Sakata, Shozo ed. 2022. *Development of Inclusive Food Value Chain in the Mekong Region*. BRC Research Report. Bangkok Research Center. JETRO Bangkok / IDE-JETRO.

Chapter 1

Food Value Chain Inclusiveness in Agriculture and Rural Development: The Case of Northern Laos

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Abstract:
The enhancement of crop diversification and food value has a vital role in improving smallholder farmers' livelihoods, particularly in northern Laos. Luang Namtha is an early participant in trading agricultural and timber forest products with China. Farmers in this province have been expedient adopters of Farmer Production Groups (FPGs) and cross-border contract farming since the early 2000s. The survey results from the 2020 Sample Household Interview (SHI) indicate that participation in FPGs or food value chain inclusiveness with China benefits Laotian smallholder farmers through significant market accessibility, allowing them to generate more income from agricultural outputs for education, healthcare, and transportation to improve livelihoods. China is a major market of Lao commodities, expanding global food value chains in agricultural products; however, diversifying global value chains will alleviate risks that could arise with dominant trade partners.

Keywords: Food Value Chain, Agriculture, FPG, Rural, Laos

1. Introduction

The production of higher value-added agricultural products has been a developing trend in many countries of the Association of Southeast Asian Nations (ASEAN) through a series of activities, from production, processing, and distribution to products' delivery into consumers' hands, which is referred to as the food value chain (Deloitte, 2015; MAFF, 2015). In Laos, an agricultural products supply chain is at the early stage of development. A small scale of agricultural production can be considered subsistence

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production, and agricultural products are also supplied to the domestic market, including the provision of fruit, vegetables, meat, and aquatic products to local wet markets. In addition, supply chains can develop across different provinces within a country. For instance, vegetables or fish are transported from Pakse district, Champasak province in the southern part to Vientiane capital in the central region. In addition to the domestic market, Laos' food value chain is also connected to the regional market. For example, in Champasak, producers export agricultural products, such as cassava and cabbages, to Thailand. In the case of the north, local farmers sell agricultural products to Chinese buyers/investors, and also import agricultural inputs from China. Such supply chains have a vital role in local producers' income generation, particularly in relation to cross-border trade with China.

Increased trade with China has been a dominant factor in transforming the economy in northern Laos, specifically in the agricultural sector. Trade with China rapidly shifted subsistence agriculture to high-value commercial agriculture, increasing smallholder farmers' incomes by offering a large and stable market. As the world's second-largest economy, with continuous 9% annual growth in the last two decades, China has become a substantial market for exporting nations worldwide. As the world's largest importer, China's share of global imports rose sharply from 3% in 2000 to 16% in 2019 (UNCTAD, 2020). Since 2010, China has been the biggest trade partner of the ASEAN for 10 consecutive years (ASEAN Stats, 2021). The ASEAN was China's third-largest trade partner for seven straight years (China Daily, 2018). In 2020, the ASEAN was China's most significant trade partner with trade volumes hitting US$732 billion (Global Times, 2021). Although the COVID-19 pandemic restricted investment and trade, causing both the Chinese and global economies to contract, China's rapid purchasing power recovery has led to high consumption demand, including for agricultural products. This opportunity has allowed Laos and other countries, such as Myanmar and Vietnam (bordering China) to increase agricultural and food production to supply the emerging market. For example, there was a tenfold expansion in Laos' agricultural exports between 2008 and 2018. The main crops exported to China are Cavendish bananas, chilis, Chinese cabbage, maize, peanuts, pumpkins, onions, rice, sugarcane, and watermelons.

In northern Laos, participation in contract farming through Farmer Production Groups (FPGs) establishes an entrepreneurial culture in the agricultural sector, allowing farmers to participate in a new way of organizing farms and production and shifting to market-oriented perspectives, particularly regarding food value chain inclusiveness with China. As a result, FPGs facilitate supplies for members to support the same production

activity. It also provides an opportunity to access information, training, market, and credit, supported by the Northern Rural Infrastructure Development Sector Project (NRI)[2] under the Ministry of Agriculture and Forestry of Laos and the Asian Development Bank (Onphanhdala et al., 2016). Many farmers seized the opportunity to increase productivity and export more to China; however, not all farmers took the opportunity to obtain contracts for their production, and some rural households remained subsistence farmers without shifting to entrepreneurial production. This results in marked income inequality and other development issues that present potential risks for sustainable development in Laos' rural areas.

These circumstances present an opportunity to examine the impacts of participation in food value chain on smallholder farmers' livelihoods. This includes further investigation to shed light on the inclusiveness of food value chains and impact on rural development when engaging with Chinese agribusiness in northern Laos.

This research will integrate the quantitative and qualitative analyses, with additional results provided by direct observations. For the quantitative analysis, secondary data on investment and merchandise trade, particularly in high value added agricultural products, will be synthesized from various domestic and international sources, such as the Ministry of Planning and Investment, the ASEAN statistics database, the OECD database, and the UN Comtrade database. The research aims to uncover China's influence on the Lao economy, and its food value chain in particular. Additionally, a combination of secondary datasets of the 2020 Sample Household Interview (SHI) from the Northern Rural Infrastructure Development Sector Project (NRI Project) survey under the Ministry of Agriculture and Forestry (MAF), which is supported by the Asian Development Bank, will be employed for a descriptive analysis of local farmers' income level. The investigation will compare between FPG members and non-members in terms of income from agricultural sources and non-agricultural sources and expenditure. The study will focus on Luang Namtha province, where there is more extensive trade openness and varieties of agricultural products. For the qualitative analysis, the Key Informant Interview (KII) approach will be employed to elicit a deeper understanding of the food value chain in the northern provinces of Laos.

The background of the study was described in Section 1. Section 2 will provide an overview of Chinese investment in Laos and the current circumstances of Lao trade

[2] This project investigates agriculture and rural development in four northern provinces of Phongsaly, Oudomxay, Luang Namtha, and Bokeo.

with China, specifically regarding agricultural products. Original findings relevant to the food value chain in northern provinces from the KII and farm households' income analysis from the 2020 SHI are presented in Sections 3 and 4, respectively. Finally, a discussion and policy recommendations in Section 5 concludes.

