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Policy Brief
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FOOD SECURITY PROGRAM

VALUE CHAIN GOVERNANCE FOR FOOD AND NUTRITION SECURITY

In Different Food Environments in the Northern Provinces, Philippines

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INTRODUCTION

Food insecurity is persistent not only in the Philippines, but also globally. It is expected to continue if nothing drastic is done at present. It is determined by the food system through the food cycle's five components: production, processing, distribution, retail, and consumption. A food system "*refers to all the elements and activities related to producing and consuming food, and their effects, including economic, health, and environmental outcomes. Food systems fulfil many important functions, but at their core are three essential tasks: ensuring food security and nutrition for a growing population, supporting the livelihoods of millions of people working in the food supply chain, and doing so in an environmentally sustainable way*" (OECD n.d.).

Food systems are complex because food commodities are seasonal, highly perishable, and bulky. Food production areas are mostly in the hinterlands, further complicating the distribution function of the system. Within a food system are food environments composed of physical, economic, political, and social contexts that influence the people's food decisions. This indicates that food environment includes the whereabouts of food purchase and consumption including information and promotion related to food (Constantinides et. al. 2021).

Food system intricacies are better understood through food value chain analysis (FVCA). A food value chain is

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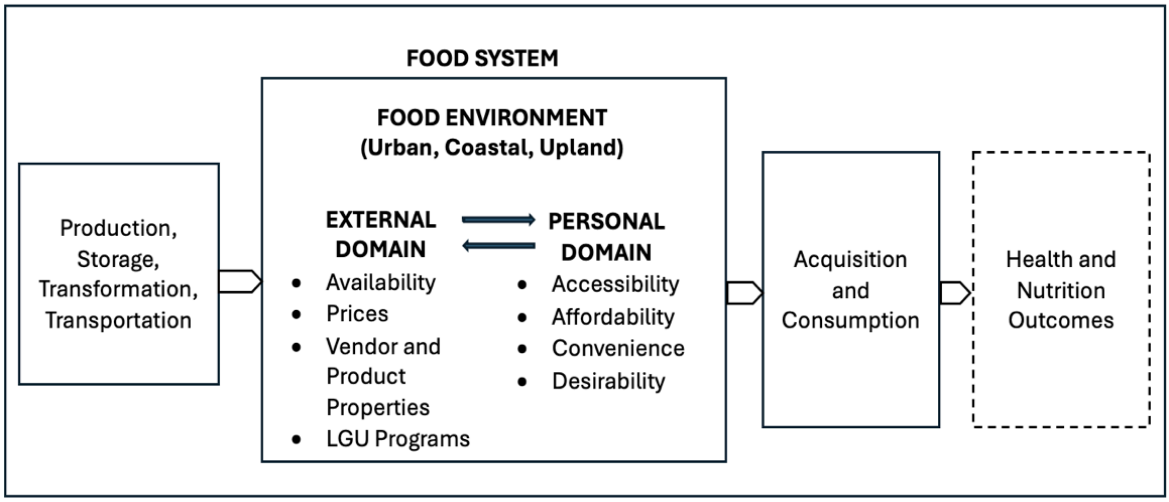
a series of activities that add value to the food product to satisfy customer needs and wants. It can help pinpoint the systems' bottlenecks for corrective strategic actions. In FVCA, food system governance (FSG) is also investigated. FSG is composed of procedures and actors that influence decision-making and activities concerning production, distribution, and consumption of food (Béné, Prager, et al. 2019 as cited by Vignola, et al. 2021). It is a complicated process of providing food, which has direct and indirect environmental consequences that impact the jobs and livelihoods and equity issues transcending local and national boundaries, oftentimes reaching international spaces (Vignola et al. 2021).

Food systems are failing but the reasons for such failure are yet to be fully dug up (Béné 2019), with targeted solutions and policy instruments remaining elusive. FSG is concerned with the process where members of a community exchange views, pursue, and weigh up collective priorities to promote collaboration and understand the attendant trade-offs. Within food environments represented by the coastal, upland, and urban communities analyzed in this study, better understanding of variations in food system governance could be arrived at in the interest of ensuring the attainment of food and nutrition security.

