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MEKONG DEVELOPMENT REPORT 2016

BRINGING PROSPERITY FROM TRADE TO FARM

MEKONG
DEVELOPMENT
REPORT

2016

Bringing Prosperity from Trade to Farm

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Acronyms

ADB	Asian Development Bank
ASEAN	Association of Southeast Asian Nations
BDS	Business Development Service
CDNA	Capacity Development Needs Assessment
DAFO	District Agriculture and Forestry Office (Lao PDR)
DARD	Department of Agriculture and Rural Development (Vietnam)
DOA	Department of Agriculture (Myanmar)
DIC	Department of Industry and Commerce (Lao PDR)
DIT	Department of Industry and Trade (Vietnam)
DST	Department of Science and Technology (Vietnam)
DTP	Department of Trade and Promotion (Myanmar)
EWEC	East-West Economic Corridor
EWEC-RLED	East-West Economic Corridor Regional and Local Economic Development
FY	Financial Year
GAP	Good Agricultural Practices
GMP	Good Manufacturing Practices
GMS	Greater Mekong Sub-region
LED	Local Economic Development
KDP	The Khammouane Development Project (KDP)
M&E	Monitoring and Evaluation
M4P	Making Markets Work for the Poor
MI	Mekong Institute
MoU	Memorandum of Understanding
NGO	Non-governmental Organizations
OD	Organizational Development
PAFO	Provincial Agriculture and Forestry Office
PSC	Project Steering Committee
SDC	Swiss Agency for Development and Cooperation
SLV	Structured Learning Visit
SMEs	Small and Medium-sized Enterprises
TOT	Training of Trainers

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Acknowledgements

Mekong Institute owes a great deal of gratitude to a number of individuals and institutions that have contributed to the completion of this Mekong Development Report 2016. This report grew from commitment and collaborations of people who lent their expertise in all stages of its development. At the outset, we would like to take this opportunity to place the record of our sincere thanks to Dr.Soraphol Tulayasathien who played the instrumental role in framing, consolidating and developing the report. It goes without saying that without his meticulous efforts and analytical insights, this report would not have been possible. This report is a consolidation and analysis of several assessments and reports undertaken by different national researchers and the staff of Mekong Institute. Mekong Institute hereby expresses our heart-felt appreciation to the national researchers listed as follows.

Dr. Visarout Krabaunsob (Rice Value Chain Analysis in Khammouane Province, Lao PDR)

Mr. Thone Boungvattana (Capacity Development Needs Assessment on Local Economic Development in Khammouane Province, Lao PDR)

Mr. Saw Jackson (Rice Value Chain Analysis in Kayin State, Myanmar)

Mr. Lawson Sein Tun (Capacity Development Needs Assessment on Local Economic Development in Kayin State, Myanmar)

Mr. Tin Htut Oo and Mr. Kyaw Myint (Maize Supply Chain in Myanmar, Potential Market for Maize Production in Kayin State)

Ms. Bui Thi Phuc (Value Chain Prioritization in Quang Tri Province, Vietnam)

Mr. Nam Pham Quang (Capacity Development Needs Assessment on Local Economic Development in Quang Tri Province, Vietnam)

Acknowledgements are also due to the staff of EWEC project team for their multiple inputs and comments in the whole process. Special thanks go to Ms. Jutamas Thongcharoenb (Program Manager, Agricultural Development and Commercialization Program Department), and Ms. Than Tha Aung (Program Officer, Innovation and Technological Connectivity Program Department) who contributed the success and lesson learned stories from the respective project sites. A special note of appreciation goes to Ms.Phornphan Srikhattanaprom (Program Coordinator, Innovation and Technological Connectivity Program Department) and Mr Franz Ferdinand Rothe (Communication Coordinator, Communication and Knowledge Management Department) for their creative illustrations in developing the infographics for the respective value chains. We would also like to extend our special thanks to the individuals from government agencies, non-government organizations, enterprises and local communities from Khammouane Province (Lao PDR), Kayin State (Myanmar) and Quang Tri Province (Vietnam) for their commitment and collaborative efforts in working with the Mekong Institute.

Finally, it is a pleasure to acknowledge with thanks to the financial support of Swiss Agency for Development and Cooperation (SDC). This report marks as a significant milestone in the project implementation of “Capacity Development for a More Inclusive and Equitable Growth in the Greater Mekong Subregion on the East-West Economic Corridor (EWEC) in GMS”.

Mekong Institute
September 2016

Executive Summary

Launched in 1998, the East-West Economic Corridor—encompassing the less developed provinces of Myanmar, Lao PDR, Thailand, and Vietnam—is one of the flagship initiatives of the Greater Mekong Subregion (GMS) in order to improve the economic situation of these areas. Although countries in the EWEC have recently experienced sheer economic growth, unfortunately this growth is unbalanced with the industrial sector growing faster than the agricultural sector, contributing to worsening income inequality. This problem needs to be addressed and tackled urgently as the majority of population depends largely on agriculture, which is declining in its importance. Taken this issue into account, this comprehensive document focuses on three specific agricultural value chains in three target provinces - a rice value chain in Khammouane province of Lao PDR, a coffee value chain in Quang Tri province of Vietnam, and a maize value chain in Kayin State of Myanmar – in order to address prospects and constraints for value chain development, examine costs and margin for each actor in the value chain, and suggest actions to minimize the constraints and maximize the prospects.

While the central government of Lao PDR plans to develop Khammouane province as a rice hub of Lao PDR and ASEAN, the development of the rice value chain is currently constrained by lack of access to certified rice seeds, lack of knowledge on international rice standards such as Good Manufacturing Practices (GMP), and absence of regulation on contract farming. Unlike Khammouane province of Lao PDR, Quang Tri province is already a production hub of Arabica coffee in Vietnam; however, the problems of the dependence on unstable international market, coffee price fluctuation, and low domestic consumption obstruct the development of local coffee sector. In contrast to both the rice sector in Khammouane in Lao PDR and the coffee cultivation in Quang Tri in Vietnam, the maize production in Kayin State of Myanmar has not totally established with incomplete value chain in consequence of low aspiration due to ignorance of the benefits of growing maize and political instability with the presence of armed groups and fight from time to time. Nevertheless, these three value chains have some shared constraints for value chain development, namely high production cost, low productivity and quality, and weak forward and backward linkage among actors.

Based on the value chain analysis, Mekong Institute (MI) designed the project approach which aims to strengthen the linkage between farmers and markets. By enhancing the capacity of 3 target groups at the provincial level, namely 1) farmer groups/associations, 2) SME clusters/business network, and 3) LED Government officials, the project expects to improve the market system of these three sectors and eventually to achieve the following objectives:

- To make smallholder farmers become more competitive as the producers of coffee, rice and maize;
- To improve the regional and local competitiveness of private enterprises in coffee, rice and maize value chains;
- To improve the enabling environment for local economic development and trade in and between target districts and provinces.

With Mekong Institute (MI)'s intervention, there has been good progress in developing the three agricultural value chains, implying the potential prospect of complete agricultural value chains in the future. Smallholder farmers become more competitive as producers of rice, maize and coffee. Since

project implementation, 768 farmer households have increased a total additional income of USD 111,953. In Lao PDR, 10 seed producing farmer groups have expanded their market linkages and 8 out of them increased their seed trade volume by 78 tons resulting in a 21% increase in income (USD 322) for 82 farmer households. In Myanmar, with winter cropping, 41 farmer households have gained an additional income of USD 4,353. Similarly, in Vietnam, 295 coffee farmers of the 475 project farmers increased their income generating a total net income of USD 51,000. With MI's intervention, private enterprises in cross-border coffee, rice, and maize value chains have become more competitive. To date, the private enterprises in the rice, maize and coffee sectors increased a total trade volume of 10,298 tons and gained additional profit of USD 322,546. In Lao PDR, rice millers are now being GMP certified. The project also organized two business matching and trade fairs to help rice millers secure export market in Italy, Thailand, and Vietnam. In Myanmar, maize farmers are directly linked with traders in Mawlamyine, Tetkone, Yangon, Myawaddy, and Mae Sot of Thailand, leading to 371 tons of maize procurement and USD 10,992 profit for maize farmers. In Vietnam, the coffee processing company established direct linkages with farmer groups so farmers got a higher price for coffee beans while the company obtained a better quality and an additional profit of USD 153,699. Two local economic development initiatives triggered by the project have been fully promoted and supported by the local governments, including Khe Sanh Coffee Association in Vietnam and Khammouane Agricultural Development Cooperative in Lao PDR. Going forward, the project plans to make a significant shift from its overwhelming focus on farmers and production side toward a more marketing and trading relevant facilitations and enabling environment for local and regional economic development.

The value chain analyses and the MI's intervention consistently find that cross border trade can potentially be one of the key tools for poverty reduction. For further progress in regional value chain development in the GMS/EWEC, the intergovernmental cooperation is continuously needed. The GMS and the EWEC represent the intergovernmental cooperation with the aim to strengthen economic cooperation and to encourage trade and investment among the six/four participant countries. Due to increased interconnectedness, more of the collective policies and initiatives by the governments, which could be either formally enforced in an intergovernmental treaty or informally agreed upon by the participating countries, are required as they are important for inclusive growth in the changing economic context with increasing interdependence among countries.

Chapter

1

1. Introduction

The Greater Mekong Subregion (GMS) is a natural economic area bound by the Mekong River, with an area of 2.6 million km² and a combined population of about 333.8 millions. The GMS consists of Cambodia, the People's Republic of China (PRC, specifically Yunnan Province and Guangxi Zhuang Autonomous Region), the Lao People's Democratic Republic (Lao PDR), Myanmar, Thailand, and Vietnam. In 1992, with the assistance from the Asian Development Bank (ADB), the GMS launched a program of sub-regional economic cooperation—the GMS Economic Cooperation Program—to enhance their economic relations, covering the nine priority sectors: 1) agriculture, 2) energy, 3) environment, 4) human resource development, 5) investment, 6) telecommunications, 7) tourism, 8) trade, and 9) transport.

The GMS has also developed economic cooperation in the form of cross-border trade, investment, and labor mobility. **In 2008, the GMS countries formed an Economic Corridors Forum to bolster efforts in transforming GMS transport corridors into economic corridors.** It is designed to enhance regional economic cooperation and development along the corridors. This movement is facilitated by the existence of globalization, trade liberalization, promotion of market-oriented agricultural production, and increased regional cooperation, notably the Ayeyawady - Chao Phraya - Mekong Economic Cooperation Strategy (ACMECS) and the ASEAN Economic Community (AEC).

To foster greater economic cooperation among the GMS countries to facilitate trade and develop logistics for better access to the global market, the ADB has initiated economic corridor development approaches in the region, including the three major GMS economic corridors, namely 1) the North-South Economic Corridor, 2) the East-West Economic Corridor (EWEC), and 3) the Southern Economic Corridor.

Launched in 1998, the EWEC is established

- to further strengthen economic cooperation and to facilitate trade, investment, and development;
- to reduce transport costs in the project area by making the movement of goods and people more efficient; and
- to reduce poverty by supporting economic development in rural areas and border regions, especially via agro-industry and tourism.



Figure 1: East-West Economic Corridor

The EWEC runs from Da Nang Port in Vietnam, through Lao PDR, Thailand, and to the Mawlamyine Port in Myanmar, with the area of 1,320 km². It links the important commercial nodes in each member country: 1) Mawlamyine-Myawaddy in Myanmar; 2) Mae Sot –Phitsanulok-Khon Kaen - Kalasin-Mukdahan in Thailand; 3) Savannakhet-Dansavanh in Lao PDR; and 4) Lao Bao - Hue - Dong Ha - Da Nang in Vietnam. Moreover, it also includes the important gateway nodes of Da Nang in Vietnam and Mawlamyine in Myanmar for access to external markets. The road project comprises the reconstruction of an 83-km highway link between Thailand and Lao PDR border, and Dong Ha (National Highway 9) as well as a 105.8 - km stretch of highway between Dansavanh (Lao PDR) and the Lao Bao (Vietnam) border crossing (Route National 9). Furthermore, there are other intervention initiatives, including a Cross-border Transit Agreement and poverty reduction, in order to ensure the economic growth along the corridor.¹

In the light of increasing cross-border trade, there is substantial and promising potential for the development of the agricultural value chains in the EWEC, both from the supply perspective, with abundant natural resources, and the demand viewpoint, namely export opportunities. It is expected that the living standards of farmers in the GMS will be gradually lifted by improving their access to markets focusing on the cross-border trade. From the data, the values of agricultural exports from Lao PDR to Thailand significantly increased annually of 7.34 percent between 2007 and 2010 (Supatn 2012), with most of the cross-border exports being taken place through the Nongkhai-Tha Nalaeng border. Similarly, the cross-border trade from Myanmar to Thailand grew 36 percent annually during 2007 and 2010 (Supatn 2012), with Myawaddy (Myanmar) and Mae Sot (Thailand) border being an important route. For the cross-border trade between Vietnam and Cambodia, the volume of cross-border trade increased on average 40 percent annually, with Bavet-Moc Bai being the largest international border crossing between Cambodia and Vietnam. As can be seen, the increasing significance of the cross-border trade of the agricultural products

¹ ADB.GMS Flagship Initiative: East-West Economic Corridor Summary.

among the GMS countries justifies the focus on improving the cross-border value chain for the agricultural products.

Although the emergence of the new agribusinesses and agro-industries can increase competitiveness in international and domestic markets, it poses risks to actors in the value chains—**smallholder farmers can experience short-term difficulties in meeting agro-industry standards and contract requirements; agribusiness SMEs must increasingly compete with large-scale food manufacturers who benefit from the economies of scale; and traders in local markets can be compromised by specialized procurement practices, supermarkets, hypermarkets, and certified products.**

In the EWEC, which connects the poorer areas of the country, many small farmers are still living in largely closed and isolated systems. Approximately, 75 percent of the population of provinces along the EWEC is engaged in agriculture and agriculture-related industries. **These farmers operate primarily in informal markets without recourse to legal and social institutions and with great vulnerability to changes in weather and many farmers also lack access to productivity enhancing modern machinery, adequate irrigation and appropriate storage, including cold chain infrastructure.** Small-scale production, informal marketing arrangements and undependable internal transport and communications links prevail.

While the countries moving towards greater regional integration and single market, it is of importance to enable farmers to respond to market demands by diversifying their product offerings, improving quality, supply dependability, and simultaneously lowering unit production costs and boosting revenues through the introduction of improved, low-cost technologies and sustainable farming practices.

As an intergovernmental organization, the Mekong Institute (MI) provides, implements, and facilitates integrated human resource development and capacity building programs and development projects related to regional cooperation and integration issues in the GMS. MI's strategic goals are 1.) to deliver high quality and relevant capacity building program promoting GMS economic and social integration; 2) to facilitate the development of the policies and best practices that promote regional cooperation and integration; 3) to be a well-known GMS learning center for regional cooperation and integration.

To promote equitable and inclusive growth in the GMS, the Mekong Institute has been implementing the regional and local economic development project "Capacity Development for a More Inclusive and Equitable Growth, Greater Mekong Subregion (GMS)" in collaboration with local partners. The project aims to improve the livelihood of small farmers and the economic status of small and medium-sized enterprises (SMEs) in six provinces along the East West Economic Corridor by making their agricultural products more competitive. As such, **MI has conducted the studies on the value chain of the promising agricultural commodities between the target twin provinces in EWEC.** The studies were conducted in two stages. The first stage was to identify the agricultural commodities that are traded between the twin provinces and, subsequently, to select the most promising commodities to be examined further. Based on the results of the first stage study, MI selected **three specific agricultural crops in three target regions: the rice value chain in Khammouane Province of Lao PDR, the coffee value chain in Quang Tri Province of Vietnam,**

and the maize value chain in Kayin State of Myanmar. The second stage was conducted as an in-depth study on the value chain mapping and analysis of the selected promising commodities in order to have a better understanding of the constraints and opportunities in each level of the value chains. This aims to understand what kind of development intervention is necessary for farmers to benefit from greater connectivity and economic cooperation in the sub-region to identify the best project approach for MI as well as to provide policy recommendation for development practitioners, governments, and private sectors to support the agricultural development that eventually leads to a more inclusive and equitable growth in the GMS. **This Mekong Development Report presents the detailed results of the second stage – the value chain analysis of the three chosen agricultural commodities in the three target provinces and the brief introduction of MI’s intervention to achieve the project goal.**



Chapter

2

2. Value Chain Analysis

2.1 Rice Value Chain Analysis in Khammouane, Lao PDR

2.1.1 Profile of Khammouane



Figure 2: Map of Khammouane Province, Lao PDR

Basic Information

Khammouane province is located in the central part of Lao PDR. It borders Bolikhamxai province to the North, Ha Tinh and Quang Binh Provinces of Vietnam to the East, Savannakhet province to the South, and Nakorn Phanom province of Thailand to the West. Khammouane province has a total land area of 16,315 km², of which 46% consists of plains, 35% of the land is mountainous, and 19% is plateau.

Khammouane province has a total population of 364,806. The current population growth rate is 2.1% while the population density is 22 people/km.² The majority of the population is Lao, with ethnic minorities of Phuan, Phutai, Kaso, Saek, Yor, and Yuan. There are 588 villages with 61,505 households.

Although the industry sector's share is larger than agriculture's, the latter is more important due to the greater number of people involved and land potential in agricultural practices. In 2013, 41.2 percent of the GDP was represented by the industry sector, 29.4 percent by the services sector

2 Mekong Institute, 2013. *Rice Value Chain Analysis in Khammouane, Lao PDR*.

(including tourism), and 26.6 percent by agriculture. However, **about 72 percent of the working population is based in agriculture**, while only 5 percent is in industry. Main agricultural products include rice, vegetable, livestock (cow and swine) and fishery.

Cross-border trade is also important for Khammouane's economy. In Khammouane, there are 3 important border crossings for trade, which are:

- Border crossing Thakhek of Lao PDR-Nakorn Phanom of Thailand (waterway link)
- 3rd Friendship Bridge border crossing Khammouane-Nakorn Phanom (land link)
- Border crossing Naphao of Lao PDR-Cha Lo of Vietnam (land link)

As regards socio-economic aspects, there is a problem of inequality in Khammouane. Although the provincial GDP is high, the poverty rate is also high. From 2010 to 2013, provincial GDP grew by more than 12 percent annually, which exceeded an average economic growth rate in the country. However, the provincial poverty headcount is 31.4%, which is higher than the national average of 27.6%.

Key Policies, Regulations and Development Initiatives

Policies and Regulations

In order to promote Khammouane to be a rice hub of ASEAN, the central government of Lao PDR has developed irrigation system. Three main water sources in Hinboun, Xebangfai, Nakai and Yommalath districts are being generated to supply farming areas. The government plans to generate water supply and target covering 200,000 hectares both wet season rice and dry season rice.

In order to help small holder farmers in accessing to cheaper inputs, in order to reduce their production costs, **the Department of Industry and Commerce (DIC) in Khammouane established quotas for input suppliers to import fertilizers** from Thailand at 3,000 tons per year **and also decreased the import tax to 1%** from regular of 10% for input suppliers who will support smallholder farmers in group formation, extension services, input access, and financial service provision. However, currently only one rice miller group, Khammouane Patthana Group, can provide these services and support to small holder farmers. Furthermore, this rice miller group can only import fertilizers from Thailand at 500 tons a year under the DIC quota for fertilizer imports.

Development Initiatives

The Khammouane Development Project (KDP) is currently under implementation in the province. The KDP aims to strengthen the planning process and public financial management associated with decentralized delivery of services and infrastructure in Khammouane Province. The project is implemented through the Department of Planning and Investment (DPI) with support from the World Bank. The KDP has been implemented in Khammouane province since September 2008. With additional financing from the World Bank, the project was extended until March 31, 2016.

The KDP consists of three components:

- Component 1: Local development and provincial capacity building mainly to support public investment through the district development fund (DDF) and the provincial development fund (PDF), and provide technical training for the various departments of the provinces
- Component 2: Supports irrigation development along Nam Theun 2 (NT2) downstream channel and lower Xebangfairiver, which mainly supports the development of irrigation facilities utilizing the discharge water from the NT2 hydropower station. This component will continue to support rehabilitation works including: (a) repairs to the pump facilities, (b) rehabilitation of canal conveyance structure, and (c) technical assistance to water user groups regarding irrigation management, administration, and agriculture. From the study, irrigation in Khammouane is still inefficient because farmers must pay pumping charges as well as other costs of irrigation operation and maintenance. Water user groups are weak and have little capacity for sustainable irrigation management. Moreover, the amount collected for irrigation services fees is only about 10% of the amount required for sustainable irrigation operation and maintenance.
- Component 3: Support for rural livelihoods and agricultural development by the Provincial Agriculture and Forestry Office (PAFO). These activities will mainly be; (a) up scaling the current Agricultural Livelihood Grants (ALG) to additional 33 poorest villages and (b) piloting a competitive grant scheme for agriculture entrepreneurs, (c) Institutional Strengthening for PAFO, including: (i) continued support for the Xebangfai Rice Seed Center; (ii) Strengthening Planning, Implementing, and Monitoring of the PAFO, and (iii) strengthening technical capacity of PAFO and DAFO staff to support effective demonstration and extension activities for villagers are included in this component

Status of Region With Regard to Commodity Selected for Development

Five out of ten districts in Khammouane have suitable land and conditions for growing rice and cash crops. These are Thakhek, Mahaxay, Xaibouathong, Xebangfai and Nongbok districts. Nongbok, Nhommalath district is recognized nationwide as the area that can produce the best quality of rice, most of which are exported.

