

PROMOTING ORGANIC AND FAIR TRADE
CERTIFICATION IN THE LAO PDR COFFEE
SECTOR: BENEFITS AND CHALLENGES
FOR FARMERS AND LOCAL
ECONOMIES

By

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CHAPTER 1

1. INTRODUCTION

1.1 Background

The Lao People's Democratic Republic (Lao PDR) (hereafter referred to as Laos) is a less-developed and land locked country located in South East Asia. It shares its borders with five countries including China, Vietnam, Cambodia, Thailand and Myanmar (See Appendix A for map of Laos). Laos's geography is dominated by a mountainous terrain in the north, east and south east and with lowlands situated on the floodplains of the Mekong River and its tributaries. Despite its relatively large land size (23.68 million hectares) it has a small population of just 6.1 million people (51% female) and is considered one of the poorest countries in the region.

Since the mid 1980s Laos has been taking concerted steps to open its economy and promote investment, economic development and poverty reduction. These economic reforms were known as the New Economic Mechanism (Bourdet 1995). More recently, the country's *National Growth and Poverty Eradication Strategy* (2004) (NGPES) outlines a plan for moving from the United Nations's least developed country list by 2020. This strategy is based on the principles of sustainable development - ensuring positive growth trends of the country's economy for every sector (UNDP-LAO 2004).

Driven by the above two milestones, over the last two decades the Laos's economy has been transforming rapidly from a traditional subsistence agriculture-based economy to a more sectoral diverse, export driven economy. The 2009 Gross Domestic Product (GDP) was about US\$6,700 million, yielding a per capita GDP of around US\$1,100 (Balbi et al. 2011). Key sectors contributing to Laos's GDP include: service sector (45%); agriculture (34%); electricity and mining (11%) and manufacturing (10%) (World Bank et al. 2010).

The country's economic growth source is mainly from the use of natural capital which includes minerals, forests, agriculture land and waterways (Table 1). Agriculture shares one-third of this natural capital.

Table 1: Laos's Capitals

Laos' Capitals	%
Intangible/Human Capitals	37%
Produced Capitals	9%
Natural Capitals	54%
- <i>Mineral</i>	16%
- <i>Forest and Protected Areas</i>	21%
- <i>Agricultural Land</i>	30%
- <i>Waterways (Hydro-electric)</i>	33%

Source: Modified from World Bank et al. (2010)

The share of GDP from agriculture is about one-third of the total GDP, but this has been decreasing gradually. Despite this reduction, agriculture remains important for the country's economic development as it still accounts for about 80% of the country's total labor force. Primary agricultural production includes rice, vegetables, maize (mainly for livestock feed and for export), roots and tubers (cassava, taro and sweet potatoes), sugarcane, banana and watermelons. These products are mainly for local consumption except for maize. Rice is the country's main staple. Average per-capita consumption is

206 kg of rice per year making Laos the highest per capital consumer of rice in the world. Important cash crops, for export include coffee, tobacco and tea (Balbi et al. 2011).

The majority of the 80% of the country's total labor force is poor and lives in the rural areas and involves in agricultural activities. Thus, ensuring the equal distribution of the benefits of the economic growth and development is very important. Despite significant growth of other economy sectors, development of the agriculture sector still plays a crucial role in the development of local economies across the country. The fast pace of growth and investment in agriculture and other sectors over recent years presents many challenges that the Laos's government and people have to consider and address to ensure the benefits from this growth are embraced and the costs / risks are minimized.

1.2 Problem Statement

Laos opened its economy to the world market in 1986, and has steadily become more integrated into both regional and global economies through its membership in the Association of South East Asian Nations (ASEAN) and on-going work in preparation for joining the World Trade Organization. This integration presents significant opportunity for trade, investment, economic development and meeting the countries poverty reduction goals. However, at the same time it also increases the country's exposure to the risks and challenges of operating in more open, competitive and complex market which can result in significant impacts on local economies and people.

These opportunities and challenges can be seen in the Laos coffee sector. It is one of the country's oldest and leading export cash crops although it only contributes a very small proportion of the total country export (FAO 2010). Coffee is one of the important crops used to meet the goal, "Promote commodity production, especially for export" of

Laos's NGPES – 2004. However, due to Laos's geographic position among some of the world's leading agriculture producers and exporters of coffee including Thailand and Vietnam, it is important for Laos to understand its comparative advantage to ensure it can increase its market share and position in the world coffee market.

Currently, there are four types of coffee farming in Laos including:

- Traditional “organic” by default household farming;
- Conventional concession farming (small-medium and large scale coffee plantations);
- Traditional household farmers (once ‘organic by default’ now shifting to different coffee varieties, use of inputs and more intensive practices for greater yields); and
- Organic and Fair Trade Certified farming.

The last three farming methods have been adopted in the Laos coffee sector within the last 3 decades. Even more recent, the Organic and Fair Trade certified farming has been adopted within the last 10 years. The proponents of organic and Fair Trade argue that Laos, with its small but long existing and high quality coffee sector has a comparative advantage to capture the premium portion of this type of coffee production.

According to Saito (2009), the principles of organic and Fair Trade farming are synonymous with sustainable coffee production. Thus, these principles should contribute to the sustainable development of Laos. The Laos's coffee sector has the capacity to produce a higher quality product. Nevertheless, the trade off is that there are many requirements that coffee producers have to comply with, which are challenging the sector and country (GDS 2005).