This policy brief is anchored on the food system and food environment interface presented by Turner et al. (2018), which was modified to contextualized this study. The food environment is subsumed within the wider scope of a food system, which is composed of two domains – external and personal, with one influencing the other. These two domains have subdomains linking food value chains, food environments, and food choice resulting to diets that affect nutrition and health outcomes. External environments are usually beyond the control of individuals, but they represent opportunities and constraints that sway food choices. These are expected to be inherently different in the three types of communities (urban, coastal, and upland) considered in this paper. The sub-domains of external environment include availability, prices, vendor and product properties, and programs of local government units (LGU). Personal domain, meanwhile, involves individual-level stimuli of food choice such as accessibility, affordability, convenience, and desirability. Based on their own personal circumstances, choices also vary within urban, coastal, and upland communities primarily because their physical (land) properties are differentiated. Further, the two domains are mutually reinforcing (Figure 1).



■ **Figure 1.** The food environment as an interface within the wider food system. Source: Modified from Turner et al. 2018

METHODOLOGY

A total of 180 households[4] in three communities consisting of 60 each from coastal, urban, and upland areas were interviewed from August 18 to September 17, 2024. Food governance data were collected through a structured questionnaire consisting of 15 indicator statements divided unequally with identified food system

4 All respondents provided consent in taking part in the completion of the survey. They were assured of their anonymity in the outputs and confidentiality of the data that they will provide for this study.

actors. For these statements, respondents were asked to indicate their responses from a five-point Likert agreement/disagreement scale (1=strongly disagree and 5=strongly agree). Mean score was computed per actor and then ranking was performed with the one having the highest score ranked as first. Socio-economic data collected were subjected to descriptive analysis using means, frequencies and percentages, and graphs. Value chain mapping and Geographic Information System (GIS) mapping were performed. GIS mapping focused on production sites and infrastructure relevant to the food system's functioning. Based on the number of retail food establishments and their classifications, the retail food establishment index by food environment was computed. Establishments selling healthy food items such as fresh produce, dairy products, basic household food items, among others, were considered healthy options. Whereas convenience stores that offer wide array of choices, majority of which are "junk" foods, were classified as "unhealthy" options. The Retail Food Establishment Index (RFEI) was computed by dividing the number of unhealthy food establishments by the number of healthy food establishments within the area. A lower ratio is desired.

Determination of household diet diversity score (HDDS) involved the recall of meals or food taken in the last 24 hours. Twelve major items were grouped into the GO, GROW, and GLOW foods. A mention of a food item within the three major food groups gives the respondents a score of 1 such that the perfect HDDS is 12. Dividing 12 by 3 allows for the classification of the respondents into having the following HDDS: Low HDDS = 1-4; Moderate HDDS = 5-8; and High HDDS = 9-12. The RFEI and HDDS were matched, where a lower value for RFEI is desired versus a higher value for HDDS.

Existing Food Value Chains

GO, GROW, and GLOW foods were found to have almost identical value chains in the three study sites. Differences lie in varying actors and functions performed to enable their uptake at the consumption level. The food value chains begin with input provision, production, trading and distribution, processing, and consumption or utilization by the end-markets. For production, actors differed per environment and food group within diverse environments.

For processing, a few households claimed to engage in pickling to prolong the shelf-life of vegetables. In the coastal areas, fish and other seafoods are dried. There are also millers, bakeries, and food hubs. In terms of trading and distribution, the actors slightly differed by food environment. The urban community had more grocery stores, supermarkets, and online sellers. The coastal community had rolling stores as unique actors. However, in the upland community, both actors are absent.

Value chains are governed by different enablers to facilitate the availability, accessibility, and utilization of varied food items for prolonged periods. Among the important enablers are the LGUs where different food environments operate. Going back to food system/food environment espoused by Turner et al. (2018), enablers comprise the external environment that can hinder or facilitate food and nutrition security. By food groups, enablers also varied: for the GROW foods value chain, the added enablers are the Bureau of Fisheries and Aquatic Resources, Bureau of Animal Industry, and the NGOs focused on Animal and Fisheries Development.