Although most of the areas in Khammouane province is utilized for growing wet season rice, the dry season rice farming contributes the highest average rice yields per hectare, compared to wet season rice and upland rice farming. In Khammouane, there are currently about 60,000 hectares for growing wet season rice and 10,000 hectares for growing dry season rice. Farmers in the upland area also grow upland rice around on about 1,000 hectares. Average rice yields in the province are 3.3 tons per hectare for wet season rice, 5.4 tons per hectare for irrigated area and 2 tons per hectare for upland rice.

A plateau area is more suitable for rice cultivation than a hilly area as it gives higher yields per hectares. As for wet season crop, in 2012 the plateau area produced the highest rice yields per hectare with 3.39 tons per hectares compared to the rice yields in the hilly area with 1.98 tons per hectares. From Table 1, in 2012 most of harvested areas were plateau area with 61,374 hectares, 90 times larger than the hilly area used for rice harvest. With its vast area the plateau area generated rice as much as 208,152 tons, about 154 times the yield from the hilly area.

Wet Season	Harvested Area	Production	Yield (tonnes per ha.)
Plateau Area	61,374	208,152	3.39
Hilly Area	681	1,350	1.98

Table 1: Harvested Area and Production of Wet-Season Rice in Khammouane in 2012 ³

Some of farmers in Khammouane have been formed into groups. Most of them were formed by the rice mill operators. There are 64 groups with total of 3,415 households covering 6,500 hectares of land area for growing season rice and 50 groups with a total 2,476 households covering 2,285 hectares of land area for growing off-season rice. In 2014, there is one more farmer group of organic rice with 70 households covering 90 hectares. Those farmer groups have not reached even 7% of the total number of farmer households in the province. Most of the extension services and input access will be provided to formed farmer groups rather than to individual farmers. This will pose a problem for providing services to farmers in remote communities who experience problems with poor farm-to-market roads.

The rice markets of Khammouane province are divided into 3 markets:

- Local markets within Khammouane province
- Domestic markets within the country, which purchase milled rice in Khammouane and then is either consumed or processed to other forms of products such as beer, noodles, local sweets, distilled spirits or rice wine, etc.
- Foreign markets from China and Vietnam

2.1.2 Rice Value Chain Mapping

Product Flow, Actors, and Activities

Actors in the rice value chain in Khammouane, Lao PDR consist of input providers, rice producers, rice collectors, rice processors (rice millers and processing factories), and market (exporters and domestic retailers).

³ Production info. 2012: drafted report of Commercial Rice Production Project in Khammouane Province, PAFO

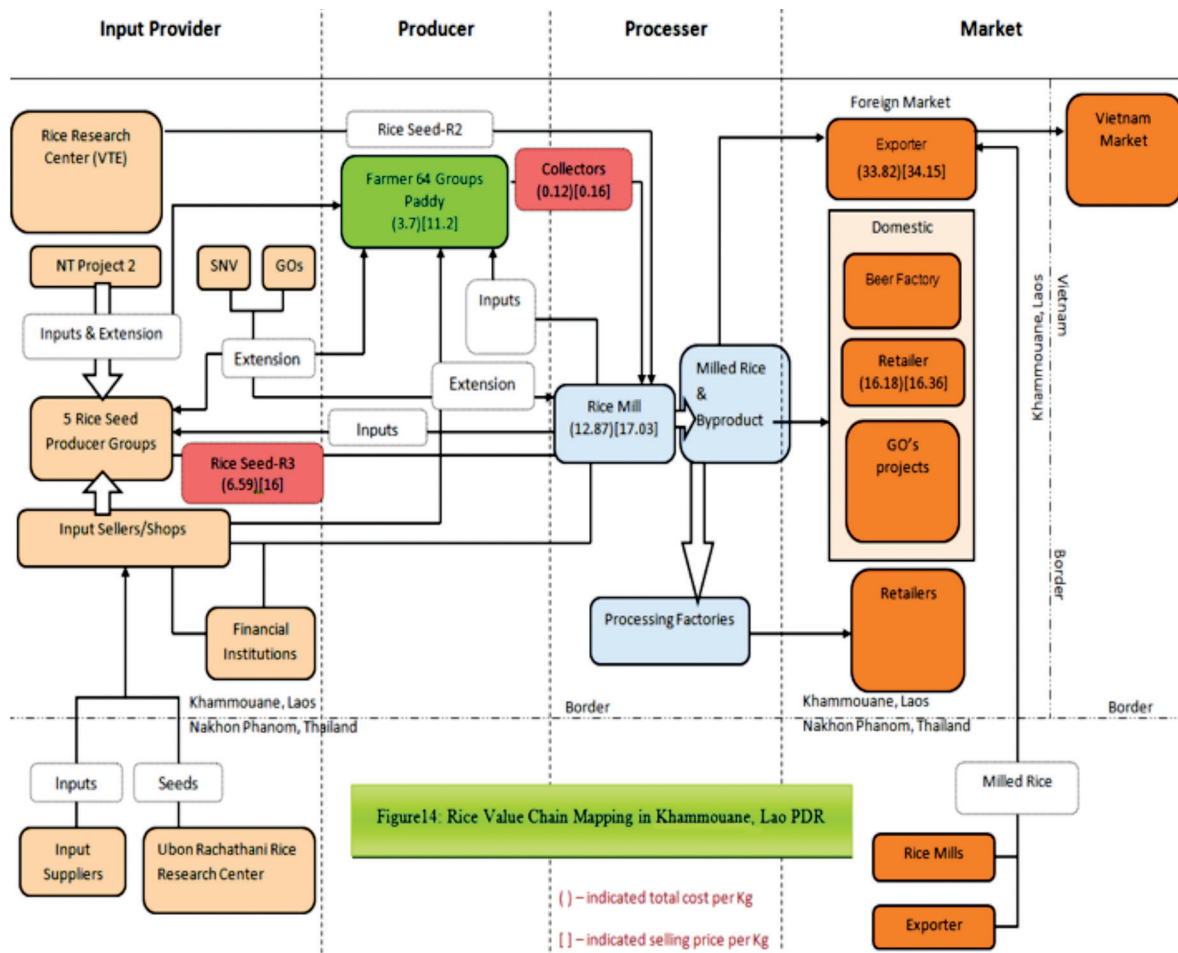


Figure 3 : Rice Value Chain Mapping in Khammouane, Lao PDR

Input Providers

In farmer acquisition of rice seeds, fertilizer, equipment and machinery in Khammouane, there are four channels:

- 1) Acquired through purchasing.** Farmers buy supplies (rice seed, fertilizer, equipment and machinery) in shops around towns. Some farmers also buy seeds from other farmer groups from neighboring villages. Lastly, some farmers also buy rice seeds from Xebangfai Rice Seed Center, the only government's rice seed center in Khammouane.
- 2) Acquired through renting or through contractors.** During the production season, farmers mostly rent or hire labor through contracting. In the case of hiring a thresher (machine and operator) the condition of payment is per sack or per ton of paddy.
- 3) Acquired through support in the form of projects.** Some of the farmer groups are under the support of NGOs, including organizations working directly with farmers and organizations working through cooperation with government organizations or the private sector. Input supplies that the farmer groups acquire from NGOs such as equipment and machineries are considered as shared properties of the group. Members of the group may use them during the production season and pay a certain fee for further fixing and maintenance the equipment and machineries. Some farmer groups also acquire inputs from the rice mills in terms of kind loans, which are repaid after harvesting.

4) **Already in the possession of the family.** Some farmers collect and store their own rice varieties and plant their own seeds every year. There are also some farmers who buy their own equipment and machinery to be used by their households or rented out to neighboring farmers to acquire additional income.

In the case of working capital (finance), most farmers use their own money. Some farmers take loans with rice mills with agreements for providing inputs and buying and selling paddy. As for large scale farmers, who need larger capital amounts, they usually take loans from financial institutions in Khammouane, such as the Agricultural Promotion Bank and the Lao Development Bank.

Rice Producers

Farmers have an average farm holding of 1 hectare per household. **Farmers in Khammouane grow rice twice a year;** one crop in the wet season from May to December and the other in the dry season from January to April. During the rainy season, the production rate averages at about 2.5-3 tons per hectare, and during the dry season the average is 4-5 tons per hectare.

Rice varieties that farmers plant in Khammouane are divided into 2 categories: rice for consumption (Glutinous rice such as Thadok Kham 8, Thadok Kham 11, and Gorkor 6; non-glutinous rice such as Hom Mali) **and rice for processing** (non-glutinous rice such as Xebangfai 1, 2, and 3).

During soil preparation, farmers spread manure fertilizer before the first plowing. **Farmers do not have to purchase manure fertilizer, because most farmer families raise cattle and buffalo for selling locally and cross border marketing.** The first plowing is left for 2-3 weeks, and, then a second plowing, is done for transplanting. The seedlings for transplanting are about 20-25 days old, and will use 1-3 stalks per clump. The spacing of transplantation is about 20 by 20 cm.

In maintaining the seedlings after transplanting, **the farmers use a mixture of chemical fertilizers, manure fertilizers and organic fertilizers.** The commonly used chemical fertilizer is urea (46:0:0) with an average usage of 2-3 sacks per hectare (50 kg per sack) and 16:20:0 with an average usage of 3 sacks per hectare (50 kg per sack). For the organic fertilizers, the average usage is 6 sacks per hectare (50 kg per sack) in each season.

For harvesting, there is still a need to use manual labor. **Nighty Five percent of all the harvesting is done by workers;** the remainder is done by mechanical threshers. The workers for harvesting are local people and labor wage is about USD 5-6 (150-180 Baht) per day (production season of 2011/2012). The harvested rice is dried in the field to reduce moisture for about 2-3 days before it is collected and stacked for thrashing. The difference between using workers and threshing machines is that using harvesting machinery requires a yard to dry the rice. This is because the output from the machinery is paddy, which is still very moist. To add to this, the farmer will still need to hire workers to help dry the paddy. If the farmer simply hires workers to harvest, the wages would also include drying the rice in the field as well.

The process of post-harvest management begins with the farmers collecting the paddy in a plastic sack (36 kilograms per sack). After that some will be kept in a barn waiting to be bought and sold and some will kept in the household for family consumption.

Paddy Collectors

The rice mill plays an important role in collecting the paddy (collectors). The rice mill conducts the buying and selling of paddy with the farmers by preparing a truck to transport the paddy from farmers' barns. The small rice mills gather and collect the paddy by themselves as the small size rice mills in villages need only a small amount of paddy due to its production capacity of 1 ton per day, compared to medium to large size rice mills in town with an average production capacity of 5-20 tons per day. The medium to large size rice mills may also hire a representative in the village to gather all the paddy of the farmers in one place for the convenience of transportation and as they require sufficient stock for production. The representative will receive a remuneration of USD 0.13 (1,000 Kip) per 12 kg of paddy, on the condition that they gather 3-4 tons of paddy per small truck. If there are any rice mills that have a six-wheel truck, the amount of paddy transported must be up to 8-10 tons per trip for fuel efficiency. The rice mill must also pay the workers who carry the sacks for loading with a rate of USD 0.13 (1,000 Kip) per sack.

Rice Processors

1. Rice Mills

There were a total of 105 rice mills in Khammouane who registered as business operators with the provincial government. Most of them were medium size rice mills with production capacities of 5 to 20 tons per day. However, there were a large numbers of small rice mills in the communities, with production capacities not exceeding 1 ton a day. Most of them were not in the provincial database. Presently, not all 105 rice millers are still in operation.

Location	Number of Rice Mills	Horse Power
Thakhek	33	20 –65
Nakai	2	20
Nongbok	30	20 -40
Mahaxay	12	20 -32
Hinboun	5	20
Xebangfai	10	15 -25
Xaybuathong	11	20 -50
Boualapha	2	22 -25

Table 2 : Number of Rice Mills in Khammouane, Lao PDR⁴

In the province, about 60 rice millers (57% of total medium size rice millers) has been formed into 5 groups in 5 districts, which are Thakhek, Nongbok, Mahaxay, Xebangfai and Xaybuathong district of Khammouane province. For the rest, they are individual rice millers.

The main role of the rice mill in the rice value chain is to process paddy into rice. After the rice mill has collected the paddy from the farmers, they will go through a quality test, including as moisture check. The standard level of moisture in paddy for wet season rice should not exceed 16% and 15% for dry season rice. Another test would be to check for contaminants. The standards of

4 Department of Industry and Commerce, Khammouane, Lao PDR, 2013.

contamination should not exceed 5% for season rice and 3% for off-season rice. After which, they will be placed in a granary and segregated by variety so as not to be mixed with other varieties.

There are two kinds of milling in Khammouane:

1) Milling the paddy into brown rice is done by cracking the shell, after which the brown rice is milled once again to be refined. This kind of milling can only be done by medium and large size rice mills with a production capacity of 500 kilograms per hour. The advantage of milling this way is that such mills can produce rice with better quality, with a higher percentage in producing unbroken and a lower percentage in producing broken-milled rice. It also separates the soft rice bran and the hard rice bran, which are priced differently.

2) Milling in a single process. The milling of paddy into rice occurs in one single process to save time. This process however produces a lower percentage of head-rice and higher percentage of broken-milled rice. It also produces mixed rice bran which is cheaper than separating the bran varieties. This kind of milling is mostly done by small size rice mills, which has a production capacity of no more than 1 ton per day. The rice mills produce the following products: whole kernels of white rice, broken rice, rice tips, rice bran, and rice husk, all of which can be sold.

1. *Processing Factories*

- **Brewery**

Some of the products of the rice mills are sold to the beer factories in Vientiane to be further processed into beer. These kinds of rice variety are: VND, BR63, and CA3. About 600 tons of rice from Khammouane bought by the beer factories per in 2014, and increased to 800 tons. However, it needs to be tested for quality.

- **Noodle and Rice Noodle Processing Factories**

Most of the non-glutinous rice produced in the rice mills, including mixed rice and broken-milled rice, are sold to processing factories that make noodles and rice noodles. These processing factories are large and are located in Savannakhet province. The noodle and rice noodle processing factories in Khammouane are of small size and all of them operate in family level with processing machines no larger than 10-horse power, which can produce 300 kilograms of noodles per day. As for their rice noodle processing factories, the machines are no bigger than 27-horse power with a production capacity of 400-500 km of rice noodles per day and tend to be sold in Khammouane only. CA3 is the variety of rice that is commonly processed into these kinds of products.

- **Kha Nom Pan Factories**

In Khammouane, there is also a group of people in Nongbok district who process rice into a local dessert, which is called Kha Nom Pan. This group purchases glutinous rice from the rice mills and process them into Kha Nom Pan to be sold in Nongbok and Thakhek districts. The businesses of these groups are considered as family businesses, which have been operating for the past 25 years, and the Kha Nom Pan they produce is considered as a unique delicacy of Khammouane. Hence this kind of business is supported and promoted by the government in order to continue their operations in Khammouane.

- Winery

Another kind of business that is considered as family business and is conducted alongside the local community as well as being part of Lao culture ever since, is the processing of rice to distilled spirits or rice wine (Lao Khao). People who operate this kind of business are considered small scale, but there are many scattered small enterprises all over the communities of Khammouane. Every variety of glutinous rice of lower quality can be processed into this product. Therefore, distilled spirit operators are considered as a suitable market for farmers who produce low quality glutinous rice in Khammouane.

Marketing

There are 2 rice market systems in Khammouane: (i) domestic markets and (ii) foreign markets. The rice market in Khammouane is mostly domestic with many market channels.

As regards domestic markets, rice is sold for domestic consumption through retailers and also to the government for food programs. Rice for domestic consumption (about 80%) is sold in local markets and nearby towns through many wholesalers and retailers in Champassak, Salavan, Bolikhamxay provinces from Vanida Rice Mill. Even rice mills in Khammouane need to have their own retail shops in order to increase the distribution channels of their products. Other than this channel, there is also distribution network that sells products to government programs through the Red Cross which then distributes these products to areas in shortage and in need as well as through the State Food Company which supplies subsidized rice for the army and government officials.

As for foreign markets, rice produced in Khammouane is exported to Vietnam and there is a prospect of exporting rice to China. Due to the agreement between the Government of Lao PDR and the Government of Vietnam, Vietnam provides a quota for Lao to export milled rice at 70,000 tons per year. This agreement gives Khammouane another major distribution channel. Also, China could also be another major distribution channel for Khammouane. China has already sent brokers to survey the rice mills in Khammouane to come up with a quota for trade.

Khammouane has an import-export company called Phuvong Trading Co., Ltd. This company exports rice to Quang Binh, Vietnam through the Naphao border crossing, which is in Khammouane territory, with an average export of about 6,400 tons per year. The rice that this company sells is glutinous rice (90%) and non-glutinous rice (10%). Apart from domestic supplies, the company also imports some glutinous rice (GorKor 6) from Thailand through the Third Friendship Bridge.

Cost and Margins in the Rice Value Chain

The analysis of costs and margins is categorized into two chains, cost and margin in the rice value chain for domestic market and international market.⁵

⁵ Concerning the farmers, this research uses the information from the Rice Production Farmers. The study has also used the milling rate of a medium sized rice mill that can produce 610 kilograms of milled rice per one ton of paddy as reference and determine the analysis as Baht per kilogram.

As regards the cost and margin in the rice value chain for domestic market, the profit to revenue ratio throughout the rice value chain in Khammouane is 119.61% with rice farmers having the highest at 66.96%, followed by collectors with 27.13%, and rice millers at 24.42%. The retailers did not get much profit, with only 1.09%. This can be seen in Table 3.

(Unit: Baht per Kg)	Rice Producer Farmer	Collector	Rice Mill	Retailer	Total
Operational Costs		0.12	2.41	0.21	
Raw Material Costs	3.70		10.46	15.97	
Total Cost	3.70	0.12	12.87	16.18	
Price Received	11.20	11.36	13.49	16.36	
Price Received from By-products			3.54		
Total Revenue	11.20	0.16	17.03	16.36	
Profit	7.50	0.04	4.16	0.18	11.88
Percentage of Profit to Revenue	66.96	27.13	24.42	1.09	119.61
Ration of Profit to Total Profit	63.13	0.37	35.01	1.50	100.00

Table 3 : Cost and Margin in the Rice Value Chain for Domestic Market

Within the rice value chain for the domestic market, retailers contribute the most to the added cost of 52.82%, followed by rice processors with 35.45%, and rice farmers with 11.34%. While rice collectors contribute the least to the added cost, with only 0.39%. With regard to total profits, rice farmers have the largest share of total profits of 63.13%, followed by rice processors with 35.01%. By contrast, exporters and collectors gain only a small share of the total profits, with 1.50% and 0.37% respectively.

Collectors have the largest share of the unit margin in the rice production, with 43.98%, followed by rice farmers with 30.08%, and rice processors with 24.43% while retailers contribute the least to the unit margin of merely 1.50%. This is shown in Figure 4.

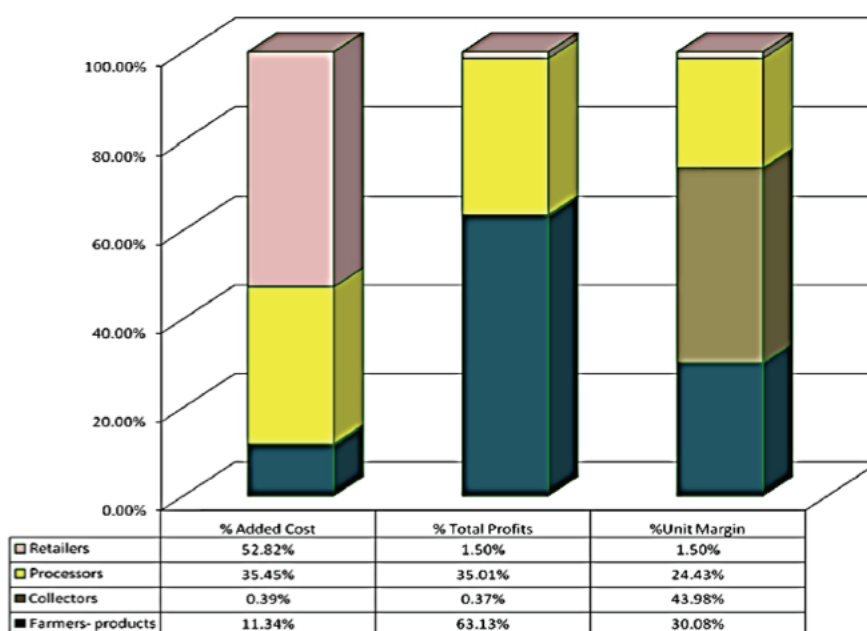


Figure 4 : Cost and Margin of Actors in the Rice Value Chain for Domestic Market

In terms of the cost and margin in the rice value chain for international market, the profit to revenue ratio throughout the rice value chain in Khammouane is 119.49% with the rice farmers having the highest at 66.96%, followed by the collectors with 27.13%, and rice millers at 24.42%. The exporters did not get much profit with 0.97%. This can be seen in Table 4.