By adopting organic and Fair Trade principles, the Laos's coffee sector is facing many challenges. One key challenge is trying to integrate these new approaches and identify how can the coffee sector contributes to the development of the local economies and meet the country poverty reduction goals. Moreover, both empirical and non-empirical information regarding the social and economic trade-offs between the organic and Fair Trade and commercial (conventional / non-organic/ non-certifying) coffee products have not been clearly determined. Thus, there is a need to further investigate how these more recent and new production and marketing strategies will affect the coffee sector, particularly for the small and medium scale producers/farmers (interchange words throughout the paper), and their community. How socio-economically secure have these farmers been by choosing to adopt new sustainable agriculture techniques and maintain the organic approach in their coffee production system compared to those who employ the conventional approach? Also, both the social-economic and environmental implications of the two different, but related strategies, and the sustainability of the strategies needs to be determined. Thus, these strategies can help foreign and domestic investments, and importantly small and medium producers in decision making on their coffee production management. Thus, the purpose of this research is to investigate the social-economic impacts of Fair Trade and organically certified, and traditionally produced commercial coffee on small and medium scale producers, including the contribution of these practices to the sustainable development in Laos.

1.3 Objective

The overall objective of this study is to determine the benefits and costs of the organic and Fair Trade coffee production method (OFM) and the conventional production

or Non-organic coffee production method (NOM), and the contribution of these methods to sustainable development. More specifically, for each method of coffee production the study aims to

- identify the socio-economic impacts to coffee farmers and local economies;
- identify the environmental and community-wide impacts, and
- examine and compare the profitability by:
 - determining the costs and returns (Gross Margin); and
 - determining the Net Present Value and Internal Rate of Return

1.4 Scope of Study

Despite making the above comparison between the OFM and NOM, it is not the intent of this study to state which coffee production method is better. Instead, the intent is to provide insights into the positive / negative impacts on farmers and local economies and to identify challenges to the growth of this sector. The results can be used to inform stakeholders including producers at all scales (small, medium and large) and organizations that give loans or support producers to design their interventions towards improvement and supporting growth in the sector. Also, this study is taking place while the AGPC (The Bolaven Plateau Coffee Producers Group Association) cooperative is operating, and thus, this study intends to provide feedback to this group. This is because project appraisal and evaluation is not to be viewed only at the beginning and end of the project but as a continuous process. Moreover, as OFM movements are considered very new to Laos and there have been numerous recent changes in the Laos's coffee sector, an additional purpose of the study would be to simply present more updated information about coffee production at both national and international levels.

Due to time constraints and limitation of information gathering, this research is intended to provide preliminary insights into the impacts of OFM on local coffee producing economies in Laos. It identifies key areas for future and more thorough study.

1.5 Outline of the Study

The next chapter is the Literature Review that will provide background on the development of Organic and Fair Trade movements, agriculture and coffee production, and their benefits and constraints at the global level. Chapter 3 will present a history of the development and progression of Organic and Fair Trade movements in Laos, and an update of the Laos's coffee sector situation. Chapter 4 provides the details on the research approach and methods used to conduct the study in a specific location. Chapter 5 will provide a discussion of the findings both from a secondary study and field work. Chapter 6 will provide conclusions and recommendations.

CHAPTER 2

2. LITERATURE REVIEW

This chapter will provide an overview of the link between sustainable agriculture and the Organic and Fair Trade movements, agriculture and coffee production. Also, the benefits and costs of these movements will be covered.

What is sustainable agriculture?

There have been many explanations and standards developed regarding sustainable agriculture. Still, the concept of “Sustainable Agriculture” is not that simply to define. However, for this research it shall share the common foundation of “sustainable development” as raised by Holling (2001). He referred the term as “the goal of fostering adaptive capabilities and creating opportunities” With the current global changing environment, having the “adaptability” and “creativity” standing position are essential.

According to Pretty (1995), there are three components required to reach sustainable agriculture. Firstly, it is the continuous application of “resource-conserving technologies”, for example, integrated crop managements and rotations, etc., that will be considered to be part of the “creativity” position as pointed out by Holling (2001). This component has to be practiced by local groups and communities which is the second important component. The third component is that support from the private sectors and/

or non-government organizations is required. In relation to Holling's (2001) study, these latest two components need to have the "adaptability" position to ensure the "creativity" position is being enforced. Moreover Pretty (1995), pointed out that the expansion of sustainable agriculture can be reached, if the promising environmental policies are being presented and guide the mentioned components. Additionally, the sustainability of agriculture requires the contribution from many sustainable agriculture practices. Organic farming / agriculture is one of those practices that could contribute to the overall sustainability of agriculture (Jones, 2003; Sahota 2007).

2.1 The Global Overview of Organic and Fair Trade Agriculture

2.1.1 Organic Agriculture

Many researchers and organizations have defined and described organic agriculture in slightly different aspects. Currently, the uniform definition is given by International Federation of Organic Agriculture Movements (IFOAM), which defines organic agriculture as *"a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved"* (IFOAM 2009). Moreover, IFOAM has four core principles for Organic Agriculture (OA) including:

- The principle of health: OA should sustain and enhance the health of soil, plant, animal, human and planet as one and indivisible;
- The principle of ecology: OA should be based on living ecological systems and cycles, work with them, emulate them and help sustain them;

- The principle of fairness: OA should build on relationships that ensure fairness with regard to the common environment and life opportunities; and
- The principle of care: OA should be managed in a precautionary and responsible manner to protect the health and well-being of current and future generations and the environment.