Food Governance within the Food Value Chains

Food governance was analyzed through food system actors. It determined who among them play significant role in promoting food and nutrition security (Table 1). Schools were consistently reported as the one being the most influential in all the study areas with score ranging from 4.29 (upland) and 4.34 (coastal and urban). Respondents reported that schools teach the importance of gardening and related skills. Furthermore, nutrition education is promoted among households. These suggest a greater chance in the future of better informed community members on the importance of food and nutrition security and how to achieve it. Additionally, school feeding programs are being implemented.

The second most important actor differed between the upland community and its counterparts, as the former source food directly from the farmers. Those from the other two claimed to access food through the mobile *palengke*. For the third rank, the upland area is unique, with an emphasized role of family members in their food system. Indigenous communities value family cohesion to ensure that their culture and tradition are handed down to the next generation. The existing system also points to the primacy of women in deciding what food is to be eaten within the households, regardless of the type of food environment. Many indigenous cultures today feature women as the primary heads of households and leaders

within their communities, a role closely linked to food availability, access, and utilization (Kuhnlein 2018).

LGUs have also been important actors in food governance within urban and coastal communities, ranking third. However, it is only ranked fourth in upland communities (surpassed by family members). Among these LGUs, the implementation of national programs has been prominent. For instance, all the three communities have been implementing the National Feeding Program as mandated by Republic Act No. 11037 or the *Masustansyang Pagkain para sa Batang Pilipino* Act of 2018. LGUs are tasked to help in implementing a comprehensive National Feeding Program to address malnutrition among Filipino children. These are emphasized more during the country's Nutrition Month celebration. In some instances, LGUs become more creative by distributing pamphlets such as Diet Guides in the case of the upland community and in the urban area. This is not done, however, in the coastal community. All of them promote home gardening (backyard and vertical) by providing seeds, other inputs, and technical assistance. Edible landscaping is being recommended by the LGUs.

The mobile *palengke* is appreciated in the coastal community, but non-existent in the upland area mainly due to the relatively dispersed households and difficulty of transportation. Online sellers are also most appreciated in the coastal community, with households more physically accessible.