(Unit: Baht per Kg)	Rice Producer Farmer	Collector	Rice Mill	Retailer	Total
Operational Costs		0.12	2.41	0.69	
Raw Material Costs	3.70		10.46	33.13	
Total Cost	3.70	0.12	12.87	33.82	
Price Received	11.20	0.16	13.49	34.15	
Price Received from By-products			3.54		
Total Revenue	11.20	0.16	17.03	34.15	
Profit	7.50	0.04	4.16	0.33	12.03
Percentage of Profit to Revenue	66.96	27.13	24.42	0.97	119.49
Ration of Profit to Total Profit	62.32	0.36	34.56	2.76	100.0

Table 4 : Cost and Margin in the Rice Value Chain for International Market

Within the rice value chain for the international market, exporters contribute the most to the added cost of 70.25%, followed by rice processors with 22.35%, and rice farmers with 7.15%. While rice collectors contribute the least to the added cost, with only 0.24%.

Regarding the total profits, rice farmers have the largest share of total profits of 62.32%, followed by processors with 34.56%. Meanwhile, exporters and collectors gain only a small portion of total profits, with 2.76% and 0.36% respectively.

Exporters have the largest share of the unit margin in the rice production, with 57.20% while collectors, farmers and processors share the similar proportion of the unit margin, with 19.22%, 13.01% and 10.57%, respectively. This is shown in Figure 5.

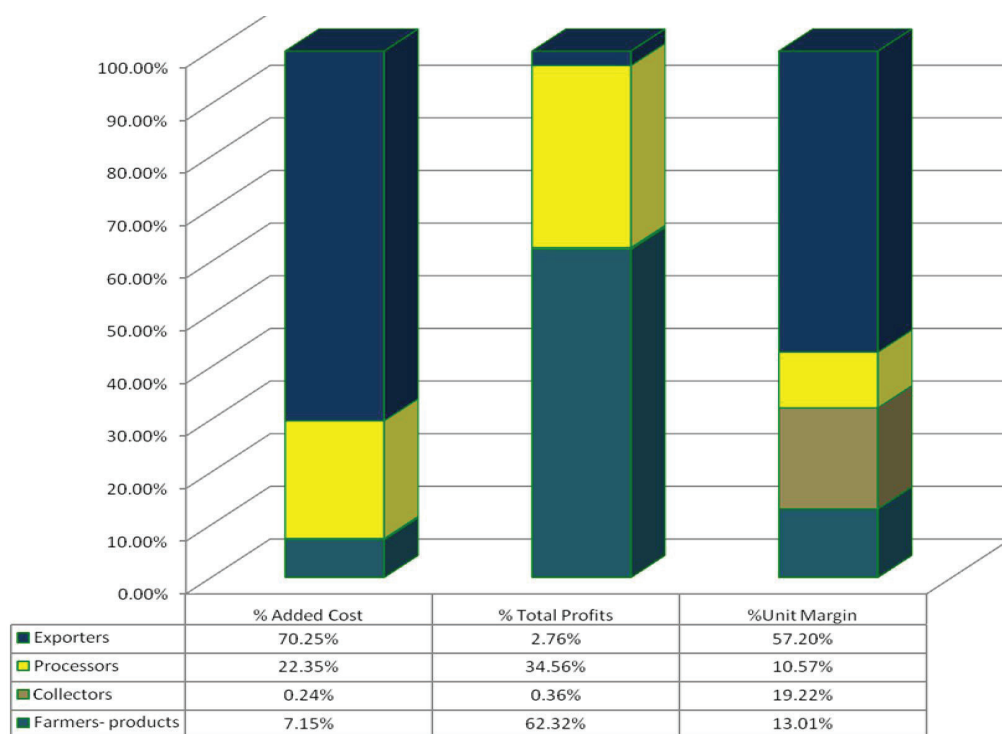


Figure 5 : Cost and Margin of Key Actors in the Rice Value Chain for International Market

As for rice farmers in Khammouane, the cost of production inputs contribute the most to the total cost of production, with 54.90%, followed by labor cost of 36.43%, costs for post-harvest management of 6.30%, and lastly costs for land usage with 2.36%. The study also found that the cost of chemical fertilizers comprise the highest component of input costs. Planting wages and harvesting wages contribute the largest proportion of the labor cost.

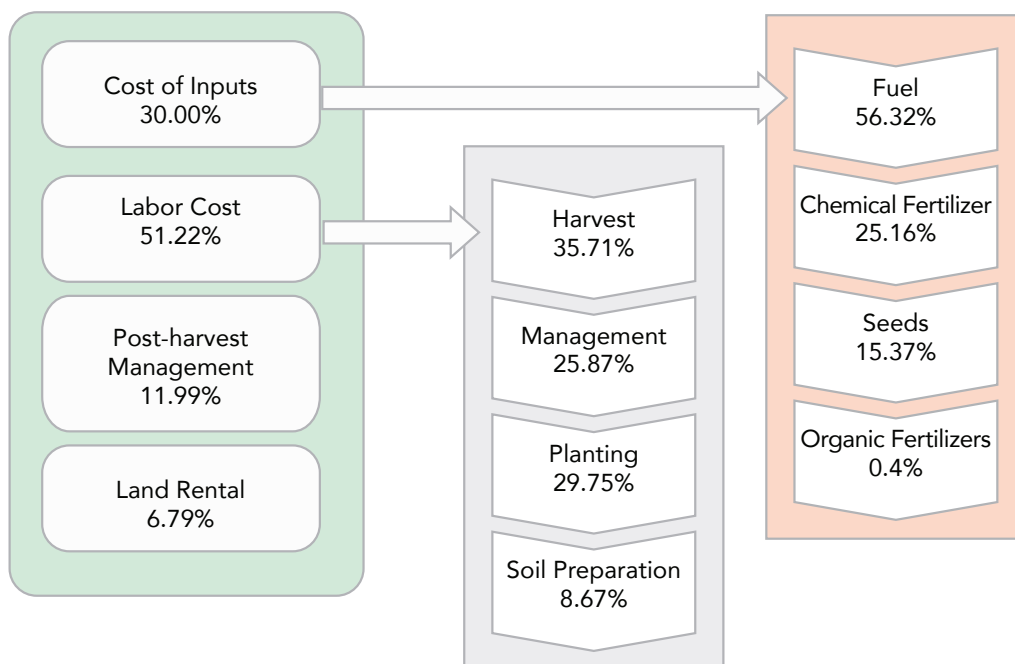


Figure 6 : Cost Categories of Rice Seed Producer Farmers in Khammouane, 2012

For rice mill operators, the cost of buying paddy as a main raw material comprises the biggest portion of the total cost of rice processing.

It was discovered that 81.27% of the costs are from buying paddy as a main raw material, 15.49% are fixed costs, and 3.24% are operational cost as indicated in Figure 7. Most of the fixed cost incurred in the rice mill is factory rental, accounting for 85.58%. As for the operational cost, the cost of collecting paddy from farmers contributes the largest proportion, constituting 30.72%.

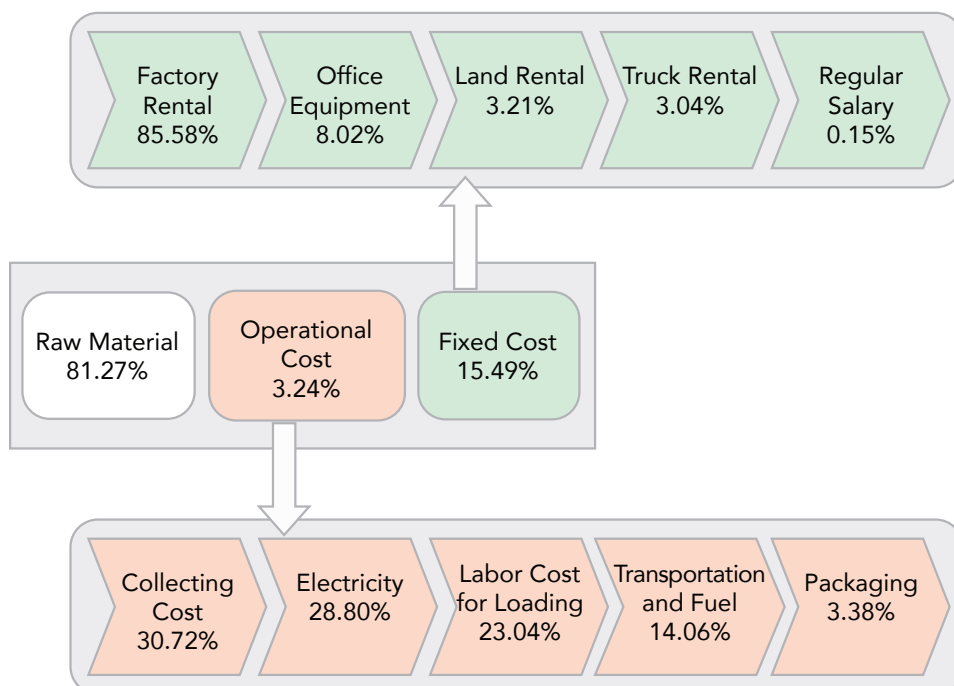


Figure 7 : Cost Categories of Rice Mill Operator in Khammouane, 2012

For the collectors in Khammouane province, the costs come mostly from the cost of fuel with 65.87%, followed by labor cost of 32.94%, as shown in Figure 8.

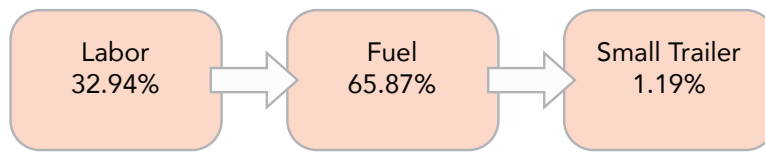


Figure 8 : Cost Proportion of Rice Collectors in Khammouane, 2012

The biggest part of the cost for the exporter comes from costs of purchasing rice, accounting for 97.56%. As for the other 2.05%, it comes from transportation operations, which includes asset insurance, import tax, and shipping costs. The last 0.38% is fixed costs for operations only.

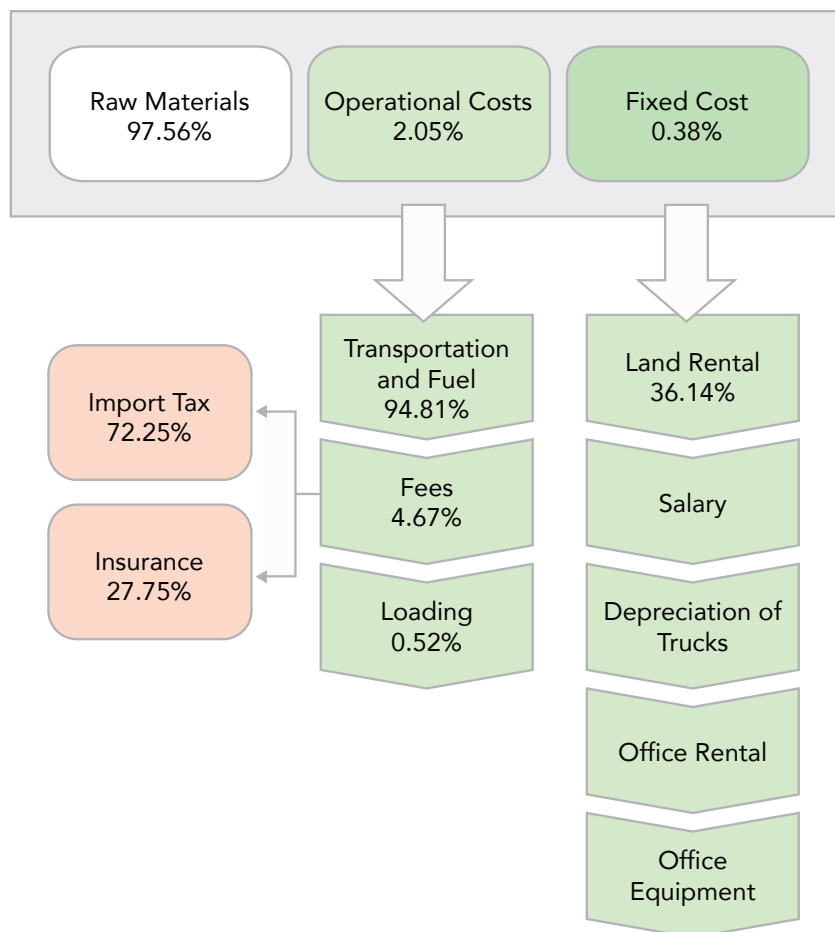


Figure 9 : Cost Proportion of Rice Exporters in Khammouane, 2012

2.1.3 Constraints for Rice Value Chain Development

High Production Costs

Rice farmers in Khammouane experience high input costs and limitation of access to inputs, especially for smallholder farmers. Farmers who produce rice seed have an average production cost of 6.59 Baht per km (USD 219 per ton), with the cost of inputs amounting to 54.90% of total production costs. The highest component cost is chemical fertilizers, averaging at 1.31 Baht per km (USD 43.6 per ton), followed by planting wages for hired labor, which averages 0.94 Baht per km (USD 31.3 per ton). The third highest cost is the harvest wage averaging at 0.82 Baht per km (USD 27.3 per ton). Lastly the rice seed producer farmers also have land rental as a fixed cost with an average of 0.67 Baht per km (USD 22.3 per ton). Currently, labor shortages with increasing rural wages add to the high costs of production. In addition, high production cost is also contributed by **high transportation cost due to poor farm-to-market roads.**

Low Productivity and Quality

A weak regulatory mechanism and certification of rice for export (uncertain rice standard system) results in low productivity and low quality of rice. In 2014, only 11% of farmers use certified seeds, while the remaining 89% still use unimproved varieties that have low tolerance to flooding and droughts.

Moreover, farmers have limited knowledge on plant protection and post-harvest management resulting in low productivity. Farmers lack knowledge on plant protection, causing production losses. In addition, as farmers grow several varieties of seed in the same plot especially during wet season, the different varieties of paddy are mixed up, resulting in low efficiency in sorting and milling process (average of 50-55% compare with optimal 60-70%).

Farmers also lack incentives to produce good quality rice due **to weak information sharing and lack of facilitation in grading, classifying, and standardizing** to differentiate product and pricing. Moreover, seed pricing is one of limitations for farmers not to change the retained or traditional varieties. The certified seed is expensive (USD 0.6/kg)

For rice processing, low rice milling efficiencies results from **insufficiency of efficient milling equipment and rice mill management.** Most of the rice mills have limited equipment for quality check on paddy rice, particularly the moisture level of paddy rice.

The improper storage area in rice mills also causes low quality rice. Generally, storage is not well built for easy cleaning purpose and it cannot control moisture. Rice mills also cannot prevent animals from entering storage area in most cases. Moreover, some rice mills' buildings do not have good ventilation.

In some cases, **rice millers are not able to control how paddy rice is produced** so the quality of rice is not ensured. Although all of rice mills do have their own rice farmer groups, which they have a control over, to supply paddy rice, the production volume of paddy rice from rice farmers groups

is not enough for the rice mills' demand. Therefore, rice mills have to buy paddy rice from farmers outside groups, which rice mills cannot make sure of the quality.

Rice mills also have difficulties in access to financial resources, leading to low investment for improving the milling factory, which affects quantity and quality of milled rice. On the one hand, this is because they lack information on financial resources. On the other hand, for rice mills that have financial information resources, they still cannot manage to obtain fund because they cannot provide formal financial report and accounting system that can be audited.

Furthermore, the rice cross-border trade is done through a single exporter; therefore, there is a monopoly with insufficient competition, which has adverse effects on incentives to improve productivity and quality.

Additionally, **ineffective flood management program and poorly managed irrigation systems** result in production losses, especially during a rainy season.

Weak Forward and Backward Linkage among Actors

In Khammouane, most of the extension services and input access are provided to formed farmer groups rather than to individual farmers, particularly in rural farming communities. Currently, farmer groups have not yet reached even 7% of the total number of farmer households in the province.

Rice mills in Khammouane do not have sufficient information on market and lack of human resources for marketing, particularly on export market; as a result, they have less power on negotiation. Some rice mills know only price but lack of awareness when it comes to buyers or the type of channels to enter the market. In addition, rice mills lack human resources for marketing. In most cases, the owners of rice mills are responsible for marketing and marketing information but they are busy with production and financial management. Moreover, for rice mills that target export market, they do not have people who can communicate in English even, the owners of rice mills.

Weak information sharing and lack of promoting private input suppliers to get involved in supporting farmers results in limited access to inputs, especially for individual smallholder farmers.

Other Issues

- Low rice prices caused mainly by government policies on restricting exports and expanding food security reserves
- Absence of contract farming and regulations for enforcement
- Increasing and inefficient use of chemical fertilizers having adverse effects on environment

2.1.4 Recommendations to Minimize the Constraints and Maximize the Prospects

Recommendations on Lowering Rice Production Cost

- **Maintaining and upgrading farm-to-market roads** in order to reduce logistics cost
- **Increase market information** accessibility in order to improve bargaining power
- **Appropriate mechanization** need to be adopted to lower production cost
- **Increase investment on input supply** in order to increase the availability of inputs

Recommendations on Increasing Productivity and Quality of Rice

- **The adoption of certified seeds** instead of low quality seed should be promoted.
- **To upgrade all rice plantation process**, technical skills including improving inputs (seed, fertilizer), technique and process on production and harvesting are urgently needed.
- Key LED actors and private sector must know **updated technology and machinery for rice milling** and quality product assurance.
- **Water supply management** and extension services need to be improved.
- **Rice grading** and rice quality standards/certification for global markets should be established.
- Professional skills in **business management**, marketing and processing technology must be provided in tandem.
- **Financial services** need to be improved to increase financial access for farmers and rice mills as well as to encourage private firms to increase their participation in international trade and investment.

Recommendations on Improving Linkage among Actors in Value Chain

- **Enhancing trade facilitation** and improving export processing
- Scaling up good practices on **farmer group formation and linkage between farmers and rice millers** will be useful to boost the pace of market access as well as product and market development.
- Turning interested and **seeking for external supports** at central level enable opportunity for **professional skill development** of key actors in Khammouane province. It is recommended that professional training can be done by the cooperation with the existing professional training provider from central level.

Recommendations on Improving Enabling Environment for Rice Value Chain Development

- Improving an enabling regulatory and administrative environment through related ministries cooperating with interested parties in reviewing regulations and implementation tools that are hindering the establishment and expansion of rice businesses;
- Improving existing regulations and issuing new ones ensuring that they are relevant, simple, clear and enforceable;
- Disseminating information on regulations relevant to rice farming businesses.

- Improving agriculture infrastructure to enable more diversity and value addition to rice produce.
- Providing extension services in the area of land and seed preparation by both public sector, such as the Department of Agriculture, and private sector, such as international organizations and NGOs.
- Improving access to finance through appropriate and comprehensive loan products.
- To create an enabling environment for trade and export in Lao PDR, the Department of Production and Trade Promotion, which plays a major role in trade and export promotion under the Ministry of Industry and Commerce, needs to strengthen its capacity. This includes DPTP staff training to deepen their knowledge and strengthen their practical skills in terms of trade promotion; improving its information collection and provision for trade promotion; and strengthen links with related organizations for trade promotion.



2.2 Maize Value Chain Analysis in Kayin State, Myanmar

2.2.1 Profile of Kayin State



Figure 10 : Map of Kayin State⁶

Basic Information

Kayin State is located in the southeast of Myanmar, bordering Mae Sot, Tak, and Kanchanaburi provinces of Thailand to its East; Mandalay Region, Shan State, and Kayah State to its north; Bago Region and Mon State to its west and south, respectively. Kayin State covers an area of 30,383 km², ranking eleventh in size of all states/regions in Myanmar. Kayin State is made up of 3 districts, 7 townships, as illustrated in Figure 10.

⁶ Department of Population, Ministry of Immigration and Population, 2015. *The 2014 Myanmar Population and Housing Census, Kayin State*. [pdf] Myanmar: Department of Population. Available at: <<http://www.dop.gov.mm/>> [Accessed 10 August 2015].