2. China's Investment and Trade

2.1. Overview of Chinese Investment

Chinese foreign direct investment (FDI) outflow significantly increased following the official implementation of the Belt and Road Initiative (BRI) in 2013. The proportion of worldwide Chinese FDI accounted for around 9% in 2019, increasing from 2% in 2005 and 5% in 2013 (OECD, 2021). Several sectors were included, such as manufacturing, real estate, leasing, and business services. China is one of the top 10 FDI country sources in the ASEAN. The FDI flows increased from US$6,165 million in 2013 to US$17,515 million in 2017, accounting for around 11% of the ASEAN's FDI inflow (ASEAN, 2022). This proportion decreased to 5% in 2019, likely due to the reevaluation of the Chinese banking sector's lending practices, and the ratio of FDI from China to total inward FDI is small for the ASEAN (10% of total Chinese FDI outflow) (OECD, 2021). For other countries in regions like Laos, however, Chinese FDI outflow is substantial.

In the 1990s, China had a minor investment role in Laos. Chinese investment in the agricultural sector in Lao northern provinces emerged in the 2000s. A decade later, investments in the mining sector arose (Onphanhdala et al., 2016; Onphanhdala and Philavong, 2018). Table 1-1 clearly demonstrates the recent growth of the big three investors in Laos (China, Vietnam, and Thailand), which together accounted for more than half of total FDI inflow from 2010 to 2019. FDI inflow into Laos also had an increasing trend due to several joint agreements between Laos and these countries. The less diverse presence of investors by country implies that Laos' aggregate FDI inflow is more vulnerable to an economic downturn in just one or two of these countries (Onphanhdala and Philavong, 2018).

Table 1-1 Top Five Foreign Investors in Laos

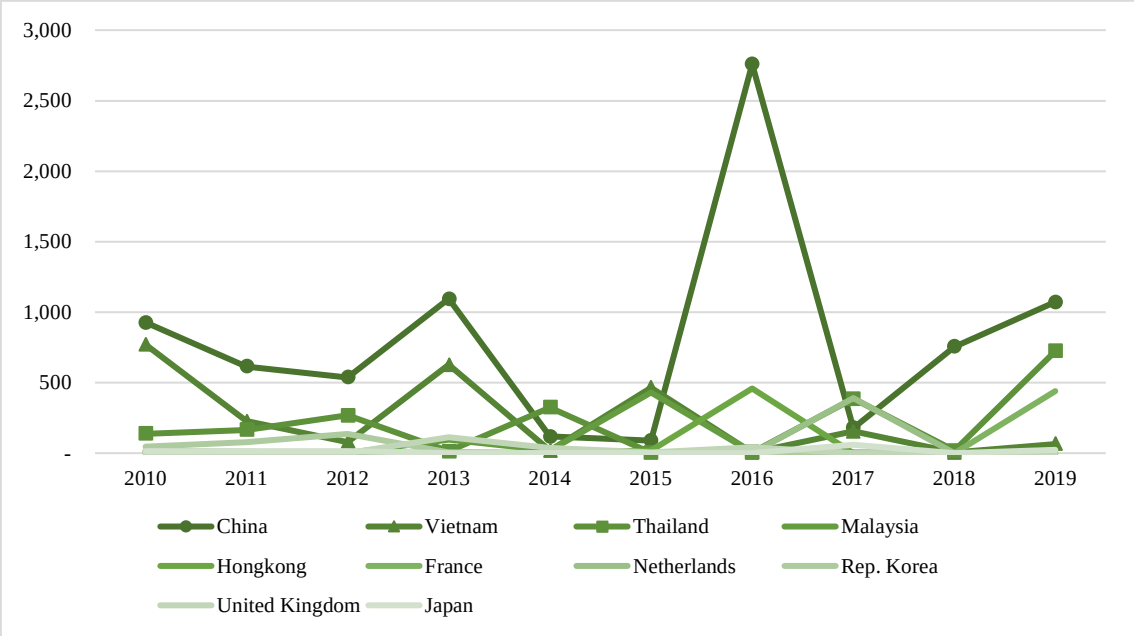
Rank	2010	2011	2013	2014	2015	2017	2018	2019
1	China	China	China	China	Vietnam	Nether lands	China	China
2	Vietnam	Vietnam	Vietnam	Thai land	Malay sia	Thai land	Thai land	Thai land
3	Thai land	Thai land	UK[a]	UK[a]	China	China	Vietnam	France
4	Rep. Korea	Rep. Korea	Malay sia	Vietnam	Hong Kong	Vietnam	–	Vietnam
5	Mali	Austr alia	Taiwan	Malay sia	UK[a]	Sweden	–	Japan

Source: Author's compilation referencing IPD (2021).

Remarks: [a] United Kingdom

Laos and China initiated diplomatic relations in 1961; however, Chinese FDI in Lao PDR is a more recent phenomenon that emerged in the late 2000s and after the BRI started, as noted previously, and primarily occurred in mining, electricity, agricultural, manufacturing, and construction sectors. It arose following the establishment of a comprehensive strategic partnership between the two nations in 2009 (Global Times, 2009). More than a quarter of approved accumulated investment values in Laos between 2010 and 2019 were from China. As shown in Figure 1-1, China is one of the top ten FDI inflow source countries to Laos. In the early 2010s, Chinese enterprises predominantly invested in minerals, agriculture, electricity generation, and rubber plantations. According to the Ministry of Planning and Investment (MPI) of Laos, its approved investment values from China were approximately US$2,078 million, with 247 projects, from 1 January, 2010, to 31 December 2012 (IPD, 2021). By sector, mining had the largest share, at almost 40%, followed by electricity (22%), agriculture (13%), and manufacturing (8%). Not surprisingly, in the mining sector, Chinese enterprises concentrated on copper, gold, and some silver ores, with 90% sharing dividends, as China produces about half of the world's metal (Ericsson et al., 2020). Chinese investors have invested heavily in agribusinesses in the north, specifically provinces that share international borders with China, since the 2000s through both verbal and written cross-border contract farming. The plantations included rice, corn, sugarcane, rubber, cassava, pumpkin, bananas, and vegetables (Onphanhdala et al., 2016).

Figure 1-1 Top 10 FDI Inflows to Laos, 2010–2019



Source: Author's compilation referencing IPD (2021).