According to Pierrot et al. (2010), organic is known as “the first sustainability standard for agriculture. It is the only one to be regulated by law in many markets and as such lends an additional level of credibility to the standards”.

Organic agriculture has always been a practicing method for farmers to cultivate their products. It is said to be “the oldest form of agriculture on earth” (Iowa State University 2009). However, less attention is given to the practice during certain stages of development, particularly, during the discovering of chemical fertilizers in conjunction with the green revolution and the significant growth of the world population in the 1940s and 1950s. It was not until the 1980s, when the public became more aware of the issues regarding food safety and environmental concerns from these applications, that organic farming began to again play a more important role (Cottingham 2007). Since then, organic farming has been one of the most discussed and debated topics within sustainable agriculture and related sectors.

The benefits of organic farming are not only for health, but also for the social and environmental value of countries that adopt this practice. A comparative study on the environmental impacts between conventional and organic farming in Australia by Wood, et al. (2006) showed that organic farming does provide social advantages, and their effective methods can help reduce the overall environmental issues. Also according to

Lobley, et al. (2009), organic farming does contribute to rural development by creating more jobs not only for family members but for the general employee in England compared to non-organic practices.

According to Sahota (2007), organic farming is widely practiced around the world and Australia has the largest areas of organic farmland comprising about 45% of the total world organic farmland. However, only a small percentage of this land has been used for organic food production. In the mid 2000s, there were more than half million organic farms in the world with Mexico containing the highest number. The two most important markets are located in North America and Europe. In North America, the market for organic products is the fastest growing in the world. In Canada the growth of organic markets is also high. Demand for organic products is so high in Canada that consumers face supply shortages. In Asia, the organic market makes up a very small proportion of the world's organic market. The largest Asian market is in Japan. However, the highest growth market is in China, which has the largest amount of organic farmland in Asia. In some developing countries in Asia, organic farming has been considered as a sustainable form of agriculture and become more popular and is practiced and supported by the government. Australasia's organic market share in the world is very small.

As with the organic market, the global market for Fair Trade products is growing at the significant rate and at a higher rate than the organic market.

2.1.2 Fair Trade Agriculture

According to the Fair Trade International (FLO) (FLO 2009a), Fair Trade is currently defined as *“a trading partnership, based on dialogue, transparency and respect, that seeks greater equity in international trade. It contributes to sustainable development*

by offering better trading conditions, and securing the rights of, marginalized producers and workers – especially in the South. Fair Trade Organizations, backed by consumers, are engaged actively in supporting producers, awareness raising and in campaigning for changes in the rules and practice of conventional international trade". The key principles of Fair Trade include "promoting market access for marginalized producers; sustainable and equitable trading relationships; capacity building and empowerment; raising consumer awareness and advocacy, and Fair Trade as a "social contract". In addition to these key principles, social, economic and environmental principles are included in all Fair Trade standards specifically developed to small-scale producers and workers and their organizations (FLO 2011a). For small-scale producers specifically the principles are:

- Members must be small producers: The majority of the members of the organization must be smallholders (small-scale farmers) who don't depend on hired workers all the time, but run their farm mainly by using their own and their family's labor; and
- Democracy: Profits should be equally distributed among the producers. All members have a voice and vote in the decision-making process of the organization.

The system is said to substantially benefit more than million small-scale farmers and laborers in 58 developing countries from Africa, Asia and Latin America regions. In addition, the system benefits consumers by having part to address the global trade issues and environment so it is protected through the environmentally sustainable practices and management of farmers (FLO 2009b).

The concept and establishment of Fair Trade has to be tracked back for centuries when many people perceived the inequality or injustice of international trade impacting human well-being and the environment (Jaffee 2007a). Some of the observed unfairness issues of international trade include the low prices received by farmers compared to the input cost and cost of living. These issues have existed ever since there was trade, but since the 1970s, the issues have deteriorated significantly for the global South. These imbalances in the transfers of trade have a number of negative impacts for subsistence farmers. The key endeavor of Fair Trade is addressing this unfairness structure (Jaffee 2007a). In 1988 under the Dutch development agency Solidaridad project, the first Fair Trade label - Max Havelaar was launched selling the first Fair Trade coffee from Mexico. Since then, many key Fair Trade labels have been established and represent different countries and regions. FLO was founded in Bonn, Germany in 1997. The development of the Fair Trade body has occurred over several decades, but it was not until 2007 that producers (farmers) joined the FLO Board as full members or co-owners (FLO, 2009c).

The Fair Trade movement has been developed over the last 3 decades, considerable new, thus, there was uncertainty amongst producers and distributors to join the Fair Trade movement (Grodnik and Conroy 2007). However, according to the latest statistics by FLO, (2010), at the end of 2009, there were 827 Fair Trade farmer and worker organizations with more than 1.2 million individual farmers and workers, and more than 6 million beneficiaries (producers and family members) from Fair Trade. The estimated world Fair Trade retail sale in 2009 was about US\$4.6 billion with an annual growth sale in 2008-09 of 15%. The estimation of Fair Trade Premium paid for

community development in 2008 was about US\$58.8 million. The major Fair Trade products include: coffee, bananas, tea, cocoa, cotton, and sugar.