Its topography is characterized by fertile lowlands along lower Thanlwin (Salween) river, and inaccessible forested hill areas along the Thailand-Myanmar border. The State is stretched in a North-South direction. Its northernmost areas are cut off from access to the central and southern parts, requiring travel through either Bago Region or Kayah State to reach the state capital, Hpa-an.

Kayin is one of the less populous states in Myanmar with the total population of 1,574,079 people or 3.1 percent of the total population. The population density of Kayin State in 2014 was 51.8 persons per km², lower than the union level population density of 76 persons per km², and ranking tenth in population density of the States/Regions in the country, the highest being Yangon Region with 716 persons per km² and the lowest being Chin State with 13. The census shows that for every 100 persons in Kayin State, 78 persons live in rural areas while 22 persons live in areas classified as urban by GAD. The main ethnic groups are Sgaw Kayin, Pwo Kayin, Bwe Kayin, Paky Kayin, Shan, Pa-O, Bamar and Mon.⁷

The Gross Domestic Product of Kayin State as at 2011-2012 was USD 785.65 million at current price, and by 2013-2014 is estimated at USD 974.69 million and is expected to be USD 1153.854 million in 2014-2015, an increase of about 18.4 percent in a year.

Though Kayin State was spared from the worst poverty conditions, due to conflicts and insecure conditions, poverty incidence had risen from 11.8 (in 2005) to 17.4 (in 2010). Due to the State Government's efforts the GDP of the State has improved in recent years. If peace and political stability could be achieved it would enhance local economic development processes positively and the expectations of the population could be achieved.

Key Policies, Regulations and Development Initiatives

For more than two decades, Myanmar has been undertaking comprehensive initiatives towards economic and social reforms. Right after her abrupt transition from a planned socialist economy in 1988, various efforts at economic and political opening have boosted foreign investment and private sector involvement in the country. These reforms broadly transformed the socialist economy into a market economy; however, the legacy of isolation and conflict undercut the progress towards realizing the country's fullest potentials.

As part of rural development measures the Progress of Border Areas Development Department of the State Government plans to build roads connecting strategic areas for both economic and social development in 2014-2015 fiscal year. Providing reliable and affordable access to rural infrastructure services dramatically increases rural people's access to market and social services, which are essential for rural poverty reduction in Myanmar. At this point of time, Kayin State has 48 bus lines with total vehicles of 337 for transportation within the state and outside the state. There are 21 electricity supply services stations in Kayin State.

⁷ Department of Population, Ministry of Immigration and Population, 2015. The 2014 Myanmar Population and Housing Census, Kayin State. [pdf] Myanmar: Department of Population. Available at: <<http://www.dop.gov.mm/>> [Accessed 10 August 2015].

The most important measure is to continue the course of peace building among the ethnic groups and the government. It is hoped that relentless efforts between the Union Government, State Government and the ethnic armed groups would yield political stability, a critical factor for people focused economic reforms and local economic development.

Status of Region With Regards to Commodity Selected for Development

In Myanmar, there are two different types of maize depending on the use or type of consumption. One type is called 'sweet corn' mainly consumed as snack food. Another type of maize is called 'seed corn' or 'feed corn,' which is locally called 'A-sei-htoke-pyaung' which is mainly used as feed grain for poultry farms and for export.

Maize farmers mainly use hybrid maize variety as it gives a high yield return. These farmers need to purchase hybrid maize variety to be sown in both rainy season and cool season crops. Hybrid maize seeds were mainly supplied by CP Myanmar registered company based in Yangon through agro-input distribution shops. But at present, there is a strong competition between different brands in the maize seed market, both formal and informal markets as the sown area dramatically increases in recent years. The competition is expected to get stronger as the giant multinational seed companies from US and Europe are geared to enter into Myanmar after the economic sanctions in Myanmar were lifted.

In Myanmar, maize is grown not for direct consumption but for the production of the processed food (such as snack and flour) and feed product. Domestically, maize is mainly used as a feed grain in the poultry industry, which is rapidly growing in Myanmar and in the Asian region because a surge in middle income groups, urbanization, and an increase in the number of tourists have resulted in rising demand for poultry products in domestic market.

Besides the domestic market, maize in Myanmar is cultivated for export, especially to China. Based on the statistics of Ministry of Commerce, the country's total maize export in 2012-13 was 0.569 million tons, accounting for approximately 182 million USD. China is the biggest maize importer for Myanmar, accounting for 78.4 percent of the total maize export of the country.

Maize is mainly produced in the hilly regions, including Shan State, Chin State, Kayah State, and Kayin State. From Table 5, in the hilly regions the maize sown area in 2012-13 was 676,908 acres, accounting for around 65 percent of the total sown area in the country. The central dry zone region, consisting of Sagaing Region, Magway Region, and Mandalay Region, is the second largest maize producing area in Myanmar with 337,885 acres, constituting 32.4 percent. The coastal region had the smallest share of the maize sown area in the country with only 268 acres, accounting for about 0.03 percent.

Different Regions in Myanmar	Sown Acre in Rainy Season	Sown Acre in Cool Season	Total Sown Acre
A. Lower Myanmar			
1.Delta Region (DR)	1,969	25,365	27,334
2.Coastal Region (CR)	-	268	268
B. Upper Myanmar			
1.Central Dry Zone Region (CDZR)	263,907	73,978	337,885
2.Hilly Region (HR)	643,331	33,577	676,908
Union	909,207	133,188	1,042,395
Percent (%)	87%	13%	100%

Table 5 : The Country's Maize Sown Area Based on Rainy Season and Cool Season (2012-2013)⁸

In Myanmar, maize is cultivated in both rainy and cool season. Based on Ministry of Agriculture and Irrigation (MOAI), the area sown to maize in 2012-2013 was 1.042 million acres. The rainy season crop area amounted to 87 percent of the country's sown area while the cool season crop area constitutes only 13 percent of the total sown area.

In Kayin State, maize is mainly sown in rainy season. The area sown to maize in Kayin State is estimated at 43,777 acres of which the rainy season crop area constituted 99 percent of total sown acre. The cool season crop area was only 1 percent of total maize sown area in Kayin State. Accordingly, maize production under rainy season and cool season in 2012-13 is estimated at 94.7 and 0.5 thousand tons, respectively.

Production Season	Sown Acre	Harvested Acre	Yield P (Bsk)/ Acre	Production (Bsk)
Rainy Season	43,487	43,487	87.33	3,797,837
				(94,731 T)
Cool Season	290	290	65.51	18,998
				(474 T)
Total	43,777	43,777	87.19	3,816,835
				(95,205 T)

Note:T:Tonne, 1 basket: 55Pounds, 1 Tonne: 2205 Pounds

Table 6 : Maize Production under Rainy Season in Kayin State (2012-2013)⁹

8 Department of Agriculture (DOA), Myanmar

9 Department of Agriculture, Myanmar

Myawaddy district is the main producing area of maize in Kayin State. Of three districts, Myawaddy district stood at highest sown area of maize and contributed the largest proportion to maize production in Kayin State, as shown in Table 7. Myawaddy district stood at first priority in Kayin State due to demand for border trade with Thailand.

District/Township	Sown Acre	Harvested Acre	Yield P (Bsk)/ Acre	Production (Bsk)
Hpa-an District	1,592	1,592	70.48	11,2210
Hpa-an	68	68	57.62	3918
Hlaingbwe	1,522	1,522	71.11	108,222
Hpar Pun	2	2	35.00	70
Than Daunggyi	-	-	-	-
Kaw Kareik District	42	42	77.55	3257
Kaw Kareik	-	-	-	-
Kyain Seikkyi	42	42	77.55	3257
Myawaddy District	42,143	42,143	87.83	3,701,368
Myawaddy	42,143	42,143	87.83	3,701,368
Kayin State	43,777	43,777	87.19	3,816,835

Note: Bsk; Basket (55 pounds)

Table 7 : Maize Production in Kayin State (2012-2013)¹⁰

It is expected that maize production in Kayin State will be increased. Due to conflicts and security reasons, there is still substantial agricultural land to be developed. Some agricultural land is not fully utilized due to low productivity and shortage of labor. Also, some of the agricultural lands under irrigated tracts are lying fallow. Hence, with the improvement in peace and security as well as the development of infrastructure and agro-based processing industries such as feed plants in the planned industrial zones along Myanmar-Thai border areas, there is large potential to expand maize production with proper mechanized farming. Moreover, there is large potential to expand the area with maize cultivation in dry season, as there are many fertile alluvial land areas with access to supplementary irrigation from nearby rivers such as Thanlwin, Gyaing, Haungthayaw, and Hlaingbwe etc. In addition, it is expected that the successful maize production development in Myawaddy can be replicated in other townships in Kayin State with the completion of Hpa-an-Myawaddy new highway that was completed in August 2015.

A maize market is expected to emerge in Hpa-an, Kayin State as one of the supply chain for maize produced in lower regions of Myanmar, especially Mon and Kayin States. An increase in middle class and rapid urbanization in the Mekong-region countries lead to rising meat consumption in the region. Consequently, as maize is a major feed grain in poultry industry, the maize trade along the East-West corridor is likely to expand, especially the Myanmar-Thai border trade in Mon and Kayin States.

¹⁰ Ibid.

2.2.2 Maize Value Chain Mapping

Input Providers

In Myanmar, hybrid maize varieties are widely used by maize farmers due to its high yield. Undoubtedly, CP hybrid maize has been the most popular variety with maize farmers. CP hybrid maize seed was produced in southern Shan State in partnership with maize seed farmers and it was distributed to the main producing areas of maize in hilly region and central dry zone region. A main outlet of hybrid maize seed to farmers is an agro-input retail shop. At present, CP hybrid maize as well as other hybrid maize seeds are sold to farmers due to a strong competition between different brands in the maize seed market resulting from a dramatic increase in the maize sown area in recent years.

Private agro-input suppliers are playing the vital role to supply chemical fertilizer and pesticides through the local retail shops. In order to have high maize yield, maize farmers are required to use hybrid maize seeds combined with the use of chemical fertilizers and pesticides.

Maize Farmers

Maize farmers in Kayin State mostly grow maize in rainy season. The rainy season crop constitutes 99 percent of Kayin State's sown area. The area planted to maize was harvested in September and October, in which rainfall occurred at the time of harvesting period. **As a result, the main maize producing areas of Kayin State required driers to reduce moisture content of harvested maize** as traders accept to purchase maize grains with less than 15 percent of moisture content in order to prevent fungus problems and to have better quality. Thus, not only threshers but also driers are required for maize farmers in Kayin state, **leading to higher cost of production** than in the central dry region where reduction in moisture content relies on sun drying and only threshers are needed. Maize farmers preferably acquire this equipment by means of rental service.

For maize cultivation and harvesting, maize farmers faced shortage of labor due to conflicts and security reasons in maize producing areas as well as emigration of workers, particularly young labor force to urban and other countries. To overcome constraints of labor, small-scale mechanized farming, such as small-scale tractors for land preparation, pesticide and herbicide sprayers, and water pumping engine, is required for maize farmers.

Maize Traders

Mandalay Crop Exchange Center (CEXC) is playing the vital role to gather maize from markets in main producing areas.

- Traders in Taunggyi, Monywa, Shwebo, and Myingyan markets supplied maize to their trading partners in Mandalay market. Through CEXC, maize was purchased by feed millers and poultry farms in Mandalay market as well as by traders involved in Myanmar-China border trade to be shipped to 105 trading zone in Muse Town, located on Myanmar-China border, for the border trade to Shweli (Ruili) in China.
- Maize from major producing areas of Magway, Mandalay and Ayeyarwady Regions, Loikaw in Kayah State, and Taunggyi in Southern Shan State were supplied to maize wholesalers in Yangon Bayint Naung Wholesale market, where maize was marketed to small-scale feed millers and poultry farms.

- Maize traders in Yangon purchased maize from main producing areas such as Taunggyi market in Southern Shan State, Pyinmana market in Nay Pyi Taw areas, Loikaw market in Kayah State, and Zalun market in northern part of Ayeyarwady Region. Then, maize was supplied to the poultry feed factory in Yangon established by CP Company mainly as well as other local feed mills. Moreover, maize traders in Yangon also purchased maize from those producing areas for oversea trade.

From		To	
Shwebo Market	Sagaing Region	Mandalay Market	Mandalay Region
Main Producing Areas	Sagaing Region	Monywa Market	Sagaing Region
Monywa Market	Sagaing Region	Mandalay Market	Mandalay Region
Myingyan Market	Mandalay Region	Mandalay Market	Mandalay Region
Taunggyi Market	Southern Shan State	Mandalay Market	Mandalay Region
Taunggyi Market	Southern Shan State	105-trading zone in Muse	Northern Shan State
Mandalay Market	Mandalay Region	105-trading zone in Muse	Northern Shan State
105-trading zone in Muse	Northern Shan State	Shweli (Ruili) in China for Border Trade	Yunnan Province in China
Pyinmana	NPT	Yangon Market	Yangon Region
Taunggyi	Southern Shan State	Yangon Market	Yangon Region
Loikaw	Kayah State	Yangon Market	Yangon Region
Zalun	Ayeyarwady Region	Yangon Market	Yangon Region
Yangon Market	Yangon Region	Maize Export (oversea)	
Hpa-an	Kayin State	Yangon	Yangon Region
Hpa-an	Kayin State	Myawady Located on Myanmar-Thailand Border	Kayin State
Myawady	Kayin State	Mae Sot in Thailand	Border Trade with Thailand

Table 8 : Inter State/Region Trade Flow of Maize in Myanmar

Marketing Exporters

- Border Trade

Through border trade, Myanmar's maize is traded to China and Thailand. From Table 9, Myanmar maize export mainly relied on border trade to Shweli (Ruili) in China, accounting for 78.4 percent of the total maize export in 2011/12 and 95.2 percent in 2012/13. By contrast, only 0.2 percent of Myanmar maize was exported to Thailand in both 2011/12 and 12/13.

Particular	2011/12		2012/13	
	Export Volumes (000 tonnes)	Percent on Total Export	Export Volumes (000 tonnes)	Percent on Total Export
Total	778.563	100.0	557.305	100.0
A. Overseas	166.33	21.4	25.56	4.6
B. Border Trade	612.23	78.6	531.75	95.4
1. China	610.20	78.4	530.69	95.2
2. Thailand	2.03	0.2	1.06	0.2

Table 9 : The Country's Maize Export (2011/12 to 2012/13)¹¹

- Overseas Export

Apart from border trade, Myanmar also exports maize by shipping to Indonesia, Philippines, and Singapore, accounting for 21.4 percent of the country's maize export volumes in 2011/12 and merely 4.6 percent in 2012/13.

Poultry Industry

After border trade and overseas export, the reminding volumes of maize produced in Myanmar were used for domestic utilization. Maize was supplied as a feed grain to small-scale feed millers; poultry feed factories in Yangon, small household poultry farms and backyard farmers.

The downstream maize supply chain in Myanmar showed how poultry farms product and finished products of food processors reach to consumers. Poultry farms supplied live chicken-to-chicken meat market and chicken egg. Food processing plants in Yangon established by CP Company and other brand names of chicken meat products supplied chicken eggs, chicken meat, and chicken sausages to high-end market consumers in supermarkets in major cities such as Yangon and Mandalay.

In Myanmar, CP company involved i) CP hybrid maize seed production to be distributed to maize farmers; ii) feed and day-old chicks to be supplied to poultry farms, and iii) CP chicken meat, CP chicken egg, and sausage to be supplied to consumers. Thus, CP Company in Myanmar involved in the whole supply chain in Myanmar.

Cost and Margins in the Maize Value Chain

Farmers

As for maize farmers, the variable cost of maize cultivation varied between 241.5 and 307 thousand Kyats (approximately USD 180 to 270) per acre. The average variable cost of production was 260.5 thousand Kyats (around USD230) per acre, of which farm family labor cost, hired labor cost, and agro-input cost shared 21, 44, and 35 percent, respectively. The average production cost of one ton of maize was 148,188 Kyats or approximately USD 130 per ton.

11 Ministry of Commerce, Myanmar

Regarding the cost of hybrid maize, according to Department of Agriculture (DOA), costs of the hybrid maize seed to be sown for one acre varied between 15,000 and 25,000 Kyats (around USD 13 and 21), as mentioned in Table 10. The cost of hybrid maize seeds in Kayin State is above 20,000 Kyats per acre, relatively high among six states/regions.

State/Region	Seed Cost of Hybrid Maize to be Sown in One Acre	
	Kyats	USD (approximately)
Sagaing Region	15,000	13
Southern Shan State	17,000	15
Northern Shan State	18,000	16
Eastern Shan State	25,000	21
Kayin State	20,300	18
Pyinmana Township in Mandalay Region	18,000	16

Table 10 : Seed Cost of Hybrid Maize to be Sown for One Acre¹²

Daily labor wages in Hpa-an in Kayin state was significantly high, compared to Myingyan and Pyinmana in Mandalay Region. As illustrated in Table 11, in maize cultivation and harvesting, Hpa-an district in Kayin State had a labor wage of 3,000 kyats (around USD 2.5) per man per day while Pyinmana in Mandalay Region incurred a labor cost by a half with only 1,500 Kyats (around USD 1.3) Kyats per man per day and Myingyan in Mandalay Region had a daily hired labor wage between 1,500 and 2,000 Kyats (around USD 1.3 and 1.7) per man per day.

Particular	Hpa-an in Kayin State	Myingyan in Mandalay Region	Pyinmana in Mandalay Region
	Kyats perman/day		
Daily hired labor wages	3,000 (around USD 2.5)	1,500-2,000 (around USD 1.3 -1.7)	1,500 (around USD 1.3)

Table 11 : Daily Hired Labor Wages in Maize Cultivation and Harvesting

In Kayin State, maize farmers received a low farm-gate price of only 5,100 Kyats (around USD 4.4) per basket, compared to other townships/states/divisions in the table 8. This is because in Kayin State maize harvest is done in rainy season leading to **high moisture content**. Moreover, maize driers are not used among maize farmers to lower moisture content. As regards the moisture content of maize, the moisture content of maize needs to have below 15 percent of the sale volume. If moisture content in maize was over 15 percent, traders need to undertake a drying process, which leads to reduction in weight. Thus, traders offered a reduced purchase price, depending on moisture content in farmers' sale volumes, to maize farmers.

12 Department of Agriculture (DOA), Myanmar. *Maize production cost of State/Division*.

In terms of margin for maize farmers, Gross margin of maize farmers ranged from 82,000 to 308,500 Kyats (approximately USD 71 to 264) per acre. Average gross margin return to maize farmers was 187,743 Kyats or approximately USD 161 per acre. Kayin State's gross margin is just below the average at 186,200 Kyats (around USD 160) per acre, as illustrated in Table 12.

Township/ State/ Regions	Farm-gate Price	Maize Yield per Acre	Revenue	Production Cost	Gross Margin
	Ks/ Basket	Basket/ Acre	Ks/Acre	Ks/Acre	Ks/Acre
Myingyan	7,000	80	560,000	251,500	308,500
Pyinmana	6,500	80	520,000	241,500	278,500
Kayin State	5,100	87	443,700	257,500	186,200
Sagaing Region	7,000	52	364,000	202,500	161,500
Southern Shan State	6,000	54	324,000	242,000	82,000
Northern Shan State	6,000	73	438,000	321,500	116,500
Eastern Shan	8,000	61	488,000	307,000	181,000
Average (Kyats)	6,514	70	448,243	260,500	187,743
Average (Approximately in USD)	5.6	0.1	383.5	22.9	160.6

Table 12 : Maize Production Cost and Gross Margin of Maize Per Acre¹³

Based on a cost and return analysis, from Table 13, the average ratio of cost and revenue for maize farmers in Kayin state was 1.7. It means that if a maize farmer spends 1 Kyat in hybrid maize production, a revenue return to the maize farmer was 1.7 Kyats.

13 Department of Agriculture (DOA), Myanmar. *Calculation of State /Division /Township.*

Township/ State/ Region	Revenue	Production Cost	Gross Margin	Ration of Cost and Revenue
	Ks/acre	Ks/Acre	Ks/Acre	
Myingyan	560,000	251,500	308,500	1:2.2
Pyinmana	520,000	241,500	278,500	1:2.2
Kayin State	443,700	257,500	186,200	1:1.7
Sagaing Region	364,000	202,500	161,500	1:1.8
Southern Shan State	324,000	242,000	82,000	1:1.3
Northern Shan State	438,000	321,500	116,500	1:1.4
Eastern Shan	488,000	307,000	181,000	1:1.6
Average	448,243	260,500	187,743	1:1.7
Average (Approximately in USD)	383.5	222.9	160/6	

Table 13 : Maize Production Cost, Revenue and Ratio of Cost and Revenue¹⁴

Traders

For maize trading, transport cost constitutes the highest share of marketing costs. Marketing costs include transport cost, handling cost, and packaging material cost.