2.2. Current Situation of Trade between Laos and China

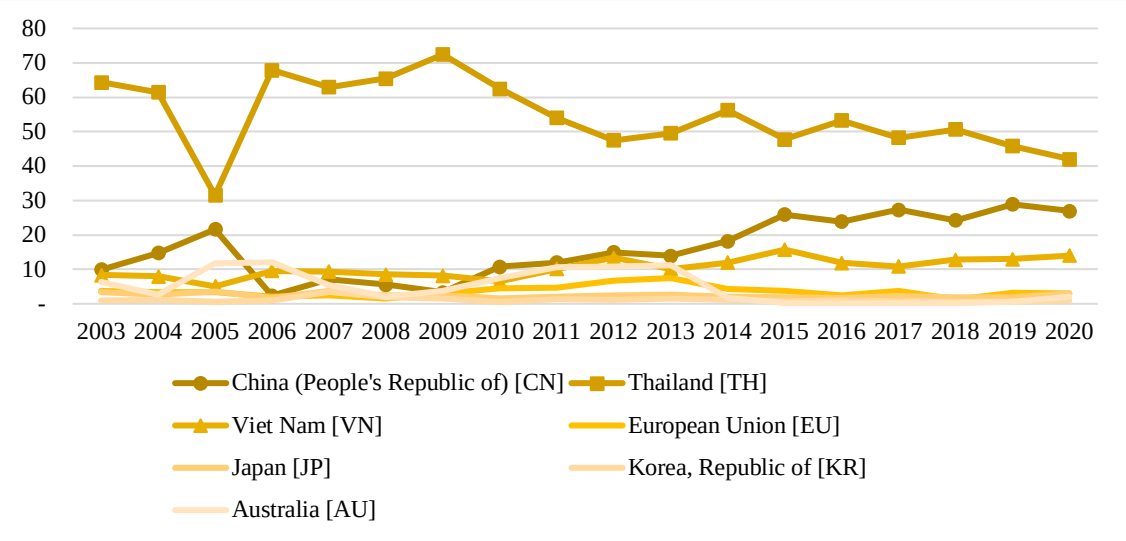
A decade after the *New Economic Mechanism*[3] was launched in 1986, Lao trade policy remained restrictive (Andersson et al., 2009). Laos' international cross-border trade in the 1990s was predominantly with Thailand and Vietnam, the nation's immediate neighbors, while trading with China was minimal. During 1990–1995, the agricultural sector contributed more than 50% of GDP and employed over 80% of the total labor force (Onphanhdala, 2009a & 2009b). In the early 1990s, the primary export product was hardwood, at a value of about US$32 million, accounting for around 30% of total exports. Notably, the proportion of the agricultural sector rapidly decreased with a shift to hydropower electricity generation in the late 1990s. The hydropower sector had an essential role in the Lao economy, as the government targeted increased export of electricity to meet the energy demands of immediate neighbors.

Since 2000, in addition to bilateral and multilateral trade agreements, the Lao government has sought to enhance its cooperation and regional integration, including

[3] The *New Economic Mechanism* is the adoption of economic reforms, from a centrally planned to a market-oriented system, in Lao PDR, which launched in 1986.

China. This consisted of the ASEAN–China Free Trade Area (ACFTA) in 2002 and the Agreement on Trade in Goods of the Framework Agreement on Comprehensive Economic Co-operation between the ASEAN and China signed in 2004 during the ASEAN–China Summit meeting in Vientiane. A reduction of tariffs on 90% of goods was implemented in 2015 for Lao exported products, including other agricultural product preferences when exporting to China, such as bananas, pumpkins, rubber, sugarcane, and watermelons. Before 2013, the officially recorded bilateral trade between Laos and China was relatively small but formal and informal cross-border trade emerged in the late 2000s, particularly in Lao northern provinces. China accounted for less than 1% of Lao exports before 2005, but its share has been rapidly rising since then (Andersson et al., 2009). In the late 2000s, major export products shifted to heavy metals, such as copper and gold ores (Onphanhdala and Philavong, 2018; 2021). Trade value between Laos and China accounted for only 2% of total Lao trade in 2006, significantly increasing after 2013, as shown in Figure 1-2.

Figure 1-2 Lao Trade with Major Partners by Trade in Goods (%)



Source: Author's compilation referencing ASEAN Stats (2021). Data from the year 2018 were obtained from UN Comtrade (2020).

Current trade value between Laos and China accounted for 29% of total Lao trade, indicating that China is Laos' second-largest trade partner, after Thailand, which accounted for around 46%. A primary export product from Laos to China was mineral products. Copper ores and their concentrates accounted for more than half of total exports. Refined, semi-structured gold and iron are also Laos' major exports. Due to Chinese

economic growth and high demand for metals, the Chinese government imports mineral products to meet this demand and preserve domestic natural resources. Laos is one of the metals exporting countries to China. On Laos' side, although such exports expand the mining sector and foster economic growth, labor participation in the mining sector is relatively low, accounting for only 6% between 2016 and 2020 (MEM, 2020). Bananas and macadamias fluctuated as the first and second highest export products from Laos to China. Bananas' export value was around US$160 million, accounting for 10% of total exports between 2016 and 2019. The other top five export products included maize, sesame, rice, and cereals. The Chinese market also demands wood products, wood pulp, rubber, and fertilizers (Table 1-2). These products were granted a tariff reduction of 97% for China's import from Laos (HKTDC Research, 2020). Although Lao exports are raw materials due to the limits of trade diversification, agricultural production appears to be a means to improve local farmers' livelihoods, particularly those residing in the northern provinces.

Laos' import value (from China) significantly increased after 2014, with increasing diversification in product categories for two reasons. First, Laos is a limited manufactured commodity country (Onphanhdala, 2021). Second, there is high demand in the mining and construction sectors. Both sectors require sufficient inputs for production, e.g., copper mines, hydropower dams, and road and railway construction, particularly projects that received Chinese FDI since the late 2000s (Onphanhdala and Philavong, 2018; IPD, 2020). These products included machinery, electrical appliances, and electronic devices. The largest and second-largest share of imports changed from year to year, including communication apparatus, telephone sets, machinery, electrical appliances, trucks, cement, iron bars, and construction materials. The third and the fourth were electrical transformers, copper cable, iron bars, screws, and construction materials. In 2010 and 2014, a demand for tobacco leaves in tobacco production arose domestically (Table 1-3).