Table 1. Food systems actors in food governance, by food environment

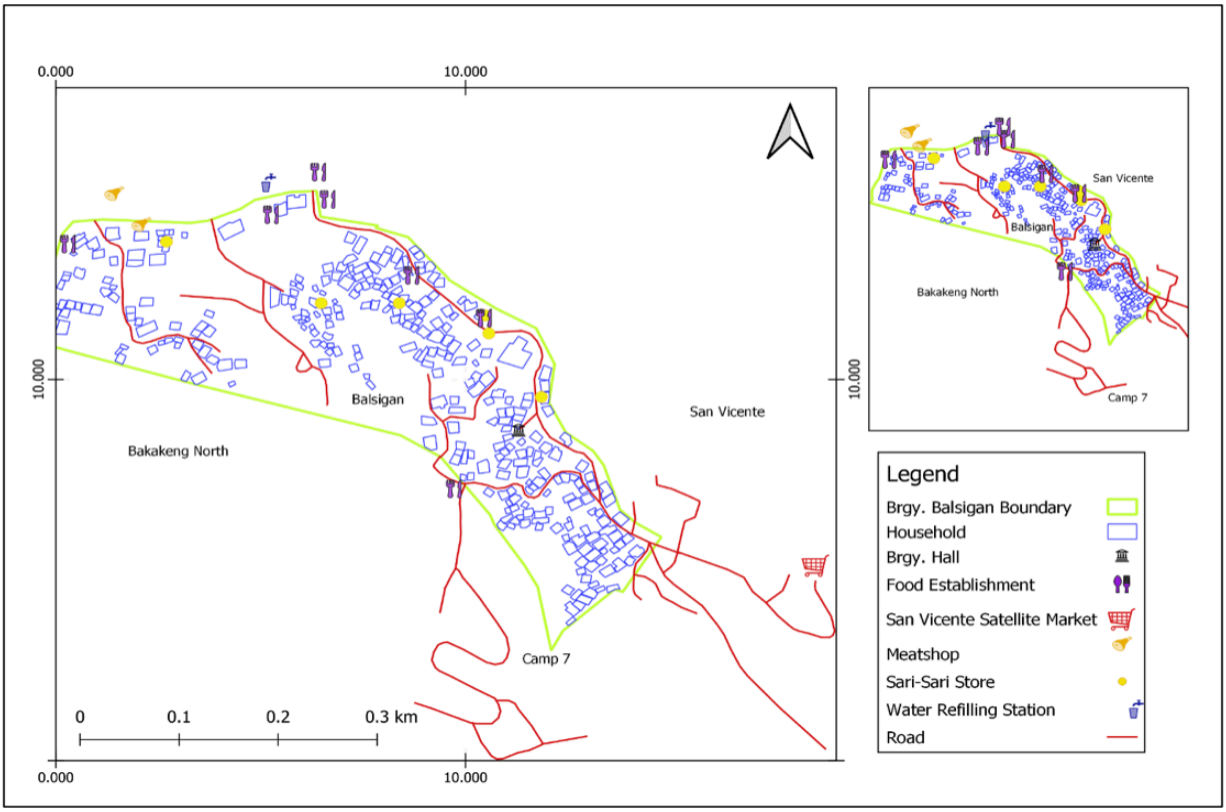
FOOD SYSTEM ACTORS	COASTAL	URBAN	UPLAND
Family Member	3.30 (4)	3.71 (4)	3.85 (3)
The mother is the food decision-maker in the household.	4.03	4.17	4.16
The father is the food decision-maker in the household.	3.05	3.73	3.86
The whole family (including children) decides collectively for household food.	2.82	3.22	3.53
Farmers	2.62 (6)	2.13 (6)	4.03 (2)
I buy food directly from the farmers.	2.62	2.13	4.03
Online Sellers	3.12 (5)	1.92 (6)	1.39 (6)
Online sellers of food have improved my access to food.	3.10	1.92	1.37
Payment for online sellers of food is also easy.	3.15	1.93	1.37
Mobile *Palengke*	4.12 (2)	3.83 (2)	3.37 (5)
Mobile *Palengke* improved my accessibility to food.	4.12	3.83	3.37
School	4.34 (1)	4.34 (1)	4.29 (1)
School children are being taught the importance of gardening and the skills related to it.	4.37	4.28	4.22
Nutrition education is being promoted among household heads/ members.	4.30	4.40	4.35
Local Government Unit	3.52 (3)	3.77 (3)	3.70 (4)
The LGU encourages backyard/vertical gardening by providing seeds and other inputs.	3.83	3.90	3.73
The LGU provides technical assistance for backyard/ vertical gardening.	3.20	3.67	3.67
Edible landscaping is being promoted by the LGU	3.17	3.67	3.75
Feeding programs for schoolchildren are implemented regularly in public schools.	4.07	3.84	3.73

FOOD ENVIRONMENTS AND FOOD AVAILABILITY AND ACCESSIBILITY

Figure 2 highlights the density of households within an urban (Balsigan) community, showing distribution of clustered households, road networks, and various food outlets and services such as *sari-sari* stores, meat shops, food establishments, water refilling stations, and public markets. The area has a well-connected road network, enabling people to go to external markets and access