Cost and Margin of Maize Trading between Myawaddy and Hpa-an

With respect to cost and margin analysis, it is not economically profitable for traders to export maize from Myawaddy to Thailand, as the net margin (including marketing costs except transport cost) is very minimal. Maize price in Myawaddy was 350 Kyats (around USD 0.3) per viss¹⁵ and maize price in Hpa-an was 320 Kyats (around USD 0.28) per viss. Thus, a margin between Hpa-an and Myawaddy was 30 Kyats (around USD 0.03) per viss. Transport cost from Hpa-an to Myawaddy was 20 Kyats per viss. Therefore, the net margin is 10 Kyats per viss after deducting transport cost.

Cost and Margin of Maize Trading between Hpa-an and Yangon Bayint Naung Wholesale Market

It is economically more viable for traders to sell the maize produced in Hpa-an at Yangon market due to a large amount of net margin. During the past harvest season, maize in Hpa-an was traded at 320 Kyats (approximately USD 0.28) per viss and its price in Yangon Bayint Naung Wholesale market was 462 Kyats (approximately USD 0.40) per viss. A margin received by traders between Hpa-an and Yangon was 142 Kyats (around USD 0.12) per viss. Transport cost from Hpa-an to Yangon was 36 Kyats (around USD 0.03) per viss. Therefore, the net margin is 106 Kyats (around USD 0.09) per viss after deducting transport cost.

¹⁴ Department of Agriculture (DOA), Myanmar.

¹⁵ viss: a measurement unit for weight used in Myanmar, approximately 1.63293 kilograms

Cost and Margin of Maize Shipping from Hpa-an to Overseas

For maize shipping to overseas, transport cost also constitutes the highest share of marketing cost. Marketing costs in overseas export include transport cost, handling cost, and packaging material cost, and certification cost. In 2012-2013, the average export price of maize was USD 330 per ton. Maize price in Hpa-an during the past harvest season was traded at 320 Kyats per viss or USD 216 per ton. Thus, margin received by traders was USD 114 per ton. Transport cost from Hpa-an to Yangon was 36 Kyats per viss or USD 15-18 per ton. As 2 percent of income taxes need to pay maize exporters, one ton of maize in terms of income tax was USD 6.6 per ton. It is also assumed that 50 percent of marketing cost occurred in overseas export. Therefore, the net margin return to traders was USD 52 per ton.

2.2.3 Constraints for Maize Value Chain Development

Low Interest in Winter Maize Cultivation

Although winter maize can increase farmers' income in Kayin State, due to the suitable geographical and climatic conditions of Kayin State and high demand of maize for the poultry feed industry in Myanmar, Thailand and China, **very few farmers in this region grew maize owing to the political instability, high out-migration rate and farmers' low awareness.** Without winter maize production, the winter maize market system did not exist in Kayin State. Moreover, farmers were reluctant to cultivate winter crops in Kawkaik because no legal action was taken to prevent animals from intruding into standing field.

High Production Costs

Maize farmers faced a high cost of hired labor due to shortage of labor for maize cultivation and harvesting. From Table 10, the daily hired labor wages in Hpa-an, Kayin state was 3,000 Kyats (approximately USD 2.6) per man per day, relatively high compared to Myingyan and Pinyinana in Mandalay region. The shortage of labor was due to conflicts and security reasons in maize producing areas as well as emigration of workers, particularly young labor force to neighbor countries. It has been found that in most villages at least 2-3 family members had migrated to Thailand for employment opportunity.

To overcome constraints of labor, small-scale mechanized farming such as small-scale tractors for land preparation, pesticide and herbicide sprayers, and water pumping engines **are required for maize farmers.** For these farms, mechanization services, including rental services of maize drying and threshing, are required in order to have timely cultivation and harvesting as well as to improve the quality. **Nevertheless, some farmers cannot afford such labor saving devices.**

For Kayin State, the production cost of maize was higher than the central dry region since during harvesting period it was rainy season and traders accepted to purchase maize grains with less than 15 percent of moisture content in order to prevent fungus problems. Consequently, maize farmers required maize driers. By contrast, in the central dry zone region heavy rainfall did not occur at the time of harvesting so maize farmers relied mostly on the sun drying to reduce moisture content. **Maize farmers acquire maize driers and threshers by means of rental service.**

In Myanmar, traders faced high transport cost. From Figure 11, highway transport cost in Myanmar was high compared to Cambodia, Vietnam, and Thailand based on World Bank group study. Thus, reduction in transport cost of highway may enhance the competitiveness of export of agricultural commodities including maize.

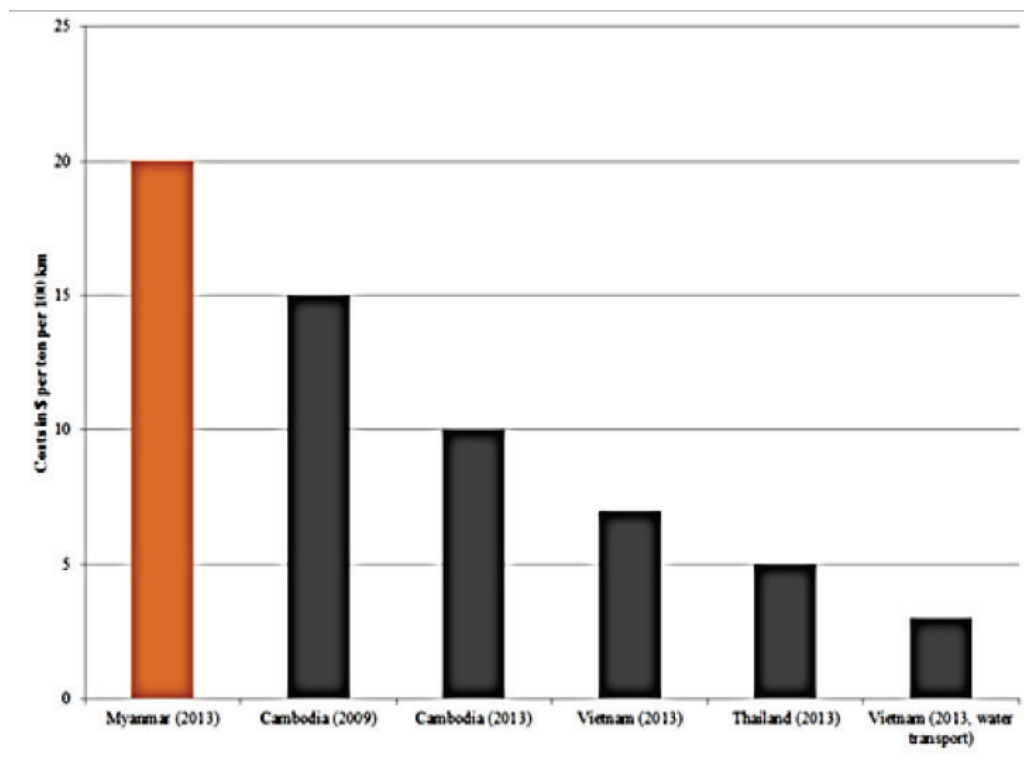


Figure 11 : Transport Costs in Selected Countries, \$ per ton per 100 km¹⁶

Low Productivity and Quality

Following factors affecting productivity and quality are related to wet-season maize cultivation, as maize in Kayin State was mostly cultivated in rainy season while very few farmers grew maize as a winter crop.

- **Due to lack of maize driers, maize had moisture content of higher than the requirement** of less than 15 percent of the total maize volume. Moreover, maize farmers lack low cost facilities to help them measure the moisture content of maize.
- **Poor knowledge in maize cultivation.** Poor knowledge on new crop like hybrid maize variety. Lack of know-how on post-harvest handling and storage techniques
- **Compost and potash have never been applied in maize cultivation.** Only a few farmers used organic fertilizers.
- **Absence of market quality standards** and certification discouraged production of high quality maize
- **No or poor infrastructure.** Lack of market-access roads. Lack of water resources and irrigation systems (i.e., dam, canal, tube wells)

16 World Bank Group, 2014. Rice Price Volatility and Poverty Reduction in Myanmar (Draft Report).

Weak Forward and Backward Linkage among Actors

In Kayin State, there are many issues related to actors and linkage among actors in maize chain value.

- Incomplete actors in maize value chain in Kayin State. In Hpa-an district, there were no local collectors, local dealers, and investors.
- Weak market information flows among actors in maize value chain, particularly among smallholder farmers. Farmers were not aware of market requirements such as where to sell and what volume. Lack of information about input prices. Weak information sharing in grading, classification and quality standards as basis for product pricing
- Weak or no farmer association, thus low bargaining power to reduce input costs
- Absence of efficient market distribution channel to access and reduce costs of agricultural inputs like seeds and agrochemicals.
- Lack of experience of local traders in managing contract farming, processing and value adding activity
- Weak extension services, particularly to rural farming communities
- All maize cross-border trade is done through informal channels thus difficult for government to provide support services to this informal value chain players
- Absence of transparent market transaction mechanisms and insufficient official facilitation and regulation in cross-border market transactions and overseas exports

Political Issue

- Some areas in Kayin State such as Kawkaik are unstable with political issues with the existence of armed groups.

2.2.4 Recommendations to Improve Maize Sector

Recommendations on Lowering Maize Production Cost

- Explore LEISA (Low External Input for Sustainable Agriculture) approaches¹⁷
- Coordinate with KSDA (Kayhtoeboe Social Development Association) regarding village-type post-harvest facilities; facilitate sourcing of appropriate post-harvest facilities.

Recommendations on Increasing Productivity and Quality of Maize

- Need to show how to optimize productivity of maize through **proper fertilizer application based** on soil analysis; soil conservation; pest and disease control; use of suitable varieties.

¹⁷ One of the most promising paradigms that has emerged for the benefit of small scale resource-poor farmers is *Low External Input and Sustainable Agriculture* (LEISA), which can enable such farmers to achieve higher income and attain sustainability by: (1) Optimizing the use of locally available resources, thereby achieving a synergetic effect among the various components of the farming system (soil, water, animals, plants, etc.) so that they complement each other in the production of output; (2) Minimizing the use of external inputs, except where there is a serious deficiency and where the effect on the system will be to increase recycling of nutrients (Mekonginfo.org, 1996).

- Private hybrid maize seed suppliers and maize buyers (e.g. CP Company) play a crucial role for the **distribution of appropriate seed varieties and technology regarding hybrid maize cultivation and post-harvest handling** such as driers, corn hullers and grain moisture meters.
- Private agri-businesses such as seed companies, agricultural machinery rental services (e.g. threshers, driers, and tractors), and processing plants should be encouraged to invest with incentive schemes
- Local traders, wholesalers and processors need to **educate/inform the maize farmers on/about the requirement of maize quality, standard and specifications**, the food safety measures, the price mechanism, and procurement system in purchasing maize from farmers
- Provide maize farmers with **adequate seasonal loans** for purchasing hybrid maize variety and agro- inputs in order to increase productivity.
- Appropriate measures for controlling floods in the rainy season and provision of adequate water for crops cultivation in summer should be developed and addressed by the State Government with the assistance of external help.

Recommendations on Improving Linkage among Actors in Value Chain

- Develop a maize supply chain development strategy in Kayin State through the formation of task force on the basis of public-private partnership at State and township level.
- Transparent information between farmers and traders, such as profit margin and maize production returns to farmers as well as profit margin and transaction cost for maize marketing to traders must be made available
- Farmers and traders need to discuss regarding a unit used by traders and different market prices offered by traders depending on quality (moisture content in sale volumes)
- Organize farmer groups or explore to strengthen existing farmer or village associations
- Extension workers in Department of Agriculture (DOA) and project technical staff need to collaborate to support maize farmers in production and marketing
- Promote farmer-to-farmer extension by training farmer leaders
- Facilitate coordination dialogues with concerned stakeholders of the cross-border trading among government, farmers and private sector.
- To develop marketing, linkages between large-scale whole sale traders in Myawaddy and Yangon and middleman, small-scale traders, transporters in major maize producing townships are required to be established to fully understand how farmers' sale volumes are reached to destinations and marketing cost and margin along supply chain are incurred.
- Current marketing and pricing practices adopted by Yangon wholesale market and Thailand border trade and daily market price information should be disseminated to maize farmers and small-scale traders in Hpa-an and other maize growing townships using FM radio stations and mobile phones to create a Win-Win situation in developing maize sector in Kayin State.

Recommendations on Improving Enabling Environment for Maize Value Chain Development

- In order to encourage farmers to cultivate maize in winter, governmental departments and related organizations need to raise farmers' awareness on the benefit of growing winter maize through model farms, field days and demonstrations.
- Liberal trade policy with export tax exemption with no intervention practiced by the government is required to continue for further expansion of export of maize as grain/raw material.
- Instead of exporting raw products, investment in value-added downstream industries such as feed mills, snacks and semi- processed food products will create higher and stable prices for the maize producers. It will also create more employment opportunities for the former combatants and their family members, attracting the legal and illegal migrants in Thailand and externally and internally displaced people to settle back at homeland. FDI in feed and meat industry will push the domestic consumption as well as export, which will dramatically increase the demand for maize in the near future.



2.3 Coffee Value Chain Analysis in Quang Tri, Vietnam

2.3.1 Profile of Quang Tri



Figure 12 : Map of Quang Tri Province ¹⁸

Basic Information

Quang Tri is a province located in the central part of Vietnam, bordering Quang Binh to its North, Thua Thien Hue to its South, Lao People's Democratic Republic to its West, and the East Sea (South China Sea) to its East. It is located on the East side of the East-West Economic Corridor in the mainland ASEAN. It has a total land area of 4,746 km², with the total population of around 608,100 people in 2012.

Quang Tri is home to three main ethnicities: The majority group is the Kinh, accounting for 88.4 percent of the total population, while two ethnic minorities, Bru-Van Kieu and Pa Co (Ta Oi), accounting for 9.2 percent and 2.3 percent respectively. Ethnic minorities live in two districts, Huong Hoa (48.3% ethnic minority) and Da Krong (77.5% ethnic minority). These districts are mountainous districts, lying alongside the Vietnam – Lao border.

Quang Tri is a poor province in Vietnam, with around 30.5 percent of households living on approximately 1.3 USD per person per day (at purchasing power parity), compared to the national average of 18.7 percent. The poorest district in Quang Tri is Da Krong, which is also one of the poorest 62 districts in Vietnam.

¹⁸ Vietnam Invest Network Corp. Quang Tri Map. Available at: <<http://Investinvietnam.Vn/Report/Parent-Region/89/120/Quang-Tri.aspx>> [Accessed 28 July 2015].

Agriculture is an important sector of Quang Tri's economy; however, it is declining in its importance. Although this sector contributes to only 27.9 percent to the province's economic output, it employs around 52 percent of the labor force. However, the annual growth rate of the agricultural sector decreased from 3-5 percent to 1-2 percent for the period 2008-2011, compared to around 15 percent and 10 percent growth in industry and services respectively. This relatively low growth rate has widened the income gap of Quang Tri population, with majority of population in agricultural sector, compared to other provinces.

Cross-border trade plays an important role in Quang Tri's economy. Its main exports are coffee, rubber, tapioca starch, and fertilizers, with a total value of 118 million USD in 2013, a 24 percent increase from last year. Main imported products are sawn lumber, lumber logs, and gypsum, with a total value of 140 million USD in 2013. The tax collection from the cross-border trade activities contributed to 24 percent of the overall provincial tax revenue in 2010. Nearly 300,000 passengers in 2010 and around 56,000 to 58,000 vehicles per year in the period of 2004 to 2010 crossed the Lao Bao border gate. Looking into the future the cross-border trade will become more important given that Quang Tri is in EWEC, which will be likely to benefit from greater trade from ASEAN Economic Community (AEC).

Key Policies, Regulations and Development Initiatives

Given the importance of the cross-border trade in the EWEC, the Regulation on Lao Bao Special Economic and Commercial Area (SECA) was issued. Lao Bao SECA is under the management authority of the Management Board of Economic Zones, which give state management support in a manner of "one-stop shop and on-the-spot."

Lao Bao SECA covers a total area of 15,804 ha, including 2 townships of Lao Bao and Khe Sanh, and 5 communes of Tan Thanh, Tan Long, Tan Lien, Tan Lap and Tan Hop, in Huong Hoa district, Quang Tri province. It stretches out 25 km along Highway No.9, with a population of 45,000. It is the shortest and most favorable route to expand the exchange of goods, tourism and services with Lao, Thailand, Myanmar and other countries in the Greater Mekong Sub-region (GMS). Providing an industrial zone, export processing zone, economic border gate zone and "special non-tariff area", SECA offers highest investment and business incentives in accordance with the current provisions of Vietnam's law, such as:

- Enterprises pay corporate income tax at the rate of 10% during the first 15 years, compared to the standard 22% of corporate income tax in Vietnam.
- People working in Lao Bao SECA have to pay only 50% of applicable personal income tax.
- Goods and services consumed within the SECA, as well as those imported to the SECA from other countries are exempted from value-added tax (VAT).

Status of Region with regards to Commodity Selected for Development

Coffee is an important product for Vietnam's economy in terms of exports, rather than domestic consumption. Vietnam is the world's second largest exporter of coffee after Brazil, with the export volume of approximately 1.3 million tons in 2012. Despite being the world's biggest exporter of Robusta coffee, Vietnam's current per capita coffee consumption is only about 1.15 kg/person per year, still considerably lower than other producing and importing countries such as Brazil's 5.8 kg/person, Honduras's 3.6 kg/person, Canada's 5.9 kg/person and the United States' 4 kg/person (USDA).

While in Vietnam up to 95 percent of coffee produced is Robusta, in Huong Hoa district, Quang Tri province, Arabica coffee, particularly Catimor variety, is mostly produced. Initially most of the coffee plantations in this area were Liberica but from the early 90s onwards the Catimor variety of Arabica Coffee was mostly grown instead due to the increase of population to the mountainous area as a scheme to lower population in delta area, high prices, and the suitability of soil and geographic location in the mountainous area.

The climate conditions of Huong Hao district, Quang Tri province are suitable for Arabica Catimor cultivation with regard to temperature, number of solar hours and rainfall. It rains during the blossom time of coffee in April, which explains why farmers can still produce coffee even there is no irrigation system in the area.

The area planting coffee in Huong Hoa district is following an increasing trend. Coffee planted area increased 18 percent during the period between 2008 and 2012. In 2012, the area planted to coffee in Huong Hoa district is 4,423 ha, accounting for 90 percent of all area planted to coffee in Quang Tri Province. The coffee area specified in the provincial plan is projected to expand the planted area to 5,000 ha in the whole province by 2020.

Arabica coffee is among the key export products for Quang Tri's economy; however, it is not popularly consumed domestically due to high prices and unpopular taste. The coffee plantation in Quang Tri is mainly for exports, especially to EU and US markets. The volume of coffee exports fluctuated during 2008-2012, with the average volume of coffee beans was 2,381 tons per year. Besides the domestic product, the export companies in the province also import cherry coffee, mainly from Lao PDR through Lao Bao gate with the average volume of 2,775 tons parchment per year (approximate 1,980 tons of coffee beans).

However, the coffee sector in Huong Hoa district, **Quang Tri province faces a number of constraints.**

Firstly, the productivity is low. In 2012 the coffee yield in Huong Hoa district is only 10 tons of coffee cherry/ha (1,450 kg coffee bean/ha), well below the world's average for Arabica coffee (1,500-3,000 kg bean/ha according to the International Coffee Organization). It is estimated that coffee yield can reach 20 tons cherry/ha (2,900 kg bean/ha) under favorable weather and proper cultivation techniques.

- One of the reasons is that the existing coffee crops are old (around 15-18 years) and thus provide low productivity. To improve the productivity, the old crops need to be replaced.
- Another reason is that many households cannot afford to buy the proper amount of fertilizers, particularly ethnic minorities. Fertilizer should be applied 3 times a year, in March-April, July-August and October when the coffee trees are flowering, filling and ripening. However, it is likely that the farmers in Huong Hoa district apply fertilizers only 2 times a year. Some ethnic minority households even do not apply any fertilizers since they cannot afford this activity.
- Also, the coffee is planted with high density and the branched are not well developed, leading to low yield.

Secondly, producers face high labor cost. Since the coffee harvesting is labor intensive and cost for labor is high, picking up both ripe and unripe cherries is one way to reduce their production cost.

Thirdly, the coffee quality is hampered also because the processors' demand of coffee cherry is more than what coffee producers can supply. **Farmers have no incentives to produce good quality coffee cherry** because processors would buy whatever quality to feed their machines. It is reported that farmers pick high percentage of green cherry than being allowed.

In addition, there is weak linkage between producers, processors, and exporters. The existing structure of the coffee value chain does not allow farmers to gain higher benefits from their increased knowledge and information of the market prices.

2.3.2 Coffee Value Chain Mapping

Product Flow, Actors, and Activities

There are four actors in the coffee value chain in Quang Tri, Vietnam: farmers, collectors, processors, and exporters.