Table 1-2 Top Five Exports from Laos to China, 2011–2020

Rank	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1	[260300] Copper ores	[740311] Copper; refined	[710813] Gold; semi-structure	[260300] Copper ores	[260300] Copper ores	[260300] Copper ores	[260300] Copper ores	[260300] Copper ores	[260300] Copper ores	[260300] Copper ores
2	[080260] Macadamias	[080260] Macadamias	[080390] Bananas	[710813] Gold; semi-structure	[710813] Gold; semi-structure	[080390] Bananas	[080390] Bananas	[470329] Wood pulp	[080310] Bananas	[080310] Bananas
3	[440110] Fuelwood	[100590] Maize	[740311] Copper; refined	[080390] Bananas	[284161] Oxometallic salts; etc.	[284161] Oxometallic salts, etc.	[310420] Fertilizers, minerals, or chemicals	[740311] Copper; refined	[470329] Wood pulp	[470200] Wood pulp
4	[440310] Wood in the rough	[440910] Parquet flooring	[440110] Fuelwood	[740311] Copper; refined	[080390] Bananas	[110419] Cereal grains	[400122] Rubber	[310420] Fertilizers, minerals, or chemicals	[310420] Fertilizers, minerals, or chemicals	[470620] Pulp of waste from recovered paper
5	[811299] Gallium	[130190] Natural gums	[260111] Iron ores	[130190] Natural gums	[100590] Maize	[100630] Rice	[110419] Cereal grains	[080390] Bananas	[470200] Wood pulp	[400110] Rubber

Source: Author's compilation referencing ASEAN Stats (2021). Data from the year 2018 were obtained from UN Comtrade (2020).
Remarks: HS 6-digits at current prices.

Table 1-3 Top Five Imports from China to Laos, 2011–2020

Rank	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1	[851718] Telephone sets	[940510] Chandeliers, lights	[853720] Boards, the distribution of electricity; exceeding 1000 volts	[252329] Cement	[841710] Furnaces and ovens; for industrial or laboratory use	[854370] Electrical machines and apparatus	[721550] Iron or non-alloy steel	[871000] Tanks and other armored fighting vehicles	[730820] Iron or steel; structures and parts	[850421] Electrical transformers
2	[851762] Communication apparatus	[960810] Pens; ballpoint	[960860] Pens; ballpoint, refills & ink reservoirs	[851762] Communication apparatus	[851761] Base stations	[870421] Vehicles; not exceeding 5 tons	[841090] Turbines	[851762] Communication apparatus	[841090] Turbines	[870120] Tractors
3	[731815] Iron or steel; threaded screws and bolts	[441239] Plywood	[240110] Tobacco	[851718] Telephone sets	[240110] Tobacco	[854411] Insulated electric conductors; winding wire, of copper	[850421] Electrical transformers; not exceeding 650kVA	[721410] Iron or non-alloy steel; bars and rods	[730890] Iron or steel; structures and parts thereof	[310510] Fertilizers, mineral, or chemical
4	[841199] Turbines; parts of gas turbines	[854411] Insulated electric conductors; winding wire, of copper	[854290] Parts of electronic integrated circuits	[852190] Video recording or reproducing apparatus	[854419] Insulated electric conductors; winding wire (of other than copper)	[870490] Vehicles; for the transport of goods	[730890] Iron or steel; structures and parts thereof	[841090] Turbines	[721410] Iron or non-alloy steel; bars and rods	[851762] Communication apparatus
5	[854411] Insulated electric conductors; winding wire, of copper	[441400] Wooden frames	[870530] Vehicles; fire fighting vehicles	[854420] Insulated electric conductors	[730820] Iron or steel; structures and parts thereof	[481910] Paper and paperboard	[870410] Vehicles; dumpers, designed for off-highway use, for the transport of goods	[730890] Iron or steel; structures and parts thereof	[360300] Fuses and detonators	[730890] Iron or steel; structures and parts thereof

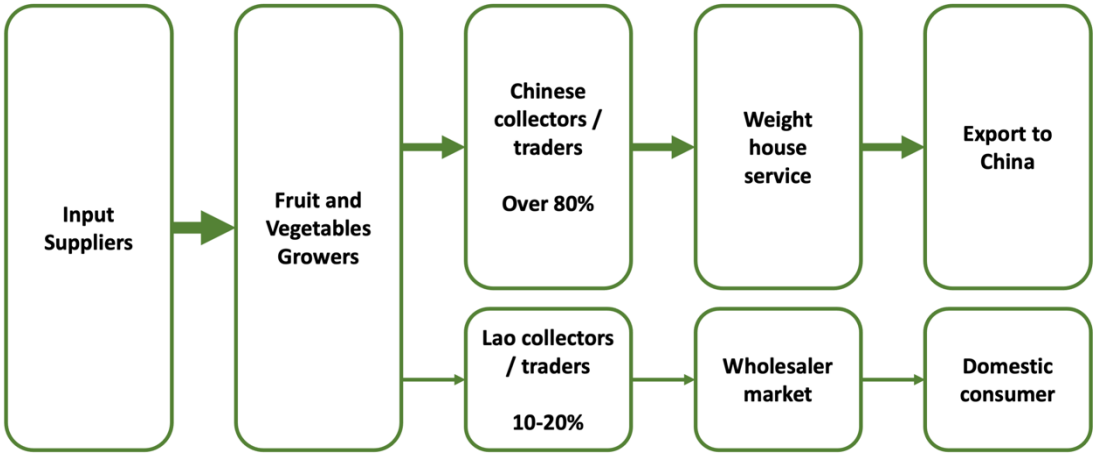
Source: Author's compilation referencing ASEAN Stats (2021). Data from the year 2018 were obtained from UN Comtrade (2020).
Remarks: HS 6-digits at current prices.