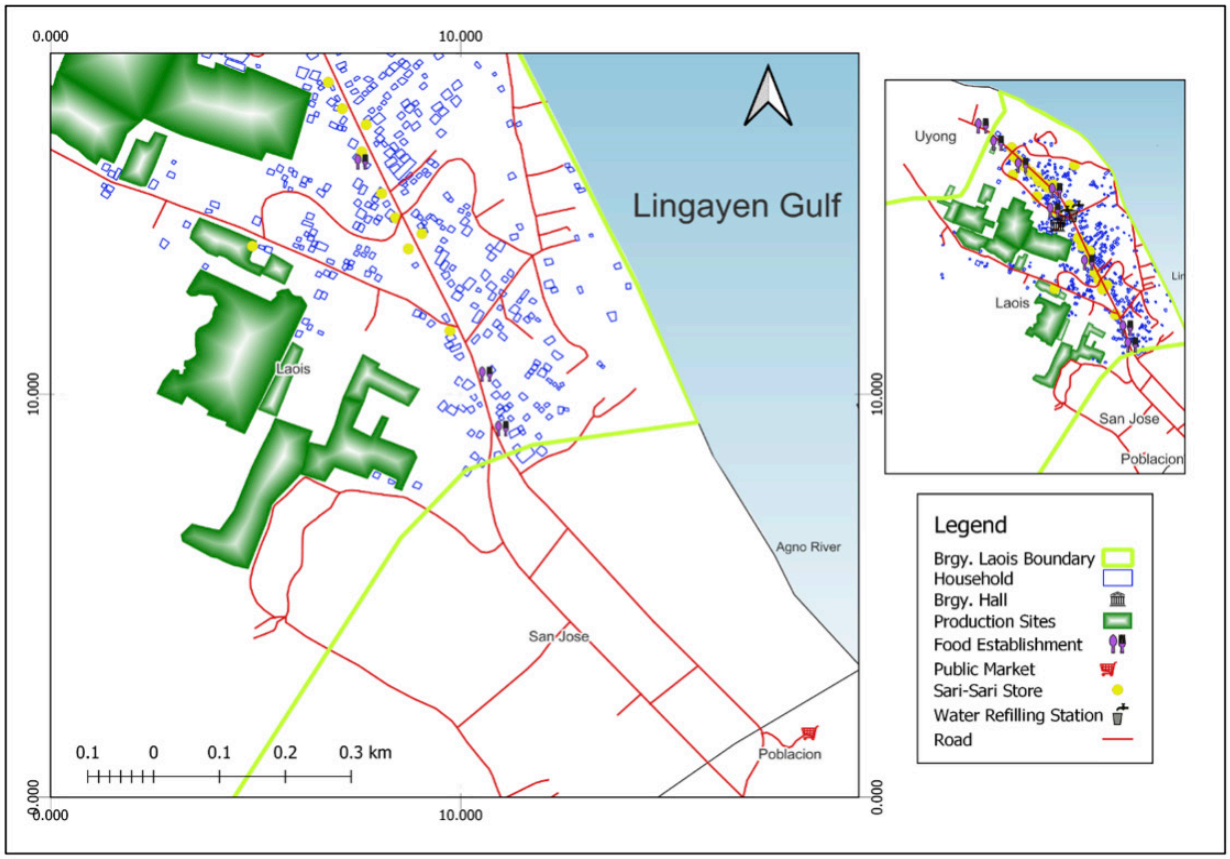
services like Foodpanda and GrabFood. Various food outlets contribute to dietary diversity, however, the absence of open spaces to grow fresh produce limits the capacity of the community to self-feed. Reliance on purchased food makes them vulnerable to economic shocks and supply chain disruptions. Respondents claim that the challenge is not the physical access to food, but the price of food items.

Contrastingly, Laois as a coastal community, has abundant natural resources and good infrastructure (Figure 3). Most production sites which are close to households, and proximity to Lingayen Gulf indicates the availability of agricultural and aquaculture products. The presence of *sari-sari* stores, water refilling stations, as well as a public market in the neighboring Poblacion, provide the community with basic needs that support food security.



■ **Figure 2.** Infrastructure Map of Brgy. Balsigan, Baguio City, Benguet (Project-generated map using GIS)

The existing road network also facilitates physical access to external markets. Yet, inadequate transport facilities and general difficulties in moving materials pose issues especially during weather disturbances which are prevalent in the area. While not as rampant as in urban areas, economic constraints also hamper food access because not every family can afford what are offered in stores. Similarly, even if seafoods and other local products with high nutritional values are available, there is no infrastructure for food processing that could prolong the supply and availability of highly perishable foods. It is notable, that relative to the urban, the coastal area is less reliant on external markets, suggesting the possibility of self-sufficiency with available high-quality fresh food and the potential to improve access, utilization, and stability for food and nutrition security.