Similar to organic products (edible products), the demand for Fair Trade products are mainly in the developed countries regions. Recently there are more than half million producers of Fair Trade products produced in over 32 countries. The main producers are located in Latin American and African countries with more growing in many Asian countries. The best known Fair Trade product is coffee and the United States is the biggest consumer in the world. The demand for organic and Fair Trade products is increasing around the world, with the high concentration in North America and Europe regions, the regions with high purchasing power. Organic product markets are more established than Fair Trade food markets. However, there have been predictions that Fair Trade products could follow the growth of the organic market and become profitable. The growing market for Fair Trade is high, but unless there is some change in structure, the revenue will remain small compare to the organic markets (Sahota 2007).

2.2 The World Coffee

2.2.1 The Variety, Production, Products and Markets

Around the world there are about 80 species of the genus *Coffea* but only two species are generally cultivated. These include *C. arabica* (Arabica) which accounts for about 75% of the world's coffee production and *C. canephora*, commonly known as Robusta (Martinez-Torres 2006b). However, this proportion has changed as shown in Table 2. The share of Arabica production is currently at about 60% in the 2009-10 (ICO 2010a; ITC 2011). Arabica is grown more in Mexico and Central America, while Robusta is widely grown more in the Asia and Oceania regions (ICO 2010a). The

production of both coffee species requires a large initial investment with several years between planting and first harvest. Thus, coffee growers must take a large risk unless they are financially secure, well-defined production land and own the land (Martinez-Torres 2006a).

Coffee has had a long history of spreading and commercializing and has played various roles for persons who drink it and for the people who were involved in its products and production. Since 2006-07, world coffee production was greater than 126 million bags (60 kg per bag). The world's leading coffee producing country is Brazil following by Vietnam. Vietnam is the leader in producing Robusta, while Brazil is the lead producer of Arabica as shown in Table 2. Brazil, Vietnam and Colombia are the top three coffee exporters, accounting for more than 50% of the total world export market in 2009-10 (ICO, 2010b; ITC 2011).

Table 2: Overview of World Production 2005/06-2009/10

Coffee Year	2005/06	2006/07	2007/08	2008/09	2009/10
in millions of 60 kg bags					
World	117.5	126.1	126.8	126.1	126.2
Arabica	74.7	76.4	79.1	75.2	75.4
Brazil	28.4	29.1	30.3	32.2	32.5
Colombia	12.6	12.6	12.5	8.7	9
Other America	23.1	23.1	24.2	22.8	21.8
Africa	6.7	7.4	7.7	7.1	7.2
Asia and Pacific	3.9	4.2	4.4	4.4	4.9
Robusta	42.8	49.7	47.7	50.9	50.8
Brazil	9.3	10.2	10.7	10.6	10.9
Viet Nam	13.8	19.3	16.5	18.5	18
Indonesia	7.2	6.4	6.9	8.1	8.6
Others	16.2	18.8	18.8	18.7	17.6
Shares (per cent)					
<i>Arabica</i>	63.6%	60.6%	62.4%	59.6%	59.7%
<i>Robusta</i>	36.4%	39.4%	37.6%	40.4%	40.3%

Source: ITC (2011)

Coffee is a key income generating component for many producing countries. For example, in Ethiopia, coffee accounted for about 65% of its Gross National Products (GNP) with 25% of the country's population is involved in the sector. Also, for countries like Burundi and Uganda their export earnings from coffee account for more than 70% of total exports (Martinez-Torres 2006a). Second to oil, coffee is the world's most traded commodity involving more than 50 different exporters from developing countries (Martinez-Torres 2006a; Grodnik and Conroy 2007).

According to ITC (2011), world coffee exports are about 92.5 million bags of green coffee beans, roasted and soluble coffee in 2009-10. Arabica has always been the major traded product accounting for more than 60% of the total world exports. This total exported volume is lower than the previous year due to lower production as shown in Table 3, resulting from bad weather. Global temperature have been reported to be gradually increasing, causing coffee rust disease that has affected coffee plants in some countries at higher elevations (Harrington 2011).

Table 3: Overview of World Exports by Type 2005/06 - 2009/10

Coffee Years	2005/06	2006/07	2007/08	2008/09	2009/10
in '000 of 60 kg bags					
World	88,246	98,388	96,032	97,433	92,521
Arabica	55,580	59,908	57,854	58,630	56,202
Robusta,	26,554	31,111	30,541	32,263	29,191
Roasted Coffee	260	204	287	255	223
Soluble (Instant coffee)	5,852	7,165	7,350	6,285	6,905

Source: ITC (2011)

The first coffee consumption region is Western Europe which accounts for 50% of the total trade volume in 2009-10 as shown in Table 4. North America is the second

major consumer accounting for about 26% of the total trade. Consumption of traded coffee in Asia and the Pacific is about 15%.

Table 4: Consumption in Importing by Countries and Regions 2005/06 - 2009/10

Consuming Countries/areas	2005/06	2006/07	2007/08	2008/09	2009/10
in '000 of 60 kg bags					
World	90,071	92,619	93,568	92,914	91,392
North America	24,075	23,994	24,501	24,901	24,624
- United States	21,328	21,199	21,423	21,656	21,332
- Others	2,747	2,795	3,078	3,245	3,292
Western Europe	42,124	42,780	42,340	39,874	40,651
- France	5,113	5,581	5,331	5,329	5,562
- Germany	8,913	9,082	9,912	8,409	9,554
- Italy	5,484	5,840	5,918	5,752	5,743
- Others	22,614	22,277	21,179	20,384	19,792
Eastern Europe	6,120	6,195	7,211	7,589	6,586
Asia and the Pacific	12,504	12,908	13,780	14,280	13,564
- Japan	7,271	7,265	7,150	7,330	6,909
- Others	5,233	5,643	6,630	6,950	6,655
Others	5,248	6,742	5,736	6,270	5,967