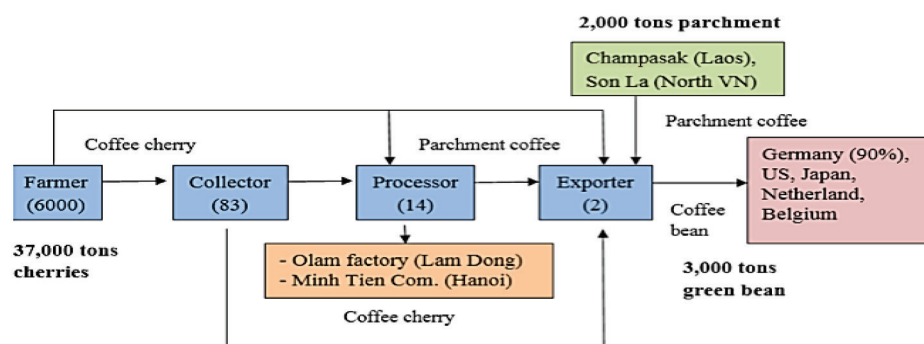


Figure 13 : The Flow of Coffee Products from Production to Export

Coffee Farmers

In Quang Tri, there are around 6,000 coffee farmers in coffee cultivation. Coffee farmers involves in many activities ranging from planting coffee trees, growing windbreaks, shadow-trees and cover crops, composting, fertilizing, weeding, pruning and harvesting. As the coffee harvest time is in a rainy season, preventing coffee farmers from drying coffee cherries under the sun, coffee farmers have to sell coffee cherries they pick within the day to collectors, processors or exporters.

Coffee Collectors

There are 83 coffee collectors in Quang Tri, 22 of which are considered as large-scale collectors, 61 are small-scale collectors. Mostly, collectors arrange the transport for coffee cherry collection by themselves. In some cases, coffee farmers may bring their products to collectors on motorbikes. Then, coffee cherry is stored at the collectors' yard for a few hours without any further handling and processing activities before it is transported to processors, who are responsible for transportation from collectors to processing plants. It is worth noting that coffee farmers do not sell to any collectors, but only to certain collectors to whom they owe money to buy fertilizers or goods for daily consumption. Consequently, coffee farmers are prone to be exploited by collectors.

Coffee Processors

There are 14 coffee processors buying coffee cherries from both coffee farmers and coffee collectors. Large coffee processors are more likely to buy directly from coffee farmers as they

can take advantage of their own trucks. At the processing plant, coffee cherries undergo the processes of skin removal, pulping, fermenting and drying. Most of the coffee processors sell their products to exporters in Quang Tri. In some cases, parchment coffee from these processors is also delivered to factory in Lam Dong or Hanoi, where it undergoes further processing or being mixed with Robusta coffee from the central highlands for both domestic consumption and export. An issue faced by processors is that all processing plants are currently operating under capacity due to seasonal (yearly) fluctuation of coffee production. 2012 was a lost crop year so the production could feed only 50% of processing capacity. 2014 was also a lost crop year in which two companies reported that they could use only 60% to 70% of their capacities.

Coffee Exporters

There are only two coffee exporters currently operating in Quang Tri. They buy coffee cherries from coffee farmers and coffee collectors, as well as parchment coffee from coffee processors. Coffee cherries undergo the wet processing, hulling, sorting, coloring and packaging while parchment coffee only arises from the hulling process. Apart from coffee produced in the district, Dai Loc Company, one of the exporters, also buys coffee from other provinces of Vietnam or imports from Lao PDR. Coffee beans are then transported to SaiGon or Da Nang port before being freighted to countries such as Germany, United States, and Belgium. Usually, the exporters hire 20-40 ton trucks from logistic company in Dong Ha city to transport from company to port. The shipment cost afterward is the importer's responsibility.

Cost and Margins in the Coffee Value Chain

Table 14 illustrates value chain margins for the actors in each level of the value chain. **Coffee farmers and coffee processors contribute the most part of added cost** per 1kg of green coffee bean (57 percent and 37 percent respectively) while the collectors and exporters only contribute a small amount of added cost (2 percent and 3 percent respectively).

Value chain actor	Costs			Profits			Margins	
	Unit total cost	Added Unit Cost	% Added cost	Unit Price	Unit profit	% Total profit	Unit margin	% Retail Price
Farmer	1.47	1.47	57%	2.31	0.84	55%	2.31	56%
Collector	2.36	0.05	2%	2.38	0.02	2%	0.07	2%
Processor	3.34	0.96	37%	3.75	0.41	27%	1.37	33%
Exporter	3.84	0.09	3%	4.10	0.26	17%	0.35	9%
Total		2.56	100%		1.54	100%	4.10	100%

Table 14 : Value Chain Margins for the Actors in Each Level of the Value Chain per 1kg of Green Coffee Bean (USD)¹⁹

Coffee farmers gain the largest share of profits per 1kg of green coffee bean, accounting for 55 percent of total profit whereas collectors have only the smallest share in the total profits per 1kg of green coffee bean, constituting 2 percent. As regards margins, coffee farmers and coffee processors also receive the highest margin of 56 percent and 33 percent respectively whilst collectors gain the smallest margin of 2 percent in unit price of coffee.

19 Mai ThanhTu, Neath Net, Bui DuyDuc, 2015.A value chain analysis of coffee in Quang Tri Province, Vietnam. Vietnam: Mekong Institute.

Medium and large scales were the most profitable size for both farmers and collectors while small scale were the most profitable size for processors. It is important to note that even though both medium and large scales were the most efficient scale for collectors and farmers, those farmers had the highest returns on investment. From Table 15, medium- and large- sized farmers had the return on investment of 105.5% and 103%, respectively. By contrast, medium- and large scale of collectors had the return of investment of only 4.1% and 4.4%, respectively.

	Cost per Farm / Company			Profit per Farm / Company			Return on Investment		
	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large
Exporter	11,509,824			555,561			4.8		
Processor	58,255	787,707	2,888,467	105,931	123,026	579,196	181.8	15.6	20.1
Collector	58,695	205,416	345,452	1,080	8,334	15,125	1.8	4.1	4.4
Farmer	959	1,561	5,017	428	1,647	5,167	44.6	105.5	103.0

Table 15 : Cost and Net Profit for Coffee Value Chain Actors in Quang Tri by Scales (USD)

For coffee farmers, harvesting accounts for the most part of the production cost. Figure 14 shows the breakdown of the production cost of Arabica coffee for coffee farmers in Quang Tri. The result indicates that harvesting contributes to the largest part of production cost (47 percent), followed by fertilizing (20 percent), and plant maintenance (18 percent).

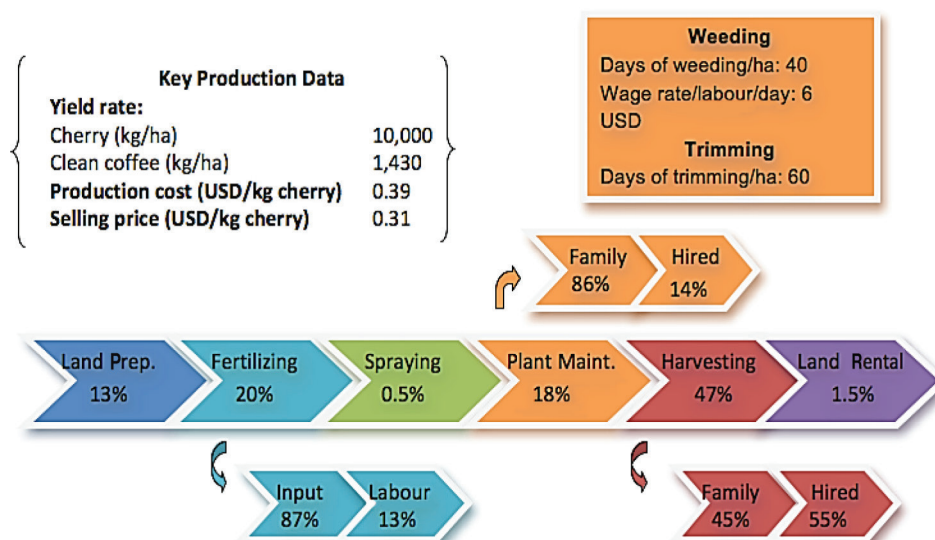


Figure 14 : Value Chain for Arabica Production in Quang Tri, Vietnam

2.3.3 Issues: Prospects and Constraints for Coffee Value Chain Development

Constraints on Coffee Value Chain Development

High Production Costs

For coffee farmers in Huong Hoa district, Quang Tri, harvesting and fertilizing make up the most part of their production cost. **Production cost of coffee in Quang Tri is high due to a couple of reasons.**

- **First, as coffee production in Quang Tri, particularly harvesting, is labor-intensive, the sharp increase in labor price during the last 10 years has considerably increased the coffee production cost in Quang Tri.** According to the information from individual interview with farmers, the labor cost of harvesting in 2005 was roughly USD 50/person/month. After that, it continuously increased to nearly USD 120/person/month and USD 150/person/month in 2009 and 2011, respectively.
- **Second, high production cost was also due to high price of chemical fertilizers.** Price for NPK fertilizer in 2011 is approximately 600 USD/tons.

Besides coffee cultivation, **coffee processing also contributes to high production cost** resulting from a high proportion of fixed cost due to the following reasons:

- **Firstly, the wet-processing system is more costly than the dry-processing one.** As coffee harvesting season in Huong Hoa district falls in the period between September and December, when there is little sunshine to undertake dry-processing, coffee processors undergoes wet-processing, which is more costly but much better in reducing losses and controlling quality.
- **Another reason is low utilization of processing machine.** Because of the condense harvesting season, processing machine is only intensively used for 3-4 months with the rest of the year being left inactive, which leads to a high proportion of fixed cost.

Low Productivity and Quality

In 2012 the coffee yield in Huong Hoa district is only 10 tons of coffee cherry/ha (1,450 kg coffee bean/ha), well below the world's average level for Arabica coffee (1,500-3,000 kg bean/ha according to the International Coffee Organization). Yield of coffee is estimated to reach 20 tons cherry/ha under proper nutrition and favorable weather. The extraction rate from coffee cherry to green bean is nearly 7:1, which is less productive than the average extraction rate 6:1 in Lao PDR. Factors contributing to low productivity and quality include:

- **Most coffee farmers, especially from ethnic minority households, cannot afford applying the sufficient amount of fertilizers.**
- In general, **coffee farmers neither apply lime nor plant cover crops**, such as mung bean and soybean, to keep soil fertile.
- In addition, **most of them do not plant windbreaks and shadow-trees**, as they do not want to 'waste' their land on these plants. However, these activities are recommended in HuongHoa district because in such dry, low lying areas as Huong Hoa, shade can reduce the evaporation of water while windbreaks can limit the damage from strong winds to coffee trees and soil erosion, increasing both productivity and quality of coffee.
- Furthermore, **only half of the coffee farmers chop coffee trees at tenth year to increase the yield afterward** because they do not want to lose 2 harvests (ACEP, 2010). At survey time, a large proportion of coffee plantations in Huong Hoa district needs to be replaced after the 15 years cycle. Thus, there might be opportunities to increase productivity through changing their cultivation practices.
- Besides, the quality of Arabica Catimor coffee in Huong Hoa is lowered than the standard by the fact that **coffee farmers have no incentive to improve the quality because processors and exporters will buy whatever quality they can get to feed their machines** – due to the imbalance between supply and demand in the district.

- Also, for coffee cherry picking, **coffee farmers often have to hire labor outside of Huong Hoa, who might have limited knowledge** or little incentive to ensure the quality of coffee cherry.

Weak Forward and Backward Linkage among Actors

Most actors in coffee value chain in Quang Tri act individually. There is little or almost no relationship between actors. It seems most information is not shared well among actors.

There is a weak linkage in sharing commitments and risks among different actors in the coffee production in Quang Tri, particularly between coffee exporters and coffee farmers under contract farming. Exporters are willing to sell seedlings and provide trainings on production and harvesting techniques to coffee farmers. However, as coffee farmers are not committed to the contract and the enforcement of rules and regulations is weak, the exporters have little incentives to help and support farmers. One exporter said that the company has contracted with 240 coffee farmers in Huong Hoa and provided technical support in expectation of exchange for exclusive purchasing rights of coffee. However, when other companies offered these farmers a higher price, they breached the contract and no enforcement could be made.

In addition, the weak forward and backward linkage among actors is also highlighted by how different actors have different paradigms of coffee quality. While farmers and collectors often refer to coffee quality as a percentage of red cherry (95 percent of the total cherries collected), no dust, and not putting into water to make it heavier, the processors and exporters refer to the TCVN 4193:2005 standard for coffee export, which also takes the size of the coffee bean into account. Meanwhile, exporters also concern about the acidity and body, which contribute to the taste of coffee.

As regards price setting, the flow of information and knowledge is mostly one-sided and is defined by the exporter. The exporters refer to prices posted on Intercontinental Exchange Center (IEC) and decide the price they will buy from farmers, collectors, and processors. By contrast, farmers, collectors, and processors hardly know about the price in New York's coffee market and also lack representative associations to negotiate price.

Other Issues

Governance

- Lack of support policies at district level. For example, the local authority does not allow farmers to sell their products freely but only to those prescribed by local authorities.
- District level staff has limited knowledge and skills on coffee production due to lack of training
- District level staff also has limited knowledge about ethnic farmers as well as language barrier. Therefore, they experience difficulties working with these farmers.
- Lack of long-term vision for coffee production
- Poor infrastructure such as poor rural roads in certain coffee producing areas

Market Constraints

- Insufficient financial support. Farmers cannot access financial support from local banks because banks fear that farmers may default on repayment of loans. Moreover, subsidized government loans in poverty alleviation programs are insufficient to cover investment and maintenance costs.
- Dependence on unstable international market and low domestic consumption
- Coffee price fluctuation in the world market. As coffee price is set by reference price in New York rather than local supply and demand interaction and coffee price fluctuates in the world market, coffee producers experience unstable income.
- Farmers have limited chances to participate in product processing and marketing

2.3.4 Recommendations to Minimize the Constraints and Maximize the Prospects

Huong Hao district, Quang Tri province, is a production hub of Arabica coffee. Coffee production is believed to be an effective way to lift farmers there out of poverty. However, the high production cost, low productivity and quality, and weak linkage among actors restrain the development of local coffee sector. To encounter these issues, the study has proposed recommendations as following:

Recommendations on Lowering Coffee Production Cost

- As chemical fertilizer and labor are two greatest cost items in coffee production. Effort for reducing these costs could lead to a significant increase in income for farmers. Such measures include:
- Train farmers on organic fertilizer production so as to reduce production cost on fertilizing,
- Need to be updated on new techniques of coffee cultivation such as Structured Learning Visits (SLV) to 'Best Practice' farms and On-farm trials and practical field demonstrations.

Recommendations on Increasing Productivity and Quality of Coffee

As the average coffee productivity is low in general with a big gap between the highest and lowest, the productivity can potentially be increased.

- Improve farmers' practice in coffee cultivation, re-plantation, intercropping, caring, fertilizer application, and harvesting so as to improve the coffee productivity and quality
- Encourage watering in coffee cultivation. Watering incurs low cost but resulting in an increase in productivity; therefore, a further study and demonstration on watering may help increasing coffee yield
- Coordinate with reliable source of good quality seedlings of improved coffee varieties
- Encourage research centers and academic institutions to develop improved coffee varieties
- Encourage the use of land zoning to concentrate coffee growing in suitable but more accessible areas with gentler slopes so as to prevent soil erosion in the steeply sloping areas
- Increase coffee farmers' awareness and understandings on the 4C standards system and develop coffee cherry quality control system.

Recommendations on Improving Linkage among Actors in Value Chain

- Strengthen the link among different actors in the coffee value chain, particularly farmers, coffee processing enterprises, and input service providers so as to enable farmers to have more and better channels for selling coffee and buying inputs
- Facilitate a process for enterprises and coffee farmers to agree on a set of rules and measures to ensure the rules are followed by everyone. Benefit sharing mechanism should also be agreed upon.
- Continue and improve the quality of regular dialogues between local government agencies, enterprises (including farmers), business development services and social organizations so as to address problems and develop strategies for product development and marketing
- Form a coffee association which can provide policy advocacy service, create a platform for all coffee value chain actors to voice up and share for better performance, and develop and promote a collective coffee brand to make the coffee better recognized in the high-end market
- Disseminate market information and information about the coffee master plan in Huong Hoa district

Recommendations on Improving Enabling Environment for Value Chain Development

- Quang Tri should develop a capacity building system to push forward a planning reform. This does not necessarily mean creating a separate agency. A working group or cross-department team could be a viable solution. This team should be tasked with documenting best practices and lessons learned, sharing them with relevant stakeholders and training involved actors. Department of Planning and Investment (DPI) should take lead in designing this system.
- Designing separate initiatives that address emerging Local Economic Development opportunities in Huong Hoa district, for example, develop a project to enhance the competitiveness and resilience of its coffee sector. Mobilizing resources from the private sector, donors and government may be necessary for such initiatives.

2.4 Comparative Summary on the Development of Each Value Chain in Each Area

As part of the 'Capacity Development for a More Inclusive and Equitable Growth in the Greater Mekong Sub-region Programme,' the East-West Economic Corridor Project currently focuses on three agricultural value chains in three target regions: a rice value chain in Khammouane province of Lao PDR, a coffee value chain in Quang Tri province of Vietnam, and a maize value chain in Kayin State of Myanmar.

While the central government of Lao PDR plans to develop Khammouane province as a rice hub of Lao PDR and ASEAN, the development of the rice value chain is currently constrained by lack of access to certified rice seeds, lack of knowledge on international rice standards such as Good Manufacturing Practices (GMP), and absence of regulation on contract farming. Unlike Khammouane province of Lao PDR, Quang Tri province is already a production hub of Arabica coffee in Vietnam; however, the problems of the dependence on unstable international market, coffee price fluctuation, and low domestic consumption obstruct the development of local coffee sector. In contrast to both the rice sector in Khammouane in Lao PDR and the coffee cultivation in Quang Tri in Vietnam, the maize production in Kayin State of Myanmar has not totally established with incomplete value chain in consequence of low aspiration due to ignorance of the benefits of growing maize and political instability with the presence of armed groups and fight from time to time.

Nevertheless, these three value chains have some shared constraints for value chain development, namely high production cost, low productivity and quality, and weak forward and backward linkage among actors. On the issue of production cost, farmers in all value chains generally faced high labor due to shortage of labor - Myanmar labor's migration to neighbor countries, urbanization in Lao PDR, and coffee-harvesting labor going home for rice cultivation in Vietnam. Moreover, traders of all value chains confronted high transport cost caused by poor infrastructure, particularly poor roads. Low productivity and quality was also prevalent in all three agricultural value chains typically as a result of absence of quality standard system, limited knowledge on cultivation, plant protection, and post-harvest management as well as difficulties in access to financial resources. Within all three value chains, forward and backward linkage among actors is weak. In general, these value chains had weak information sharing relating to standard requirements, input and output prices, and potential markets, as well as no farmer association causing farmers to have low bargaining power.

In conclusion, the constraints addressed and examined in each value chain, especially high production cost, low productivity and quality, and weak linkage among actors, are fundamental roots of prevailing and persistent poverty among actors, mainly smallholder farmers, in focused agricultural value chains in Myanmar, Lao PDR, and Vietnam. As agriculture is the backbone of these economies with the majority of population participating in the agricultural sector, its decline in its importance tends to worsen the economic situation of these actors in agricultural sector and hinder a prospect towards a more inclusive and equitable growth in EWEC and eventually in GMS.

Chapter

3

3 Mekong Institute's Intervention:

Capacity Development for a More Inclusive and Equitable Growth in the Greater Mekong Subregion

Based on the value chain analysis, Mekong Institute (MI) designed the project approach which aims to strengthen the linkage between farmers and markets. As a capacity building focused organization, MI applies a capacity building for market development approach in this project. By enhancing the capacity of 3 target groups at the provincial level, namely 1) farmer groups/associations, 2) SME clusters/business network, and 3) LED Government officials, the project expects to improve the market system of these three sectors and eventually to achieve the following objectives:

- To make smallholder farmers become more competitive as the producers of coffee, rice and maize;
- To improve the regional and local competitiveness of private enterprises in coffee, rice and maize value chains;
- To improve the enabling environment for local economic development and trade in and between target districts and provinces.

The following subsections summarize MI's experience in the capacity building projects in Lao PDR, Myanmar, and Vietnam.

3.1 MI's Capacity Building Project in Lao PDR

The value chain analysis in section 2.1 has shown that the main obstacles for rice sector development in Khammouane are the low quality of local rice and the limited marketing and trade opportunities. As such, MI's capacity building project in Lao PDR focused in five areas:

- 1) Encourage the use of certified seeds and make these seeds available in order to improve the productivity and quality of rice produced;
- 2) Convince farmers to produce higher quality rice such as organic rice and GAP standard rice as well as assist them in certifying and promoting organic and GAP standard rice;
- 3) Improve rice millers' facilities and capacity, lead them to produce GMP standard rice equip them with the knowledge on GMP requirement and facilitate its certification process;
- 4) Help rice millers to explore export market; and
- 5) Improve cross-border trading environment through capacity building of relevant government agencies.