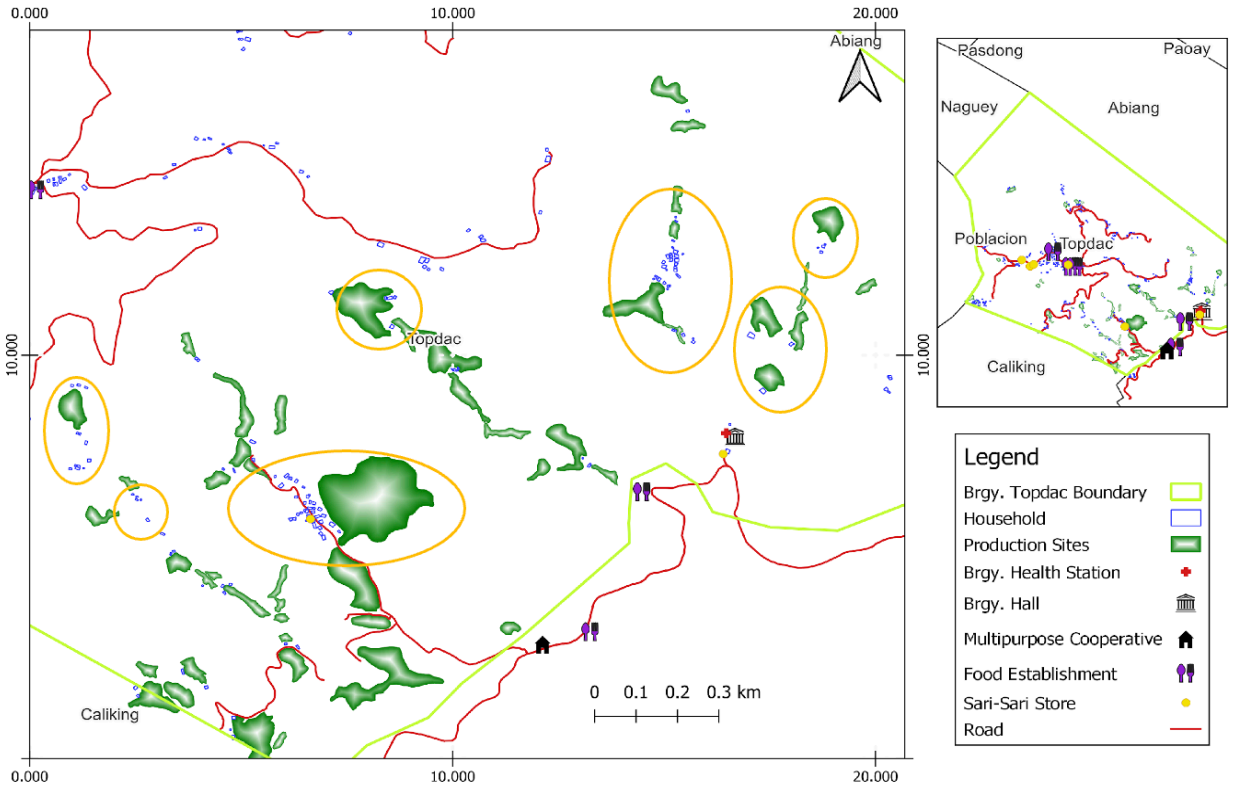


■ **Figure 3.** Production Site and Infrastructure Map of Brgy. Laois, Labrador, Pangasinan (Project-generated map using GIS)

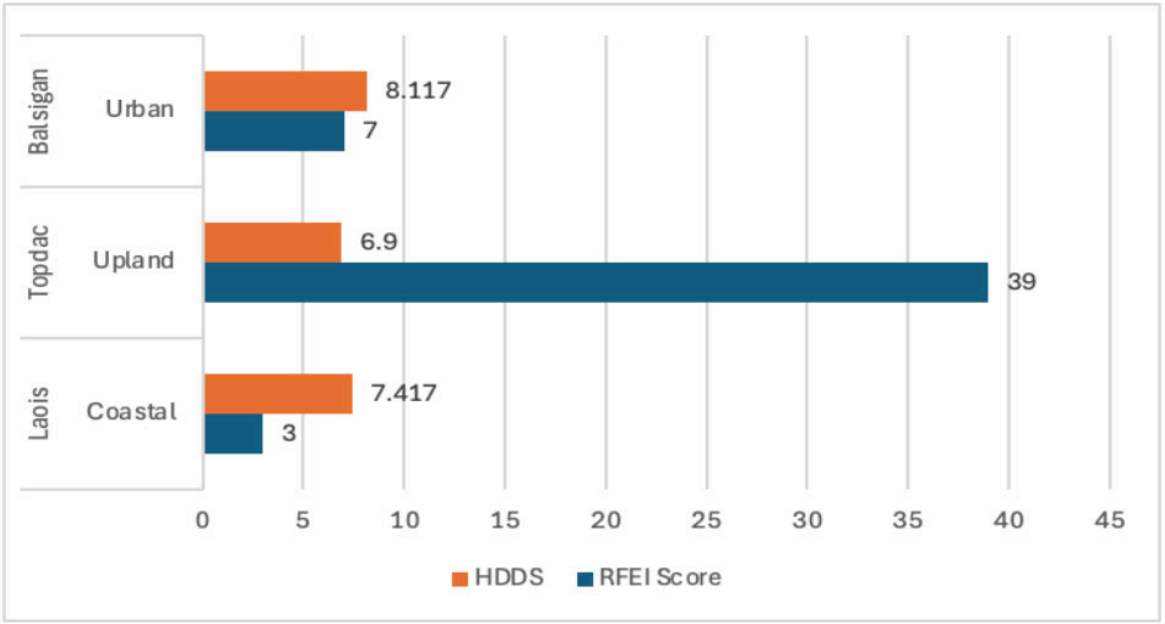
Brgy. Topdac in Benguet is an upland area distinguished from urban and coastal communities by its scattered households that cluster near food production sites (those encircled orange in Figure 4) in response to logistical challenges impeding transportation and transfer of food from the source to the consumption sites. A notable feature is collective or communal land ownership among indigenous peoples, making it easier for them to set up their own production sites nearer their dwellings. This is in complete contrast with the private and exclusionary land ownership of urban and coastal areas. The map also shows key infrastructures such as health stations, barangay halls, multi-purpose cooperatives, groceries, sari-sari stores, and food outlets distant from residential areas (Figure 4). As a result, household diet diversity is lowest in this community.