Source: ITC (2011)

2.2.2 The Coffee Prices and Crisis

The world price for coffee has always been highly variable. According to Jaffee, (2007b), coffee price is determined by commodity traders on the New York Coffee, Sugar and Cocoa Exchange. Before the termination of the International Coffee Agreement (ICA), coffee price fluctuated from 1.00- 1.50 US\$/lb (2.20 - 3.30 US\$/kg). However, the changing distribution of coffee production resulted in the world coffee crisis when there was a significant falling of the coffee price in the early 2000s (Wollni 2006). The factors that contributed to this crisis were due to structural changes in supply and demand. There had been an over-supply of coffee due to the production expansion from the major exporting countries, while consumption was constant. Also, the

elimination of the ICA in 1989 resulted in less cooperation amongst coffee traders, particularly in sharing coffee production information among the producers.

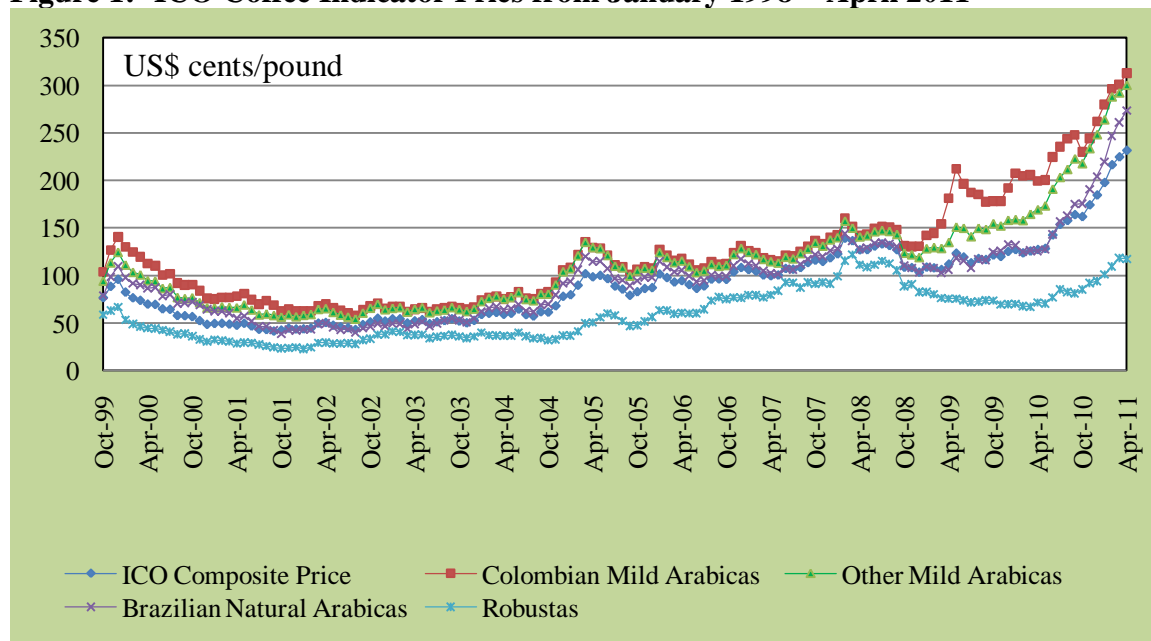
Simultaneously, improvement of technologies at the processing level resulted in lower production costs (Wollni 2006). The consequences of the crisis at the country level were the reduction of revenue from export earnings. At the farm level, some of the farmlands were abandoned and/or reallocated to other types of production, affecting the environment by converting the shaded coffee land into open cropland and increasing of deforestation. For laborers, their wages were reduced.

The severity of the crisis was greater for some farmers that were no longer able to cover their basic needs. Thus, in many cases, farmers and laborers migrated to urban areas in search of new jobs to overcome their financial and social hardships (Wollni 2006). Jaffee (2007a) described this international coffee price crisis as “the worst ever”. The world coffee price was 2.50 US\$/lb (5.50 US\$/kg) between 1994 and 1997. However, in 1999 the price fell sharply and did not even cover the production cost for small farmers. In December 2001, the lowest price was at 0.41 US\$/ lb (0.88 US\$/kg). For small farmers, this price was too low to continue production. From Central America to Africa the coffee crisis was estimated to affect 125 million people (Fritsch 2002).

The recovery from the crisis began in 2004. The coffee price in 2006 returned to around 1.00 US\$/lb (2.20 US\$/kg). This had provided minor improvement for some small producers. However, this is not the end of the crisis as reported by Oxfam America in 2006 as the recovered price is half of that when there was ICA. Also, as there is no institution to control the production quantity, the current price improvement is considered to be short-term. Thus, unless the world commodity markets structural problems and the

terms of trade is addressed, the coffee markets will continue to experience a persistent crisis (Jaffee 2007a). Nevertheless, according to the International Coffee Organization (ICO) monthly prices report in 2011, there is a promising indication that coffee prices are starting a new era. As shown in Figure 1, after the crisis, the coffee prices for all types of coffee have increased gradually, with Colombian Mild Arabica posting the highest gain, while Robusta has the lowest. The prices for Colombian and Other Mild Arabica have risen from less than 1.50 US\$/lb (3.30 US\$/kg) in 2005 to greater than 3.0 US\$/lb (6.61 US\$/kg) in early 2011. This has provided the new record of the highest ICO composite indicator price at 2.24 US\$/lb (4.93 US\$/kg) since June 1977. However, the price for Robusta has always been significantly lower than the Arabica prices.