The COVID-19 pandemic has disrupted international trade and global value chains. Investment in Laos has shifted from foreign investment dependent to domestic investment dependent. It consists of manufacturing and service sectors hoping that they will substitute the import and enhance the export. The 9th Five-Year National Socio-Economic Development Plan 2021–2025 (9th NSEDP) and the Vision of Digital Economic Development of Lao PDR aims transform the Lao economy through industrialization and modernization by increasing the digital economy's contribution to GDP from 3% in 2020 to 10% by 2040. It also aims to develop agriculture and tourism as potential sectors for Laos to substitute imports and promote exports. The 9th NSEDP also concentrates on clean energy production and progressively restricts natural resource exploitation for export. The agricultural sector has enhanced and improved its productivity for exports, driven by external demands; however, in the first year of the pandemic, freight forwards between Laos and China were stuck at the Boten-Bohan checkpoint due to COVID restriction measures and changed logistics regulations and methods to mitigate the issue. In the second year of the pandemic, there has been strong growth in agricultural exports. The value of agricultural and livestock export is expected to grow 2.5% compared with the 2020, as China granted import preferences for 80 items of Lao agricultural products and the Laos–China railway was inaugurated in December 2021 (MAF, 2021).

3. Value Chain in Agricultural Production

This section uses the original results of a field survey conducted in Luang Namtha province in September 2020, and a summary of agricultural product value chains based on the author's observations and surveys in northern provinces from 2012 to 2020, as shown in Figure 1-3. Field observations were conducted in four northern provinces of Phongsaly, Oudomxay, Luang Namtha, and Bokeo. The author observed the value chains of various agricultural products, such as pumpkins, watermelons, and cassava. Local farmers who are members and non-members of plantation groups or FPGs were also considered in observations.

Figure 1-3 Value Chains in Agricultural Production in Northern Laos



Source: Original survey results and the author's various observations.

The most important motivation for smallholder farmers' joining contract farming in the north is raising income. Formal written contracts offer smallholder farmers inputs, credit, improved technology, information, and access to markets (Onphanhdala et al., 2016, Onphanhdala and Manolom, 2019, and Onphanhdala and Philavong, 2021). Farmers decide to enter into formal contracts as they gain familiarity with a crop and establish suitable conditions for cultivation. For instance, local farmers who promise to sell products to Chinese buyers receive seed, fertilizers, and other inputs from the contractor, which are primarily imported from China (as Tables 1–3 demonstrates, agricultural inputs are the top five imported products from Laos to China). In addition to input supplies, initial costs for land clearance and preparation are a heavy burden for some households to meet. At first, local farmers found limited competition affecting price and bargaining power. By participating in FPGs, farmers can receive support from the NRI and gain more bargaining power to negotiate with collectors and investors.

Family members are the main labor source for cultivation. Smallholder farmers also hire laborers within villages or from different villages to grow and cultivate crops. Over 80% of agricultural products are sold to Chinese collectors who impose strict quality, weight, shape, color, harvesting period, and transportation standards. Smallholder farmers seem to be unfamiliar with such strict assessments, but continue selling to Chinese buyers, as they guarantee stability and higher income (as Table 1-2 shows, agricultural products are the top five products Laos export to China). Around 10–20% of agricultural products are also sold to Lao collectors with less strict quality standards

compared to Chinese collectors. All outputs are delivered to wholesale wet markets within provinces, while some portions of the products are transported to nearby provinces, which leads to loss during transport.

Domestic markets for Lao agricultural products are at the early stage of development. Collectors buy fruit and vegetables from farmers and transport them via pickup trucks from one district to sell at wet markets in another district in the same province. In urban areas, there is a small amount of agricultural product sales in grocery stores and supermarkets. Sometimes, they also sell those perishable products in other provinces, but the primary form of buying and selling remains in wet markets. The emergence of convenience stores in Laos occurred in the mid-2000s. The M-Point Mart was the first convenience store franchise in the country. For more than a decade, it was the sole leading Lao convenience store chain in the Vientiane capital, pushing competition among grocery store franchises, such as Sokxay All, J-Mart, and K-Mart. In 2018, a joint-venture between the M-Point Mart and the Big C Supercenter[4] rebranded the Lao M-Point Mart to the Mini Big C—the first 24-hour convenience store in Laos (Laotian Times, 2018).

The COVID-19 pandemic in 2020 interrupted food value chains due to severe restrictions, including full lockdowns and many other constraints, as well as easing of measures to enhance economic activities. The pandemic lifestyle transformation changed households' consumption behavior, as people adapted to the "new normal." Delivery and takeout possibilities increased significantly. Delivery services by the Delivery Hero (well-known as Foodpanda) and similar delivery vendors have become popular in large cities like Vientiane capital. Households that could afford to do so preferred eating at home, using food delivery services and advance ordering for takeaway. They also ordered fresh fruit and vegetable deliveries for cooking at home. In October 2021, Foodpanda achieved nationwide coverage, providing food delivery service in all 18 provinces of Laos.

To supplement its food delivery services, Foodpanda expanded business by launching Pandamart as an online market serving vital demand in grocery products. Although food value chains in urban areas show significant development, in other provinces, including northern provinces contract farming with Chinese investors changed.

[4] A partnership with the BJC Group from Thailand.

4. Impact on Income and Expenditure

4.1. Households Characteristics

In this chapter, secondary data were obtained from the samples in four northern provinces via the SHI conducted in 2020. The dataset was originated by the NRI through in-depth interviews on households (HHs) information, including HH characteristics (the number of HH members, ethnicity, religion, and language group), poverty status, landholding, healthcare, income source(s), income level, and expenditure structure(s). This chapter employed only the SHI from Luang Namtha province, which was administered to 229 HHs as survey samples after clearing outliers.

A quantitative analysis was performed to identify HHs' income sources, income structure, and expenditure structure by scrutinizing the samples. Farmer households (FHs) predominantly earn income from both agricultural and non-agricultural sources. Families spend money on food-rice consumption, investing in education, medical/health needs, repairing/improving/furnishing the house, clothing, electricity, cooking, transportation, social events, and other expenditures. A qualitative comparative analysis between FPG members and non-members in terms of income from agricultural and non-agricultural sources and expenditures is conducted to allow the author to visualize HH income and the components of spending for the four northern provinces examined.