RETAIL FOOD ENVIRONMENT AND DIET DIVERSITY

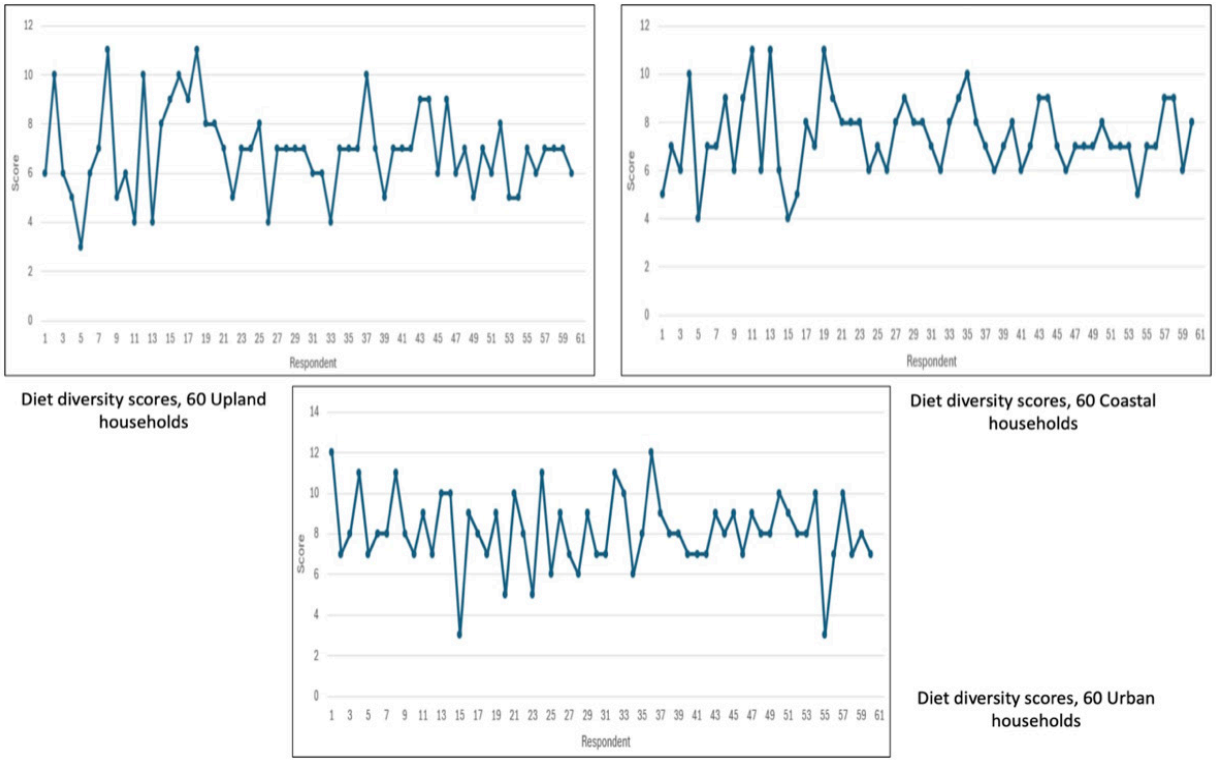
A negative relationship between HDDS and RFEI was found in the study areas. Due to many food sources, the urban community (Balsigan) had the highest HDDS (Figure 5) and second lowest RFEI. Contrastingly, the upland community (Topdac) had the lowest HDDS but the highest RFEI. One of the main reasons is the domination of food establishments in the area by *sari-sari* stores (33) that rarely offer fresh food items. There is also no water-refilling station in the community and wet market within the eight-kilometer radius of the center of the area, with the nearest about 31-33 kilometers away.



