestock value chains. Improved food security will come through strategies to enhance climate and natural hazard resilience, promote a circular economy, and improve waste management.

Vibrant rural areas and agriculture. It is critical to scale up social assistance to vulnerable segments of the population to meet their immediate needs. Tackling malnutrition and undernourishment will require an integrated approach and inclusive and pro-poor policies implemented through stronger social assistance programs and investment in primary health care. Objectives to enhance resilience in agricultural communities include increased purchasing power for the rural poor, capacity building and empowerment for women, and improved access for women to resources and technologies.

Better monitoring of food security. Finally, because the food security situation in the Lao PDR can change quickly, it is important to improve the monitoring of it. Rapid response requires more detailed analysis and inquiry into wet season production and harvests, as well as follow-up surveys of the state of agriculture and food security in the winter dry season, both disaggregated by gender. Moreover, food security indicators need to be presented in a dashboard that informs countercyclical policy responses. In conjunction with these initiatives, rapid response coordinated by the government with support from international development agencies would avoid or mitigate food crises and reverse worsening food insecurity. Such support could include investment in critical infrastructure; clean, green, and productivity-enhancing technology; human capacity development; and social support systems. This integrated approach is vital to achieving the goals of zero poverty, hunger, and food insecurity.

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Strengthening Food and Nutrition Security in the Lao People's Democratic Republic

This paper advances understanding of food security and nutrition in the Lao People's Democratic Republic. Analyzing food security across six pillars—availability, accessibility, utilization, stability, agency, and sustainability—it outlines an agenda for responding to challenges with robust solutions.

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