Luang Namtha province is located in the northern uplands region and covers around 9,325 km^2, which is twice as large as Vientiane capital (but lower in density). This area is characterized by a complex topography of mountains, hills, and flatlands, has an ethnically diverse population, a comparatively low population density, an incomplete public infrastructure, low levels of primary education and healthcare, and reliance on traditional swidden agriculture and forest use practices. As of 2018, the GDP per capita in Luang Namtha was US$1,796, consisting of 63% of the agricultural sector, 15% of the industrial sector, and 22% of the services sector (MPI, 2019). Based on the Lao Expenditure and Consumption Survey in 2018/19 (LECS6), the poverty headcount rate in Luang Namtha was 10.5% in 2019, which decreased from 25.0% in 2013 (LSB, 2020). Among other northern provinces, Luang Namtha is an early participant in trading agricultural and timber forest products with China; thus, farmers in this province are expedient adopters of FPGs and cross-border contract farming.

Table 1-4 presents information on the HH characteristics in Luang Namtha. FHs are categorized under FPG participation (FPG group) and non-FPG participation (the non-FPG group). Approximately 33% of farmers participate in FPGs, and 67% are non-FPG members. FPG members have a larger area of landownership in both lowland and upland agricultural production. On average, FHs that participate in the FPGs own around 1.34 ha of lowland and 0.74 ha of upland, while farmers in the non-FPG group own smaller areas of lowland (1.10 ha) and upland (0.68 ha). Two family status levels of poor and non-poor are determined in considering poverty status. A HH is considered poor when its income level per month per person is below the 2001 poverty line income of 180,000 kips (US$21)[5] and non-poor when it is above 180,000 kips (US$21). Results indicate no difference in wealth status between FPGs and non-FPGs, particularly the proportion of non-poor HHs; however, further detail is needed regarding the annual income level between both groups, and how participation in the food value chain or agricultural production affects HH livelihoods.

Table 1-4 Landownership and Poverty Status of FPGs and Non-FPGs

	FPG	Non-FPG
Percentage	33%	67%
Landownership [ha]	2.07	1.76
Lowland	1.34	1.10
Upland	0.74	0.68
Poverty Status [%]		
Poor	2.63	2.61
Non-Poor	97.37	97.39

Source: Author's compilation referencing the SHI dataset.

4.2. Income Distribution

On average, the annual HH income for the FPG group in Luang Namtha was around 88 million kips ($10,150) from agricultural sources and 87 million kips ($9,965) from non-agricultural sources. These figures are higher than in the non-FPG group (Table 1-5).

[5] Please note that the Lao Kip currency was converted to US$, based on the exchange rate in 2020 by ADB (8,680 kips was roughly equal to US$1).

Income from selling agricultural products to Chinese buyers/collectors included income from rice production, banana plantations,[6] rubber plantations, livestock/poultry/fishery, and other crops. In contrast, non-agricultural income sources included wages from farm labor, non-farm labor, and employee salaries, whether from the public or private sector, sales of non-timber products, sales of handicrafts, and running a business.

Table 1-5 Annual HH Income of FPGs and Non-FPGs (Kip)

Average Annual HH Income (Kip)	FPG	Non-FPG
Agricultural Source of Income	32,100,000	28,700,000
Rice Production	*15,000,000*	*9,088,428*
Bananas	*1,951,533*	*1,991,547*
Rubber	*4,640,903*	*5,866,500*
Livestock, Poultry, and Fish	*3,416,500*	*3,293,072*
Other Crops	*4,857,730*	*5,788,105*
Not Specified	*2,656,689*	*3,024,770*
Non-agriculture Source of Income	56,000,000	57,800,000
Farm Labor for Other Farmers	*6,031,733*	*4,689,346*
Labor Outside Farm or Village	*2,381,579*	*3,255,667*
Salary As Employee (Public Or Private)	*19,000,000*	*26,200,000*
Sales of Non-Timber Products	*2,176,111*	*2,361,745*
Handicrafts	*1,191,781*	*248,355*
Business	*23,000,000*	*16,800,000*
Other	*2,714,865*	*4,198,684*

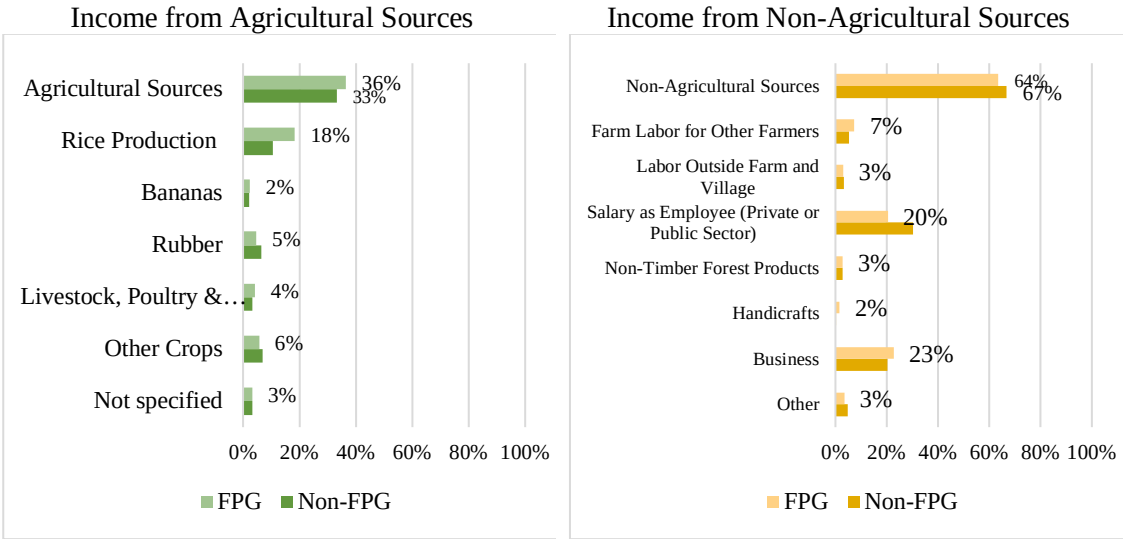
Source: Author's compilation referencing the 2020 SHI dataset.

[6] Banana production is not a massive industrial production. Products are from individual farms in which smallholder farmers produce agriculture to sell to Chinese collectors. The banana plantation area of each farm covers around 1–2 hectares. The cultivation period depends on each area, but the banana plantation period generally varies between 3–5 years, as China's demand rises.