■ **Figure 4.** Infrastructure and Production Map of Brgy. Topdac, Atok, Benguet (Project-generated map using GIS)



■ **Figure 4.** Infrastructure and Production Map of Brgy. Topdac, Atok, Benguet (Project-generated map using GIS)



■ **Figure 6.** Household diet diversity score by food environment

CONCLUSIONS

It can be concluded that similar value chains are operational in all three food environments with minor differences in actors or operators (e.g., rolling stores and household participation in food production and processing). Also, food system governance is dominated by the school, LGU and family members, which is consistent with meta-governance framework mentioned by Vignola et al. (2021), focusing on the analysis of the "governance of governance" within the multi-actor processes such as those found in the identified food value chains.

In addition, HDDS is highest in urban communities and the most desired RFEI can be found in coastal areas. A negative relationship persists between HDDS and RFEI. Increased HDDS is possible if the number of unhealthy food sources can be regulated or if the number of healthy food suppliers can be increased. The findings are consistent with the food system/food environment framework developed by Turner et al. (2018), indicating that indeed a mutually reinforcing relationship exists between external domain represented by the different types of food environment and corresponding RFEI and personal domain represented by the HDDS.

POLICY OPTIONS AND RECOMMENDATION FOR FURTHER RESEARCH

Based on the existing food system governance, addressing food insecurity issues would require close coordination between LGUs and food and service providers (e.g., diverse food sources especially in the upland setting). The following are therefore recommended:

1. LGUs are recommended to be more aggressive and strategic in assisting the farmers, especially in Topdac, where household respondents claimed farmers as their second most important food source. There must be an ordinance issued institutionalizing the support of farmers, allowing them to diversify food production (e.g., provision of a variety of vegetable seeds and fruits seedlings). An ordinance should ensure that there will be corresponding

budget allocation for financing whatever assistance is targeted for the farmers.

2. For food provision, increasing the number of those providing healthy options should be incentivized. The possibility of setting up cooperative stores should be looked at especially for Topdac. Feelings of ownership and patronage are important for continued successful operations. A possible incentive is setting-up one-stop shops for enterprises venturing into food production and processing. This eases the process of doing business. Reducing the cost of getting permits can also encourage more private individuals into food production and processing.

3. There is also a need for coherent food security policies of LGUs to be closely communicated with schools, with the latter's high rank in food system governance in all the three food environments. Policy coherence could provide consistent and continuous support to school activities and programs related to food and nutrition security. Emphasizing the importance of food and nutrition security in school curricula and attendant activities should be accompanied by tangible outputs that will be visible examples of good food governance even among young children. Edible landscape gardening should be implemented in school premises.

4. Since the LGUs are among the most important actors in the food systems, it is recommended that they be consulted first in the process of crafting policies related to food security. The current practice involves LGUs implementing national programs, regardless of type of food environment, Based on the study results, within the food environment are external and personal domains that are mutually reinforcing. In this case, participatory bottom-up planning, beginning at the barangay level, should be practiced.

5. For further research, there is a need to study the possibility of promoting food sovereignty in Topdac. This is premised on the idea that the indigenous peoples in this community need to have their own diverse food sources within and among them. They also need to preserve their culture and values at the same time be responsible stewards of their ancestral land through their collective decisions.

ACKNOWLEDGEMENT

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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 been 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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