Figure 1: ICO Coffee Indicator Pries from January 1998 – April 2011



Source: ICO (2011)

According to Harrington (2011), ten reasons for the rising world coffee prices are:

- Surging worldwide demand for Arabica coffee;
- United States and Europe sustained high demand for specialty coffee;

- Declining U.S. dollar;
- Lower interest rates;
- Depleted stockpiles of green coffee;
- Coffee futures skyrocketing;
- Rising global temperatures displacing Arabica Coffee farmers;
- Major coffee retailers contemplating further price hikes;
- Not convenient to stock up on coffee;
- Arabica Coffee cultivation takes five years until production; and
- Bad weather and other problems lead to disappointing coffee harvests.

The trend in increasing coffee prices seems to be a very promising position for coffee farmers, especially for those who produce Arabica Coffee unless their products suffer further impacts from the rising global temperatures.

According to DaMatta and Cochico Ramalho (2006), this changing temperature often results in drought. This is the main environmental stress affecting coffee producers in majority of coffee-growing countries. With no irrigation, in very dry years, coffee productivity might be only about 20% of normal harvest. If drought or frost events occur, the impacts are significant for the international coffee prices. This happened in the mid 1990's when damaging frosts occurred twice in the southern growing regions of Brazil resulting in the three fold increases in the coffee price. For producers who are able to predict the changes and have access to information and capital, solutions or alternatives may be adopted to minimize the impacts. However, the majority of the coffee producers are small-scale, limited capital, and no access to information. These producers will be forced to rely on a good crop year temperature in favor to their production. One of the

suggestions pointed out by DaMatta and Cochico Ramalho (2006) is to adopt coffee shade-grown management. This management has reported to alleviate the impacts from both drought and frost. Also, it is part of the organic production management techniques.

With the current changing temperature that affects coffee production and has resulted in price rises for coffee, stocking coffee beans by major producers and suppliers in large warehouses is beginning to occur. However, in the following years if the temperature is in a favor of producers, coffee yields would increase. This could result in more supply than demand in the world markets and coffee prices might decrease which will not be favorable for producers. Thus, with this changing world climate, coffee stockpiling, and the uncertain levels of supply and demand of coffee in the world markets are some of the indicators that the coffee crisis might happen again. Thus, it is important to understand the alternatives that may alleviate the potential crises. Since the crisis and because of the current coffee products and production situation, the differentiated coffee markets such as organic and Fair Trade have been developed to ensure minimized risks for small famers.

2.2.3 Organic and Fair Trade Coffee

Organic and Fair Trade coffee are considered as part of the world sustainable coffee production and markets (Giovannucci and Koekoek 2003; Daviron and Ponte 2005). In Giovannucci and Koekoek (2003), the brief and simple definitions of organic coffee and Fair Trade coffee were developed:

“Organic coffee is certified to be produced with methods that preserve the soil and without the use of synthetic chemicals”, and “Fair Trade coffee is purchased directly

from cooperatives of small farmers that are guaranteed a minimum pre-set contract price. A distinction is made between FLO-certified and other fair trade coffees.”

In 2002-03, the niche market or differentiated market known as Fair Trade, organic and eco-friendly coffees covered less than 2% of consumption. However, they provided attractive advantages for about three-quarter million farm households and the entire coffee industry by increasing sales and providing higher profits for all stakeholders along the coffee supply chain. Moreover, the estimated sales were more than 1.1 million bags of coffee from both certified and non-certified coffee both of which received a premium price. Also, markets for these coffees were said to be fastest-growing markets resulting from what was seemed “to be attuned with emerging consumer demands, increasing corporate responsibility, and heightened risk management along agricultural supply chains”. However, with these positive aspects of differentiated markets, some drawbacks such as limited market access and size support by the government, and costs of the certifications also occur (Giovannucci and Koekoek 2003).

Three standards and procedures have to be met if coffee growers or producers are to be certified as organic (Daviron and Ponte 2005). First, the coffee growing areas have to be synthetic agro-chemical free for three years. Second, farmers and processors must record in detail, approaches and equipment used in the production and management. Last, inspection from a third-party certifier must take place annually on all methods and materials used. Key to meeting these standards is to have “funds” to be able to pay for the certification including annual inspection and monitoring fees. This certification cost is another key differentiation between conventional and organic coffee production (Giovannucci and Koekoek 2003). As an individual small scale farmer it is difficult to

pay the certification fee. Thus, in many developing countries, small-scale coffee farmers often form up as a group or cooperative to be certified as organic and Fair Trade producers, and gain benefits from these certifications. Besides meeting the mentioned standards, and in order to receive support from international organizations, Giovannucci and Koekoek (2003) pointed out that organic coffee farmers have to adopt the environmental friendly farm management approaches including: recycling and reusing available nutrients through methods such as composting; the rotation or intercropping of diverse plants to balance the soil's requirements, improve its tilt; check the proliferation of pests and diseases; using plant cover and terracing to minimize runoff and erosion; and neither monocropping nor clear-cutting large tracts of land in order to significantly maintain biodiversity.