Rice production was the main source of FH income for those who participated in the FPG group, with approximately 15 million kips (US$1,728), while among the non-FPG group, it was around 9 million kips (US$1,047). In contrast, the average annual HH income from rubber, banana, and other crops in the non-FPG group is larger than the FPG group. HHs in the non-FPG group also depend on salaries from employment in the public sector or private companies. An average annual HH salary income in the non-FPG group was around 26 million kips (US$3,018), slightly higher than the FPG group.

HHs' income structure includes two, agricultural and non-agricultural, primary income sources. In the FPG group, income from agricultural sources comprises around 36% of total income, larger than in the non-FPG group (33%), as shown in Figure 1-4. This implies that agriculture is a more significant source of income generation among FHs that participate in FPGs. Individuals in the FPG group that make the highest contributions from agricultural sources to total income work in rice production (18%), other crops (6%), and rubber plantation (5%). In Luang Namtha, income from agricultural sources has a greater role in FH income in both FPG and non-FPG groups, accounting for around 70% and 38%, respectively.

Figure 1-4 HH Income Structure in Luang Namtha (% of Total Income)

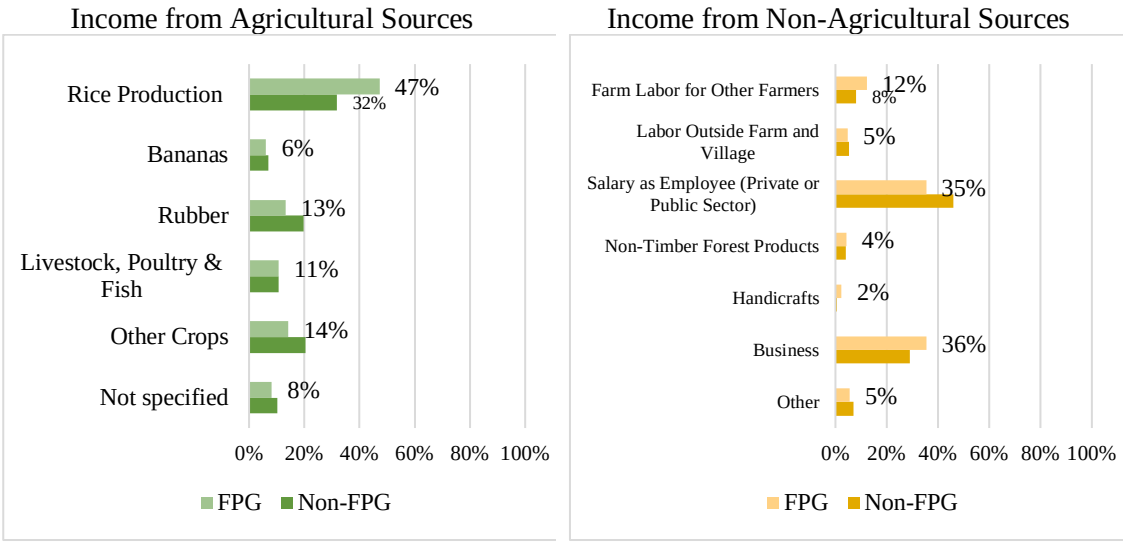


Source: Author's compilation referencing the 2020 SHI dataset.

Income from non-agricultural sources still takes up a more significant portion of HHs' total income, especially in the non-FPG group. FH members work in agricultural production and are employed by private companies or public agencies; many also run

their own small businesses. As shown in Figure 1-4, business and monthly salaries offer higher paychecks for HHs in both FPG and non-FPG groups (more than 60% of total income). Although the income share of non-agricultural activities is higher in the non-FPG group, it does not mean that FPG members are worse-off, as they gain more income from rice production, particularly through contract farming with Chinese investors (as Figure 1-5 demonstrates, the income share from rice in the FPG group is much higher than that in the non-FPG group. Onphanhdala and Philavong (2021) also confirmed that income from agricultural sources could diminish income inequality among FHs, suggesting that participating in agricultural production and export outputs reduces disparity in rural areas.

Figure 1-5 HH Income Structure in Luang Namtha from Each Source



Source: Author's compilation referencing the 2020 SHI dataset.

4.3. Expenditure Distribution

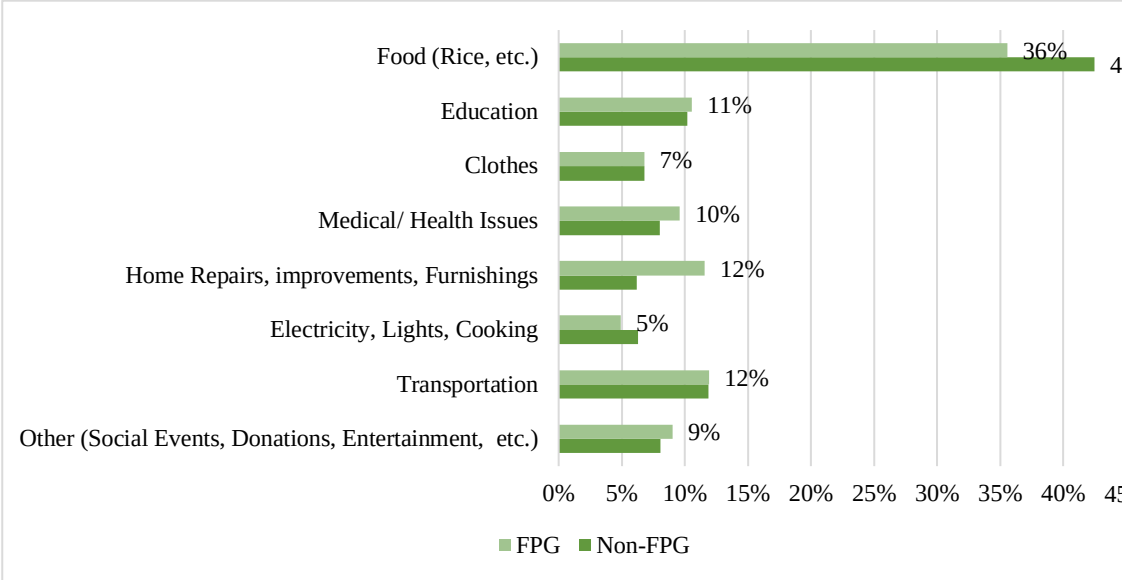
Table 1-6 and Figure 1-6 present the annual expenditure structure of HHs in the researched province. On average, the total annual expenditure of HHs in the FPG group is approximately 32 million kips (US$3,652) and 31 million kips (US$3,514) among those in the non-FPG group. The primary necessities of HH expenditure are food, education fees, healthcare charges, clothing/shelter, fuel, transportation, and social events.