MI's capacity building project in Lao PDR has built a good partnership with District/Provincial Agriculture and Forestry Office (DAFO/PAFO) and Department of Industry and Commerce (DIC). Specifically, in partnership with PAFO, the project involved with the distribution of certified seed targeting to reach 10 seed producing groups and 500 farmers in 10 districts. Additionally, the project supported the farmers in producing high quality rice and get certification to penetrate the market. The project is cooperating with the PAFO to work for 1 farmer group which is comprised with 70 households and 3 GAP farmers group which includes 90 households.

Similarly, with DIC, MI has assisted the rice millers in applying GMP standard, which greatly improved the competitiveness of Lao rice in the region. To date MI is working with 5 rice miller groups and 4 pilot GMP rice millers. A rice miller association has been established and formally registered, which will help rice millers in Khammouane to identify potential markets and facilitate rice trading in the future.

Various research efforts on cross-border trade facilitation between two provinces of Laos and Thailand were conducted; and currently MI is engaging with different government agencies to facilitate policy dialogue on trade promotion.

Success and Learning Story

Yes, Khammouane Can! Supporting the Provincial Government's Efforts in Marketing the Rice Produced

Envisaging Khammouane to become the rice hub of Lao PDR, the provincial government is looking for ways to increase the yield of rice cultivation and market opportunities so as to reduce poverty, build on local assets, and strengthen local economy. The target for rice production in 2020 is to achieve at least 463.340 tons, producing on 107.080 hectare of land (increase 41% from 2014). Of these, it is expected to sell 216.950 tons of rice, targeting domestic and export to international market. As quality assurance and marketing are essential keys to reach the targeted export, the strategy was set to focus on producing high quality rice by promoting the image of applying good agricultural practices (GAP). The provincial government is now intensively providing supports by setting up farm school to educate farmers on seed production techniques and introduce new seed variety. Rice seed farmer groups received exemption of fees for accessing agriculture equipment, inputs and access to finance.

Located in the border with Thailand and Vietnam, Khammouane is favored with strategic position to reach out to both domestic and cross-border markets. On the other hand, given the significant bearing of rice production on the economies of the neighboring countries, it is challenging for Lao Rice to project its competitiveness in the market. Furthermore, a number of problems hinder the transition into commercial based rice production, including limited access to market information, poor access to urban and export markets, and lack of knowledge on how to improve its branding and quality in compliance with the market requirements. Thus, farmers and rice millers in the area are still virtually unconnected with the market oriented production.

In pursuit of increasing incomes of farmers which could in turn benefits for the equitable development in the region, the Mekong Institute is working with relevant stakeholders for the development of entire rice value chain. While efforts have been concentrated in supporting government's efforts in promoting rice quality to increase its market competitiveness, the project is currently now intensifying the measures in linking the rice producers to the markets.

After being equipped with the good agricultural practices, good manufacturing practices and organic farming, the farmers and rice millers are in need of upbeat market prospects. As such the project seeks to explore markets for the farmers and rice millers whilst supporting the rice produced to be better responsive to market demands and customer needs.

Connecting the Dots between Buyers and Sellers in Outreaching Markets

As production increases, farmers and small-scales rice millers were confronted with the difficulties of marketing their produces out of the province. The project supported them by seeking the market options that could match with their capacities and risk profiles that are manageable for rice millers and farmers in the province. The team realized the importance to form long-term business relationship among farmers, processors, retailers and others. The project thus focused on making connection among them by means of networking and direct marketing activities. These activities involved facilitating in forming cooperatives, supporting business matching events and contacting potential businesses locally and internationally. The potential buyers were from Vientiane and six provinces nearby. The international buyers came from Vietnam, China, Thailand, EU countries and United States of America. These activities helped them to understand the important market determinants such as capacity of rice producers, consumer behaviors and demands from private sectors which are prerequisite for forming long-term business partnership.

Formation of Rice Miller Cooperative

The project facilitated the dispersed rice millers to form into a cooperative. This marked as the full-fledged initiation of forming the provincial cooperative. The cooperative, comprised with 23 rice millers, is currently under the registration process. The overarching goal of the co-operative is to become a management body for rice trading in both domestic and export markets. It is targeted to act as an integrator in delivering large aggregated quantities of rice produced to different market channels with an additional focus on quality and information management. The project also provided hand-on learning to the groups by exposing them cooperative/association management in Thailand.

Business Matching Events

In cooperation with Department of Industry and Commerce (DIC) and Chamber of Commerce, the project facilitated to launch the business matching events. The events aimed to expand business network of small-scale rice producers and rice millers locally and regionally. A total of 45 people from private sector which included Italian businessman, local customers, and 23 government authorities from Ministry, and local level participated.

- After the event, three rice millers, namely Phattana, Vanida, and Soulvian, were offered to have agreement on rice sale with three famous local businesses such as Riveria hotel, Saisamout Saw Mill, and Phetsamone Gas Retailer. The agreed sale volume was around 200 tons per month.
- One rice miller group received the shipment export agreement with an Italian Company. As trial run of rice report, the first shipping that includes 50 tons of rice was made in December 2015.

For the sustainability, MI provided capacity building training on organizing effective business matching events and trade promotion to the partners.

Aside from those, the following results were also generated through the director marketing activities the project was supported.

- Phattana Rice Millar Group from Khammoune contracted with Beer Lao Company for 2,000 tons a year.
- One organic farmers group was linked with Urmatt Ltd., from Thailand. The company expected the group to produce organic rice 3000 tons per year covering 1,000 hectares of cultivation area. The discussion for agreement is still ongoing.

Recommendations

Standardization Process

Priority should be given to rice standardization process to go beyond the domestic market. At central level, Minister's Official Decision on Good Agricultural Practices for Quality Produce Management Standard and on Organic Agriculture Standard was issued. However, these have not been put in practice yet at the provincial level. In spite of having rice seed quality inspection process and Sanitary and Pythosanitary measures, they are yet to be full-scale proper process. The project therefore should continue providing capacity development programs on standard requirements in compliance with the cross-border and international markets.

Branding

To build the credential of Khammoune Rice in the markets, it is of critical importance to project the unique brand for increasing its competitiveness. The urban consumers are willing to pay a premium price for safe food products. The trademark of Khammouane Rice should be constructed on the low use of chemical inputs resulting in relatively uncontaminated soil to penetrate the market.

For the long term, the team should encourage the government to support the Khammoune rice to get Geographical Indication (GI) certification. The upmarket branding as GI could advance the locality and originality of Khammouane rice which

ensures standards for quality and food safety. Using GI as a differentiation from other competitors will offer a valuable market advantage.

A Commercial Video and Web Portal

The production of commercial video for Khammouane rice would be useful in any marketing activities. Additionally, the team should assist DIC to develop the web portal that showcases rice production, market, related regulations and policies regarding rice sector. Such activities will enhance the interest of traders and private sectors for further investments.

The journey of market linkage has not been smooth-sailing while the urban and international markets are heavily regulated and competitive even though there are more consumers who prefer safe products. It has been around one year the team has commenced the marketing and market linkage activities. The tangible results were made within the short time. The proof is in the number. To extend the magnitude of the results, attention should be given to facilitating not only rice-millers but also farmer groups to have equal footing in market participation. Provided the strong commitment by virtue of inclusive partnership approach among the provincial government, private sectors and farmers, it is certain that Khammouane Rice will someday occupy a more prominent place in the rice market.

3.2 MI's Capacity Building Project in Myanmar

The value chain analysis in Chapter 2, section 2.2 has shown that with suitable natural conditions and high demand for poultry feed in Myanmar, Thailand, and China, winter maize has high potential in Kayin State, Myanmar. However, due to the political instability, high out-migration rate, and farmers' low awareness in the area, very few farmers in that region grow winter maize due to.

MI's capacity building project in Myanmar aims to develop this new sector from 4 aspects:

- 1) Raise farmers' awareness on the benefit of growing winter maize and provide them with necessary knowledge and techniques of cultivating maize so as to increase the maize production in Kayin;
- 2) Make quality seeds and fertilizer available for potential maize farmers through input companies and retailers;
- 3) Provide farmers with post-harvest management skills and help to identify and purchase suitable threshing facilities; and
- 4) Cultivate local maize traders and explore the maize market in and out of Myanmar for newly produced maize in Kayin.

In Myanmar, the extension staff of Department of Agriculture (DOA) was trained on maize production and gave strong technical support and guidance to pilot maize farmers. The Department of Trade and Promotion (DTP) was involved in helping to explore maize market for Kayin State. Owing to those efforts, over 60 farmers started growing maize in the cold season of 2014 in six demonstration plots and now the cultivation areas are extended.

To ensure the market access of new maize farmers, Myanmar project linked two local maize collectors and introduced three outside maize traders into Kayin State. The collectors and farmers have been directly linked with outside maize traders in Mawlamyine, Tetkone, Yangon, Myawaddy and Mae Sot of Thailand.

Recently, Myanmar capacity building project organized a consultation workshop on cross border trade between Kayin State and Mae Sot, Thailand. Government officials from 8 relevant agencies as well as the representative from Chamber of Commerce and Industry participated in the workshop and discussed about trade issues such as government liberalization on cross-border trade for promoting exportation, the establishment of one-stop window, the updating of inspection facilities, the high taxation on some agriculture products by Thailand government and the informal trade cross the border between Myanmar and Thailand.

Success and Learning Story

Enhancing Trust among Local Government, Farmers, Critical Input Suppliers and Buyers: A Case Study from Hpa-an, Kayin State, Myanmar

Encouraging farmers to grow new crop is a formidable task, particularly in the aftermath of conflict. The area does not have enough labor due to migration, and farmers are reluctant to embrace new crops. The farmers in the area conventionally grow legume family crops such as pulse and beans which also have their own respective domestic and foreign markets. The project, therefore, has to work on the development of entire maize supply chain ranging from production, expansion to market linkage. On top of that, the project encountered another post-conflict symptom which is the existing distrust issue - the distrust of farmers towards the existing markets, the distrust of buyers towards the production capacity of farmers and the overall distrust atmosphere which typically lingers in the post-conflict period. The project realizes that the classic capacity provision to the different partners alone will not deliver the desirable outcome. Thus, trust building is embedded as the strategic thrust in each of intervention stages.

Building Trust among the Parties through Consultative Process

The farmers in Kayin State faced key two-fold challenges that militated against their capacity to follow the good practices in growing maize. The first constraint was limited financial resources which hindered their ability to purchase quality certified seeds and other complementary inputs which were tailored for winter-maize production in the area. The Agricultural Development Bank does not provide loan for maize crop. In

fact, the local government has allocated some development fund for villages which is available for loan provision to the farmers. Notwithstanding the availability of the loan, the farmers were hesitant to engage directly with the government and its procedures.

“we have the village development fund, even when we offer them to lend money for investment in their business activities , the villagers turn down our proposal ” (U Bo Rain Mann , Township Development Committee of Kayin State)

The second constraint was the accessibility to market where they could sell their produces easily. Despite the market demands in domestic market outside Kayin State and projected export markets, there is no well-structured market linkage and network of traders in the area.

Seeing the problems that could deter the potential of winter maize production, the project planned the intervention that could synergize inputs, services and markets that were required by farmers. The critical position of private sector in supplying agricultural inputs and services is widely recognized, nonetheless, it is too risky for the private sector to invest in maize sector without being seen any historical record on this particular crop .

To bring all together, the most classic, yet effective way, is establishing platforms for dialogue, where the government, private sector (input companies including both fertilizer and seed companies and buyers) and farmers could exchange concerns and find solution together. This intervention involved a large component of arranging meetings and dialogues among them. The vision, interests, concerns and existing resources were clearly spelt out in finding the possible solutions.

As a result, an agreement was reached between farmers and input companies where input suppliers consented to provide inputs to farmers on credit. Together with the heads of village where farmers are residing, the Department of Agriculture transited into facilitation role, and is accountable for providing technical assistance to improve the quality and quantity of maize production. To strengthen the confidence of the private sector, the government likewise took the guarantor role which was kept as discreet agreement between companies and Kayin State Department of Agriculture. The buyers, even though did not sign in the contract formally, promises were made to buy all that farmers could produce.

“We would like to solve the limited investment capacity of farmers on agricultural production. On the other hand, we would like ease the risk of the input providers on credits as it is the first time. We do not let farmers know the arrangement as we fear that farmers will take it for granted without keeping their 100 percent effort to return the credit. (U Toe Wai (Chief Officer), Department of Agriculture)

“I have been dealing with the local farmers for years. I provided loan to some of them too. Traditionally, the farmers in this area are very reliable. The delay returns occurs only in the year where the crops are badly affected by the nature disasters. A handful

of loss cases come from the farmers who migrated to Kayin State just for cultivation and went back when they face the loss. Apart from that, the local farmers are very reliable” (KoNaing, collector)

Through intense consultation and discussions process, the triangle partnership was developed in 2015. As a result, the participating farmers in the projects had access to quality seeds and fertilizers on credit.

Results

Maize production becomes profitable for farmers and evidently potential for up-scaling and replication in the Kayin State. Since 2014, farmers had started planting maize by using quality seed provided by outside seed companies under a certain business relationship and harvested better quality produces. Various Myanmar maize traders from outside Kayin State (Yangon, Mawlamyine and TetKone Townships) and traders from Mae Sot areas of Thailand have established business relationships to buy produces from maize farmers in Kayin state. Besides, some local farmers have built up their direct connections with traders in the Mawlamyine market. As a consequence, 62 farmers started growing winter maize mainly in the fertile alluvial soils (on the river banks) in 2014 winter season.

The receptivity of the different parties for such collaboration is the tangible foundation laid by the project which could not be imagined in the previous years of Kayin State. The critical successful factor of this cooperation model contributed to the reform-minded local government or the Champion of Change who proactively lead in each stage of dialogues. Hence, it could be seen that the scenario in the aftermath of conflict is not all negative. The reform-minded government has higher tendency for cooperation, thereby creating favorable environment for project operation.

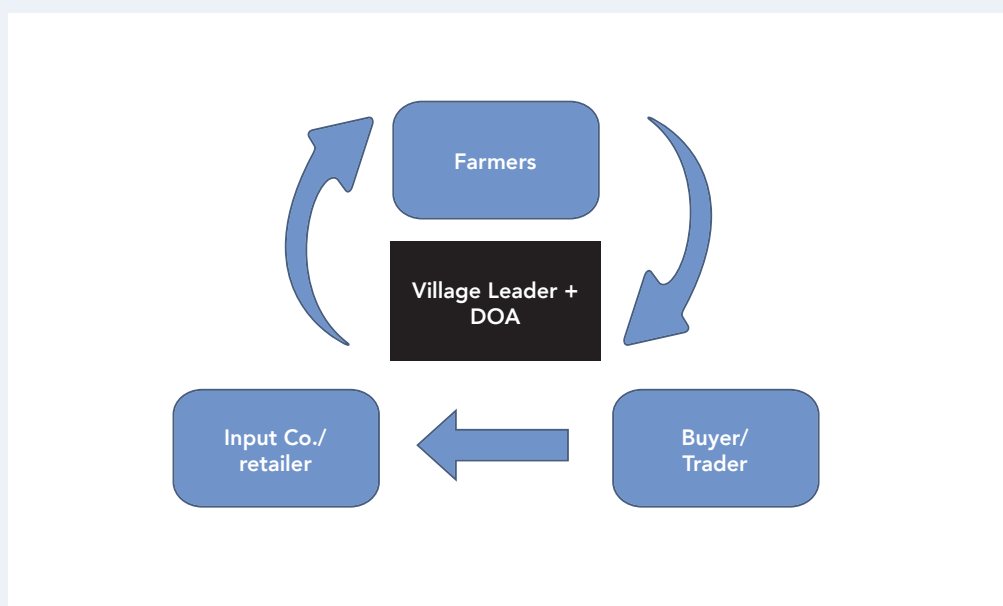


Figure 15 : Triangle Cooperation Model

The lesson-learnt from this case study provided great insight in building relationships and addressing quick-win solutions to the problems of farmers. Maintaining and sustaining trust is not rocket science; instead it had to develop in accordance with the context sensitivity. The successful outcome of maize sector promotion in the project area would be determined by the continued and collective commitment of all the parties involving in the triangle arrangement.

3.3 MI's Capacity Building Project in Vietnam

In Vietnam, the project has developed 5 interventions:

- 1) Support in the formation and development of farmer groups to improve their voicing and negotiation power as well as enhance their status and role in the coffee value chain;
- 2) Improve farmers' practice in coffee cultivation, re-plantation, inter-cropping, caring, fertilizer application and harvesting so as to improve the coffee productivity and quality;
- 3) Strengthen the link among different actors in the coffee value chain, particularly farmers, coffee processing enterprises and input service providers so as to enable farmers to have more and better channels for selling coffee and buying inputs;
- 4) Form a coffee association which can provide policy advocacy service, create a platform for all coffee value chain actors to voice up and share for better performance, and develop and promote a collective coffee brand to make the coffee better recognized in the high-end markets; and
- 5) Provide LED trainings and practical recommendations generated from cross-border trade study to relevant public and private agencies in order to contribute to the effective planning for local economic development and efficient delivery of public services to project beneficiaries.

Vietnam capacity building project signed an agreement with the Department of Agriculture and Rural Development (DARD), who promises to provide technical support to coffee farmers and improve their knowledge and skills on coffee production. Furthermore, the project is closely collaborating with Department of Industry and Trade Promotion in the Province. In 2014, the project could facilitate the cooperation between 1 farmer group and one processing company. Until now, the project has successfully facilitated the cooperation for totally 11 farmers groups who link directly with 7 processing companies.

The project initiated and facilitated the implementation of a so called quadripartite cooperation among farmers group, Fertilizer Company, bank, and processing company. Under this cooperation, the bank agreed to provide technical support to farmers in filing loan application based on availability of assets. For those farmers who had no asset, the bank assisted to make them eligible for credit with maximum amount of USD2.500 per household (in the case that they were not getting credit from other banks). Interest rate applied to these loans was 7 percent per year; almost half of the

interest applied by local collectors and input providers. Whereas, Fertilizer Company committed to sell fertilizer to farmers at the same price the company sold to its first level agents. Farmers groups were responsible for transportation of bought fertilizer from the factory to farms to reduce the sharing cost

Attended by different relevant government agencies from Quang Tri Province, the researches efforts on cross-border trade analysis between Savannaket Province of Lao PDR and Quang Tri Province of Province were organized. The project is attempting to facilitate dialogue between two provinces on cross-border trade facilitation issues.

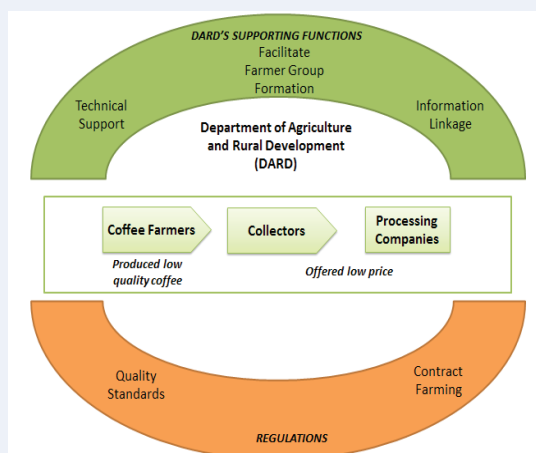
Success and Learning Story

Role of MI in Sustainable Capacity-Building of Local Government Officials to Increase Benefit of Farmers

The Mekong Institute (MI) applied the working through partners approach (MI) to improve the Arabica coffee sector in Huong Hoa District of Quang Tri, Vietnam. MI's value chain study found out that the benefits smallholder coffee farmers acquire from coffee farming in the project area were rather small. The case study described the project interventions, which aim to tackle the failures from the product quality affected to low price, and present ways to improve the marketing system for better quality of coffee cherry, so the coffee farmers can enjoy higher benefits in the value chain.

Mapping Coffee Cheery Marketing System

The core actors in coffee cherry market are farmers -- who produced low quality of coffee cherry, collectors and processing companies -- who offered low price of coffee cherry, and the Department of Agriculture and Rural Development (DARD) -- who are the key organization mandating to perform management function in the fields of agriculture services in Quang Tri Province. With respect to price issues, the study likewise spelled out several causes which related to the functions of DARD as shown in the mapping diagram below.



Some issues under each of the Department of Agricultural and Rural Development (DARD)'s function are as follows:

Technical Support on Coffee Production: The DARD officials in the Quang Tri Province, who supposed to provide technical support on crop production, had general knowledge on the agriculture, but had limited knowledge on the specific crops including coffee plantation and harvesting practices. DARD usually provided one training course for farmers in a year on the same topic, which is not problem-oriented. There is a lack of training needs assessment in the selection of the training topics.