The two conditions under which coffee producers can be registered as a Fair Trade organization are, the group's members are smallholders, and the group is free to operate and not under any political bodies. These principles are in line with the small-scale producers principles of Fair Trade. However, Fair Trade is differentiated from other sustainable coffee certification in that it pays a minimum price to producers. Many rules and standards have to be met and complied with by coffee farmers in order to certify their coffee products as organic and Fair Trade. In return these farmers have expected that organic and Fair Trade coffees will provide them with an attractive incentive such as premium coffee price (Daviron and Ponte 2005).

2.2.3.1 Organic and Fair Trade Coffee Products, Producers, and Markets

According to Potts et al. (2010), in 2009, the total organic (1.8%) and Fair Trade (4.3%) coffee production accounted for about 6.1% of the total world production. Sales

from these types of coffees account for more than 3 million bags. This volume has increased more than 50% since 2005 as shown in Table 5. The amount of organic coffee has always been higher than Fair Trade coffee. However, in 2009 the sales amount worldwide is just about 150 thousand bags difference between organic and Fair Trade coffees. The total amount of these two types of coffees represent about 3.5% of the total worldwide sales. In 2009, the total sales of sustainable coffee (green coffee) represented about 8% of the total global coffee sales and 17% of the global coffee production (Potts et al. 2010). Thus, in less than 10 years, the total global sales of sustainable coffees have increased by 4 times. This is a positive signal for producers to adopt sustainable coffee production.

Table 5: Comparison of Total Worldwide Coffee Sales and Worldwide Organic and FLO-Certified Coffees Sales 2005-09 in 60-kgs bag

	2005	2006	2007	2008	2009
IFOAM (Organic)					
Volume	867,000	1,117,000	1,492,000	1,624,700	1,693,055
%	0.98%	1.14%	1.55%	1.67%	1.83%
FLO-certified coffee					
Volume	566,565	867,730	1,036,815	1,370,200	1,526,217
%	0.64%	0.88%	1.08%	1.41%	1.65%
Worldwide coffee sales¹					
	88,246,000	98,388,000	96,032,000	97,433,000	92,521,000
% for share of IFOAM and FLO from worldwide coffee sales					
	1.62%	2.02%	2.63%	3.07%	3.48%

Source: Potts et al. (2010) and ITC (2011)

The organic coffee export destination is mainly to the European Union countries which accounts for 44% of the total volume, followed by North American as shown in Table 6 (ITC 2011). The biggest organic coffee consuming country is the United States which accounts for almost 40% of the total exports of organic coffee. Among European

1) Data obtained from ICO (2010a)

Union countries, Germany is the lead organic coffee consumer with 50% of the total imports in 2009. In Asia, Japan is the leader in organic coffee consumption, accounting for 8.2% of the total (ICO 2010a).

Table 6: Worldwide Imports/Sales of Certified Organic Coffee in 60-kg bags

	2005	2006	2007	2008	2009
Total	867,000	1,117,000	1,492,000	1,624,700	1,693,055
Europe				725,000	754,000
North America	316,700	511,700	612,000	672,800	703,080
Other	498,700	543,300	813,000	154,400	160,575
Japan	51,600	62,000	67,000	72,500	75,400

Source: ITC (2011)

Again the worldwide sales or trade of FLO-certified coffee products (as presented in Table 5), in 2009-10 comprises 1.65% of the world total sales. As presented in Table 7, the main destination of this Fair Trade coffee products is the European region followed by the North American region.

Table 7: Worldwide Sales of FLO-Certified Coffee in 60-kg bags 2005-2009

	2005	2006	2007	2008	2009
Total	566,565	867,730	1,036,815	1,370,200	1,526,217
Europe	352,065	429,915	521,065	767,300	855,717
North America	210,685	430,600	504,565	578,567	636,917
Australia/New Zealand	1,650	4,765	7,500	18,500	26,567
Japan	2,165	2,450	3,685	5,833	6,533
Others					483

Source: ITC (2011)

Latin America is the lead region in exporting organic and Fair Trade coffee with Peru being the largest exporter. In Asia, Indonesia is the leader, while in Africa, Ethiopia is the leader followed by Tanzania (ITC 2011).

2.2.3.2 Organic and Fair Trade Coffee Prices

Organic and Fair Trade coffee prices have been determined differently. As pointed out by Daviorn and Ponte (2005), Fair Trade is differentiated from other sustainable coffee certification because it pays a minimum price to producers. However, there is no minimum price set for organic coffee products. Thus, the organic coffee price depends on the negotiated prices, coffee quality, world market prices plus the premium (Fair World Project 2011). According to Giovannucci and Koekoek (2003), the average premium or bonus paid for certified organic coffee generally ranges from 0.15 to 0.30 US\$/lb above the current New York Coffee or “C” market price.

In early 2011, new minimum prices have been agreed for both washed and natural coffee for Arabica but not yet for Robusta. However, both the premium from organic and Fair Trade have increased by 0.10 US\$/lb for both types of coffee as presented in Table 8. After the 1st of April 2011, coffee producers who have been certified and meet FLO principles will be granted these minimum prices, and will receive higher prices if the New York prices (It is the daily closing price of the second position Coffee ‘C’ futures contract at ICE Futurer US) are higher (FLO 2009d; FLO 2010; FLO 2011b).

Table 8: Fair Trade Minimum Prices and Premium for Coffee Validating Before and After April 1, 2011.