Table 1-6 Annual HH Expenditure of FPGs and Non-FPGs (Kip)

Average Annual HH Expense (Kip)	FPG	Non-FPG
Total Expenditure	31,700,000	30,500,000
Food (Rice, etc.)	*11,500,000*	*11,100,000*
Education	*3,247,973*	*2,674,276*
Clothes	*2,194,605*	*1,885,714*
Medical/Health Issues	*3,007,237*	*2,432,632*
Home Repairs, Improvements, Furnishings	*3,877,571*	*5,975,497*
Electricity, Lights, Cooking	*1,652,040*	*1,618,209*
Transportation	*3,641,908*	*3,114,840*
Other (Social Events, Donations, Entertainment, etc.)	*3,025,921*	*2,147,026*

Source: Author's compilation referencing the 2020 SHI dataset.

Figure 1-6 HH Expenditure Structure



Source: Author's compilation referencing the 2020 SHI dataset.

The FPG group spends around 36% on food consumption, while the non-FPG group spends around 42%. FHs in the FPG group can produce their own food and sell the surplus for income. They also spend money on transport, such as buying new vehicles to deliver outputs to local markets and export, which accounted for around 12% of total annual expenditure. This is likely because they earn more and want to improve their living standards by enhancing travel quality. In addition, they invest in their children's education

at around 11% of total annual expenditure. In contrast, HHs in the non-FPG group spend more on home repairs, improvements, and furnishings than the FPG group.

5. Discussion

FPGs are not fully legal entities, but are semi-legal. It can be considered a form of pre-cooperative, which is a soft opening form of the fallen legacy of agricultural cooperatives. The government aims to improve FPGs and promulgate the agricultural cooperative decree in 2020 to strengthen farming production; however, based on the findings of this chapter, insignificant progress has been made, as there is a minimal difference between FPG and non-FPG members in terms of poverty status. There are two reasons for this circumstance. First, although member participation is voluntary, there is a selection bias in terms of FPG members' backgrounds. Farm households that own land for rice field cultivation are considered to be eligible to join FPGs, which increases the proportion of rice production income in the FPG group. Second, rice field area is smaller than upland area; thus, income from other sources is also larger. FPG members are better-off than non-FPG members who prefer cash crops and earn from non-agricultural sources of income. FPG members benefit from selling agricultural products to Chinese buyers, particularly rice. This is because China is a major market for Lao products, which helps to expand global value chains.

Luang Namtha is an early participant in trading agricultural and timber forest products with China. Exported products include a variety of products, such as pumpkins, watermelons, cassava, bananas, and rubber. Farmers in this province are expedient adopters of cross-border contract farming and FPGs. Based on the September 2020 survey in Luang Namtha and several years of observation in Luang Namtha from 2012 to 2020, at the beginning of contract farming, individual farmers struggled with contract management. The Provincial Agriculture and Forestry Department Office have more significant roles than the Provincial Industry and Commerce Department Office and the District Industry and Commerce Office (DICO), though they have limited control of contract farming, particularly with Chinese investors. The DICO has taken responsibility for the administration of contracts between investor(s) and farmers since 2013, and renews contract(s) annually (Onphanhdala et al., 2016, and Onphanhdala, & Philavong, 2021). FPG participation helped individual farmers to manage contracts and strengthen bargaining power with buyers. However, establishing FPGs is not an easy task. Such

organizations are fundamental instruments for supporting farmers through technical training and extension services, access to credit, and market integration.

Results from the quantitative analysis of the 2020 SHI demonstrate that participating in FPGs, as part of a contract farming and the value chain with Chinese investors, allows farmers to generate higher income, particularly among smallholder farmers. There is a relatively small difference in income levels from agricultural and non-agricultural sources. In sum, only small gaps between FPGs and non-FPGs show the inclusiveness of the fair opportunity of FVC in this case; however, increased income from agricultural sources is likely to reduce income inequality among farm households rather than a non-agricultural source (Onphanhdala and Manolom, 2019, and Onphanhdala and Philavong, 2021). More income from selling agricultural products can improve local livelihoods when poverty is a major constraint on life in rural areas. Despite investments in children's education and healthcare for the rest of the family members among FPG members, smallholder farmers spend more on transportation. The proportion of transportation expenditure was larger than farm households' other expenditures in 2017 (Onphanhdala and Manolom, 2019), including both daily use and output transport. Farmers can load their outputs for delivery to wet markets, covering around 10–20% of total outputs. Chinese buyers collect the remaining 80% of total outputs for export to China. Agricultural inputs, such as fertilizers, seed, and other inputs, are primarily imported from China. This value chain has a place in international trade shows, as China is the second-largest trade partner with Laos.

Regarding food value chain inclusiveness with China, FPG and the non-FPG farmers can seize the opportunity to join value chains and enhance agricultural production. Regardless of whether a farmer is a member of the FPG, both the FPGs and the non-FPGs can engage in contract farming; however, non-FPG members also tend to enter into verbal contracts that are not legally managed by the local authority when facing external shock, low price, and other challenges. However, based on this study, there is currently no clear-cut difference between FPGs and non-FPGs, and it incidentally arose during the study.

Laos seeks to improve its trade and investment diversification, rather than depending on a few dominant trade partners as it has for several years. According to trade data, 85% of Laos' trade volume is with Thailand, China, and Vietnam. The government endeavors to lower this proportion to 70% in the next five years and to 50% in the next ten years. This trade diversification will mitigate risks from political, security, or pandemic issues that will affect Laos if one of these issues occurs with dominant partners. For future strength, practical assistance from the Lao government is essential. The

government can attract more investment in the agricultural sector from foreign investor countries from ASEAN, East Asia, the EU, and the US to deliver benefits of not only investment value, but in technology and innovation. The government have a stronger guiding role in strengthening FPGs and upgrading them to agricultural cooperatives. It is also essential to maximize this opportunity by strengthening connections with global value chains.

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