Farmer Group and Information Linkage: The project found that the coffee processing companies are willing to offer a premium for higher quality products, since it will lower their cost of sorting and enable them to gain higher profits from their final products. Unfortunately, information of quality requirements from the processing companies has never reached the farmers since most of the products are sold via collectors. The processing companies usually deal with big traders or group of farmers. Prior of the project, there was no initiative about group formation. Almost all farmers in the project area were small size. Farmers usually sold product individually to collectors, who perpetrated information and offered farmers lower price. These collectors did not pay a premium for better quality products, which prevented farmers to improve their product quality. The DARD had no experiences in facilitating farmers to form their groups to be able to address their own problems of product quality and price with the processing companies. As a result of no the farmers groups existed, farmers could not sell products directly to processing companies.

Involvement and Achievement of MI in Increasing Farmers Benefits

As stated at the beginning, MI applied working through partner approach; the objective of the project is beyond increasing coffee productivity and quality. Instead of working directly with coffee farmers, the project focused on sustainably building local partners' capacity to address the issues and to be able to provide appropriate technical support services to the groups of farmers in the project area. The project recognized DARD as the local government who plays a most important role in local development.

The project tried to address the issues of quality of coffee cherry by facilitating the experts from Hue University to study on the appropriate coffee cultivation techniques for Huong Hoa District. The study found that farmers in Huong Hoa District applied chemical fertilizer heavily without an understanding of the proper methods. Poor timing and poor application practices, therefore, rendered the fertilizers less effective and negatively affected soil quality, which consequently prevented the good production of coffee cherry. The first step in producing *quality coffee cherry* is proper field maintenance, including maintaining soil nutrition and appropriate application of fertilizers.

Harvesting practices also affected the quality of coffee cherry in terms of immaturity and impurity. Producing good quality coffee is impossible without the proper practice of selective harvesting of coffee cherries. Most farmers in Huong Hoa District applied strip harvesting technique instead of selective picking, since it reduces the number of picking days, which will reduce the cost of hired labors. Strip harvesting, however, result in harvested mixture of maturation levels of coffee cherries and other foreign matters such as leaves, twigs and fragments of wood.

The results of the study were disseminated to the relevant stakeholders especially the DARD Officials. The project and DARD together identified two interventions, namely: farmer field school, and farmer group formation.

The farmer field school is a work-based learning program, which allows farmers' exposure to actual practices on appropriate cultivation technologies, soil nutrition maintenance, fertilizer application, pest management, and harvesting techniques. Farmers had chances to direct-observe, practice, openly interact and share best practices and experiences among experts as well as among farmers themselves. The problems, which farmers really faced, were really addressed during the activities.

The farmer group formation is to establish efficient groups of coffee farmers, who work together to tackle production and market issues, as well as to strengthen the power of the farmer groups to be able to negotiate with the processing companies.

As a result of this project, the project team together with DARD facilitated to form 12 farmer groups, and 14 training courses on coffee appropriate cultivation techniques were organized by DARD officials to around 400 farmers. The Chairman of the Khe Sanh Coffee Association (KCA) reported that the quality of coffee cherry in the region was improved significantly due to a better quality coffee cherry from proper harvesting practices. The project together with DARD facilitated and linked new formed farmer groups to be able to sell their products directly to the processing companies. The companies agreed to sign contracts with the farmer groups. The quality requirements of the coffee cherry and the lowest purchase price, which is higher than the market price, are also stated in the contract. Information of the coffee quality requirements in order to pursue the better price was now recognized by farmers. Regulations were also set such as not allow side selling to ensure the quantity of cherry to feed the companies. The group regulations ensured the quality of product through the internal control system.

Management Strategic Partner for Sustainable Change

The project invested a lot of time during the initial stage of the project in trying to understand how the local government system in the project area operates. After that, the project identified the key potential contact persons, and spent much effort in building relationships with them by carefully demonstrating how the project will benefit to them and to the whole coffee production system in their working areas. The project selected the local agriculture extension -- Quang Tri Department of Agriculture and Rural Development (DARD) to be one of the key project partners to address the production issue. Specifically, MI believed that fostering respectful, cooperative relations with local government ensures the success and sustainability of the project.

MI ensures the success of gaining commitment of the local organization from the policy level. In Vietnam, provinces are controlled by a People's Council, which appoints a Provincial People's Committee (PPC) to be the executive arm of the provincial government. To be partnered with provincial government organizations, there is a need to receive approval from the PPC. The project approached to the PPC for the

approval. The PPC agreed and appointed the DARD to work with the project. The project then involved the DARD in many activities to ensure the mutual understanding of the objectives of the project. A number of capacity building activities were provided to the DARD staff.

Lessons learned

There is a report of farmers received higher from better-quality coffee cherries in the project area, however, there are also some lessons learned as listed below:

- The cooperation and the commitment of the government sector is one of the key factors of the project success. It is important to involve them in the early stage of the project to increase their understanding of the project's aims and approach. The project succeeded in convincing PCC and DARD to participate the project willingly.
- Good farmer leader is another success factor of the farmer group. The leader needs to be able to negotiate and convince both members and partners to come up with collective decisions for mutual benefits.
- Providing the appropriate technologies that respond to Huong Do District farming practices to DARD to be able to support farmers, increased the trust and confident of the farmers in adopting the technologies.
- In getting farmers to adopt the suggested practices, DARD found that some of the farmers strongly believed in their traditional practices, and were reluctant to adopt the techniques. Though some farmers have a positive perception of new suggested harvesting techniques, the price offered by processing companies for the selective picking of cherries was not different from the non-selective one. Some farmers prefer to strip harvest their cherry and receive cash instantly for their daily expenses. The project was succeeded in implementing other initiatives such as negotiating with companies to offer higher price for better products and requesting the companies to provide transportation. These benefits need to be illustrated to other farmers.

Scaling up the Project's Achievements

To scale up the achievements of the project required the convincing results. The success of the Huong Do Farmer Group in managing the quality of coffee cherry is proven when other groups requested to replicate the practices. The system will move by itself. To ensure the success, the project still needs to encourage and work closely with DARD to be able provide more intensive supports to farmers in terms of technical knowledge as well as to build up the capacity of the farmer leaders to be able to manage the group and be able to negotiate with processing companies. The real success will come when the local extension officials of DARD are appreciated the success of the project and decided to devote to their roles and responsibilities. The project also aimed for another level of scaling up. The Huong Hoa District is considered a pilot project, which is expected to be able to scale up in other area, if it can prove and illustrate the success.

Chapter

4

4. Conclusion

4.1 Overall Conclusion

The agricultural value chain approach would improve the standards of living of participants, reduce poverty, and enable inclusive growth. With Mekong Institute (MI)'s intervention, there has been good progress in developing the three agricultural value chains, implying the potential prospect of complete agricultural value chains in the future. **Smallholder farmers become more competitive as producers of rice, maize and coffee.** Since project implementation, 768 farmer households have increased a total additional income of USD 111,953. In Lao PDR, 10 seed producing farmer groups have expanded their market linkages and 8 out of them increased their seed trade volume by 78 tons resulting in a 21% increase in income (USD 322) for 82 farmer households. In Myanmar, with winter cropping, 41 farmer households have gained an additional income of USD 4,353. Similarly, in Vietnam, 295 out of the 475 project farmers increased their income generating a total net income of USD 51,000.

With MI's intervention, private enterprises in cross-border coffee, rice, and maize value chains have become more competitive. To date, the private enterprises in the rice, maize and coffee sectors increased a total trade volume of 10,298 tons and gained additional profit of USD 322,546. In Lao PDR, rice millers are now being GMP certified. The project also organized two business matching and trade fairs to help rice millers secure export market in Italy, Thailand, and Vietnam. In Myanmar, maize farmers are directly linked with traders in Mawlamyine, Tetkone, Yangon, Myawaddy, and Mae Sot of Thailand, leading to 371 tons of maize procurement and USD 10,992 profit for maize farmers. In Vietnam, the coffee processing company established direct linkages with farmer groups so farmers got a higher price for coffee beans while the company obtained a better quality and an additional profit of USD 153,699. Two local economic development initiatives triggered by the project have been fully promoted and supported by the local governments, including Khe Sanh Coffee Association in Vietnam and Khammouane Agricultural Development Cooperative in Lao PDR.

Although the recent outcomes of the intervention have shown some improvements in the selected value chains, implementation constraints and challenges are still encountered. *In Lao PDR*, despite being interested in initially, input retailers refused to collaborate with rice seed producing groups owing to the small volume of supplying seeds and little profit margin. Even though some rice farmers have already produced good quality seeds, they still got low price due to weak marketing. *In Myanmar*, although more farmers have involved in maize cultivation, there are still constraints, including limited capacity and human resources as well as the climatic factors such as flood. *As for Vietnam*, although the coffee association was formed, the commitment and awareness of the local authority on the importance of the Coffee Association were limited. The support from some local partners, particularly the DIT, was limited. Also, there was a cooperation problem between enterprises and farmer groups.

Going forward, the project plans to make a significant shift from its overwhelming focus on farmers and production side toward a more marketing and trading relevant facilitations and enabling environment for local and regional economic development. The upcoming year is to implement a step further by utilizing the project successful practices to facilitate the cross-

border integration, trade facilitation along the EWEC and between twin border provinces for achievement of the committed regional development results. The project commits to invest more efforts and resources to implement activities and ensure the capacity development of the relevant Government agencies as well as bilateral negotiations, so that they become more competent and willing to facilitate the cross-border integration and trade.

Given the successful implementation in three target regions in term of farming productivity enhancement and poverty reduction, **it is encouraging for governments and supporting agencies to scale up and replicate the project throughout the Greater Mekong Subregion.** From the government side, strong political will and commitment from related government agencies are critical. Market information and trends should be made available for farmers to be used for crop planning and pricing. Big corporations and middlemen should be monitored to ensure equitable profit sharing to farmers. Transportation network should be improved in order to reduce logistic costs from farm to market. Cooperation among governments are also needed in order to establish successful regional trading platforms. Top-down view are needed in order to ascertain that regional projects do not cannibalize one another. From supporting agencies such as MI and ADB, technical assistances could be provided. Best practices and lesson learnt from successful project implementation are a good starting place, however, they need to be customized to specific needs of each new implementing site. Technical assistance in term of product quality enhancement, marketing channels, and branding could greatly improve product value add and profit share of farmers. From local participants, strong local institutions such as farmer groups and cooperatives are key to sustain economic development and economic inclusion in the long run.

4.2 Implications for Agricultural Development in the Region through Linking Farmers to Markets

Despite the limitations in term of narrow scope given the case studies are conducted on a few selected commodities and regions and as such their findings and recommendations may not be generalized, the value chain analyses consistently find that **cross border trade can potentially be one of the key tools for poverty reduction.**

To link farmers to market, connectivity as well as technical assistance are needed. With the support of ADB, the cross border trade within the GMS region and the EWEC has been promoted through both physical connections such as the highway link between the Thailand and Lao PDR border and Dong Ha, and other intervention initiatives, namely a Cross-Border Transit Agreement and Lao Bao Special Economic and Commercial Area (SECA).

With regard to technical assistance, **the Mekong Institute has implemented capacity building projects in GMS region to raise farmers' productivity and production quality, improve processing standard, as well as link these products to markets.**

Yet, the further improvement of local economic development (LED) and trading environment is sluggish as it largely relies on the government. In Lao PDR, Vietnam, and Myanmar, it is usually a slow and long process to convince the government agencies to change policies or laws. This could hamper the development process of the cross border trade along the EWEC and the GMS.

As such, the governments need to actively participate in the value chain and cross border trade development process. Specifically, the government agencies responsible for agriculture, trade promotion, and development planning need to understand and apply local economic development (LED) concept to applicable policies and regulations. Moreover, the government agencies such as DLT are required a commitment to facilitating cross border trade. As for value chain development, the government agencies, such as DOA extension staff in Myanmar, DAFO in Lao PDR, DARD in Vietnam, still need to be trained on maize/rice/coffee production and necessary skills to be able to give technical support and guidance to farmers. Moreover, as the positive change is under progress, the government agencies need lots of effort and commitment to continue the project and duplicate the success.

In addition to the governments, international agencies, namely ADB, MI, and SDC, play an important role in developing agricultural value chains through various methods such as the publication of reports, strategic frameworks, and field studies, the financial support, the facilitation of intergovernmental cooperation, and the direct interventions for development. More of the international agencies' cooperation and information sharing are still needed for further development in value chains and cross border trade.

For further progress in regional value chain development in the GMS/EWEC, the intergovernmental cooperation is continuously needed. The GMS and the EWEC represent the intergovernmental cooperation with the aim to strengthen economic cooperation and to encourage trade and investment among the six/four participant countries. Due to increased interconnectedness, more of the collective policies and initiatives by the governments, which could be either formally enforced in an intergovernmental treaty or informally agreed upon by the participating countries, are required as they are important for inclusive growth in the changing economic context with increasing interdependence among countries.

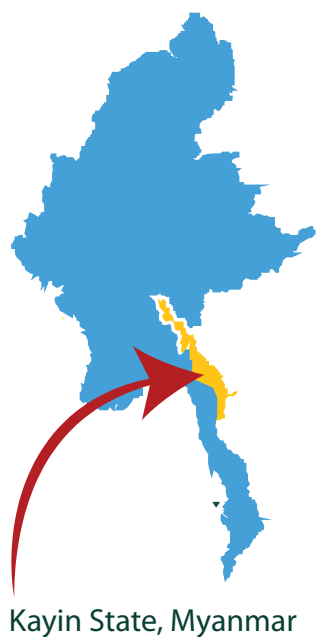


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Bridging Prosperity from Trade to Farm

Case Study: Maize Farming in Kayin State, Myanmar

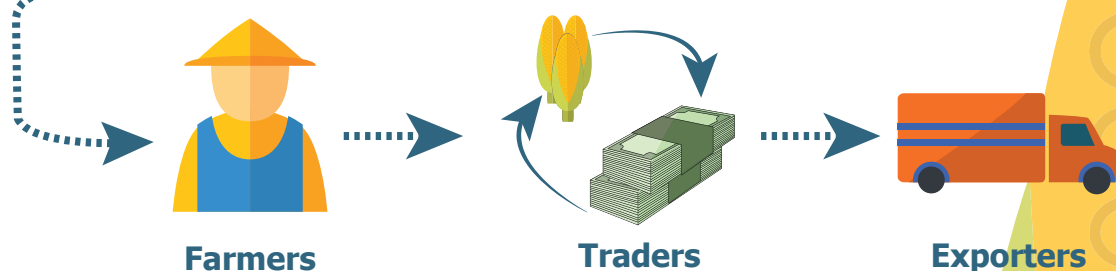


Kayin State, Myanmar

Current Situation in Kayin State

- Kayin State is **one of the poorest states** in Myanmar
- 78% of population lives in **rural areas**
- Main **ethnic groups**: Sgaw Kayin, Pwo Kayin, Bwe Kayin, Paky Kayin, Shan, Pa-O, Bamar, and Mon.

Maize Value Chain



Significant Issues

- **Low interest** in winter maize cultivation due to political instability, high outmigration, lack of awareness and limited access to quality inputs
- **High production cost** due to shortage of hired labor and small scale farming
- **Low production quality** due to poor knowledge of maize cultivation as well as market quality standard
- **Poor infrastructure**
- **Weak market information**, farmer associations & distribution channels

Mekong Institute's Recommendation

- **Lowering production cost**
Explore LEISA (Low External Input for Sustainable Agriculture) approach
- **Increase productivity and quality**
Proper fertilizer application Adequate seasonal loans
Appropriate seed variety Measures to control floods and draughts
Better post-harvest handling Education on maize standard and specification
- **Enhancing value chain**
Develop a maize supply chain development strategy based on public-private partnership
Improve access to market information
Facilitate market access for farmers and small-scale traders
Facilitate inclusive dialogues to promote cross-border trade
Form Farmer Groups



Bridging Prosperity from Trade to Farm

Case Study: Coffee Farming in Quang Tri Province, Vietnam

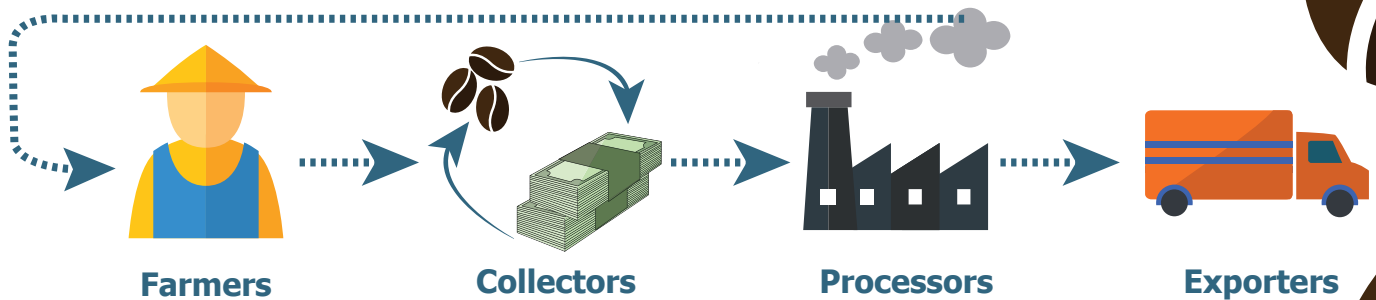


Quang Tri Province, Vietnam

Current Situation in Quang Tri

- Quang Tri is **one of the poorest provinces** in Vietnam with **30.5% living in poverty**
- Agriculture employs **52% of laborers** but contributes **only 27.9% output**
- Quang Tri is home to **3 main ethnicities**: Kinh, Bru-Van Kieu, and Pa Co.

Coffee Value Chain



Significant Issues

- **High production costs** due to sharp increase in wages and chemical fertilizer price, as well as low utilization of processing machine
- **Low productivity and quality** due to insufficient use of high-price fertilizer and poor farming practices
- **Lack of information** on coffee quality and market price
- **Insufficient financial support**
- **Low domestic coffee consumption** and dependence on international market

Mekong Institute's Recommendation

- **Lowering production cost**
Use organic fertilizer as substitute to high-cost chemical fertilizer
Train farmers on new technique of coffee cultivation
- **Increase productivity and quality**
Improve farmers' practices in coffee cultivation, *e.g. wind-break, shadow trees, and replanting old coffee trees*
Encourage watering in coffee cultivation
Coordinate with reliable source of good quality seeds
Land zoning
R&D on coffee variety
Using Good Agricultural Practices (GAP) for coffee



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Bridging Prosperity from Trade to Farm

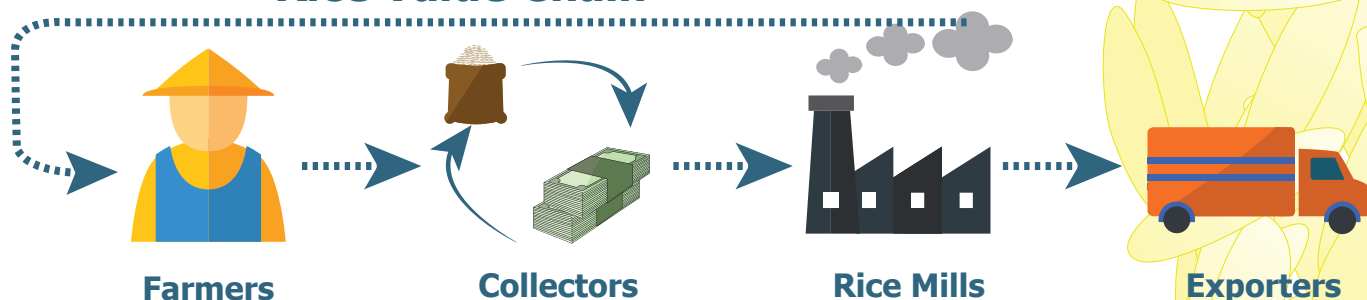
Case Study: Rice Farming in Khammouane Province, Lao PDR



Current Situation in Khammouane

- Khammouane is **one of the poorest provinces** in Lao PDR
- **31.4%** of population live in poverty
- **72% of population** work in agricultural sector, producing **only 26.6% of gross provincial product**

Rice Value Chain



Significant Issues

- **High production costs** e.g. chemical fertilizers, hired labor wages, rice seeds, and transportation cost
- **Low productivity and quality** due to weak regulations on standard, farmers lack of knowledge on plant protection and post-harvest management, inefficient rice milling equipment, improper storage areas, and inadequate financial resources resulting in lack of investment
- **Limited knowledge on export market**

Mekong Institute's Recommendation

- **Lowering production cost**
 - Maintaining and upgrading farm-to-market roads
 - Increase investment on input supply
- **Increase productivity and quality**
 - Adoption of certified seeds
 - Upgrading rice planting process and milling equipment
 - Water supply management
 - Rice grading
- **Enhancing value chain**
 - Trade facilitation
 - Farmer group formation



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