Producer Scope Small Producer Organizations	Washed or natural ²	Currency per Unit	Minimum Prices (FOB ³) Before (B) and After (A) April 1, 2011		Minimum Organic Differential Before (B) and After (A) April 1, 2011		Fair Trade Premium on top of the price Before (B) and After (A) April 1, 2011	
			B ⁴	A ⁵	B	A	B	A
Coffee Arabica (World-wide)								
SPO	Washed	US\$/lb	1.25	1.40	+0.20	+ 0.30	+0.10	+0.20
		US\$ /kg	2.75	3.08	+0.44	+0.66	+0.22	+0.44
SPO	Natural	US\$/lb	1.20	1.35	+0.20	+ 0.30	+0.10	+0.20
		US\$/kg	2.64	2.97	+0.44	+0.66	+0.22	+0.44
Coffee Robusta⁶ (World-wide)								
SPO	Washed	US\$/lb	1.05	1.05	+0.20	+ 0.30	+0.10	+0.20
		US\$/kg	2.31	2.31	+0.44	+ 0.66	+0.22	+0.44
SPO	Natural	US\$/lb	1.01	1.01	+0.20	+ 0.30	+0.10	+0.20
		US\$ /kg	2.22	2.22	+0.44	+ 0.66	+0.22	+0.44

Source: FLO (2009d), FLO (2010) and FLO (2011b)

2.2.3.3 Organic and Fair Trade Coffee Certifications

The cost of certification for both organic and Fair Trade coffee production is difficult to determine. Many factors have to be included in the calculation. These factors include the time needed for preparation, travel, inspection, reporting and certification, and the fees the certification organization charges. To be certified as organic, the agricultural production system of the coffee must be inspected as well as the processing and storing systems. Simply, the entire production and marketing systems needs to be

2)Washed: use wet processing method, Natural: use dry processing method

3) Free on Board (FOB) means that the seller delivers when the goods pass the ship's rail at the named port of shipment. From that point forward, the buyer has to bear all costs and risks of loss or damage to the goods. Under FOB terms, the seller is required to clear the goods for export

4) Minimum price was increased from 1.21 US\$/lb to 1.25 US\$/lb on 1 June 2008 and Premium was increased from 0.05 US\$/lb to 0.10 US\$/lb on 1 June 2007

5) at least 0.05 for productivity and/or quality

6) The price of Robusta coffee will be revised as part of a separate project

inspected and certified. Fee structures vary considerably as some will charge a fee per hectare, others a percentage of the export value. Thus, it is important for those who seek organic certification to review and compare in detail which inspection and certification organization offers the best deal in terms of service and price. With all these mentioned factors, it should be set as a standard that the “cost of inspection and certification should not exceed 3%–4% of the sales value of the green coffee”. However, in reality some grower organizations pay higher than this percentage (ITC 2011). When referring to these types of coffee, costs of certifications are always the main point of contention between those who are in favor and not in favor of organic and Fair Trade coffees. The facts are that for small individual farmers, mainly from developing countries, it is difficult for them to obtain these certifications. Also, although the producers are part of a producers group, they may not survive without support from international organizations. For more information regarding certification fees and procedures please follow the following links:

- Organic certification through the “International Organic Accreditation Service”
website: <http://www.ioas.org/fees.htm>
- Fair Trade certification through “Fair Trade Labeling Organization-Certification”
website: <http://www.flo-cert.net/flo-cert/main.php?id=29>

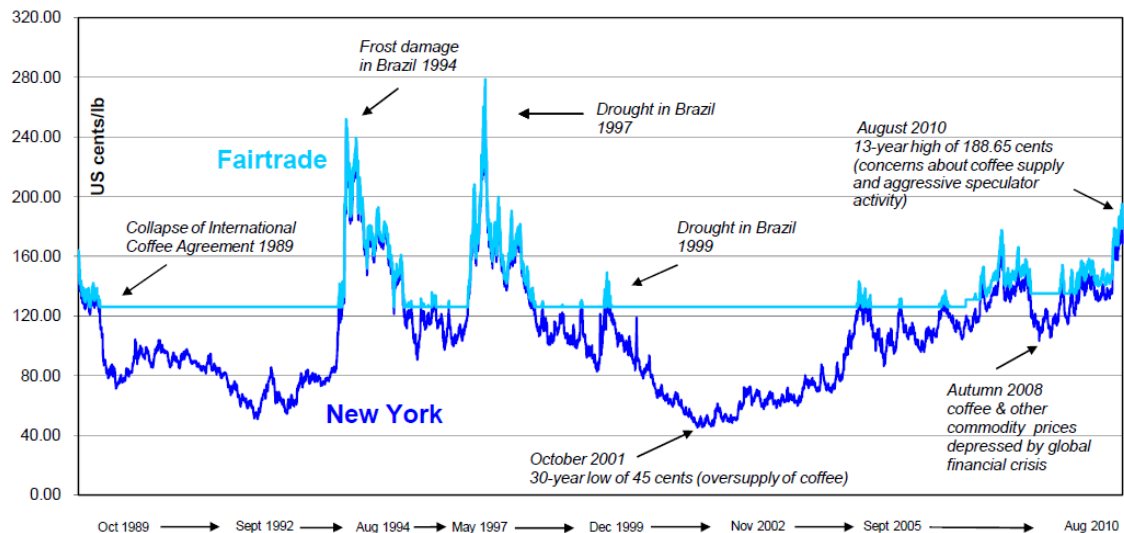
2.2.4 The Benefits and Costs of Organic and Fair Trade Coffee

Minimum Price and Premiums

The benefits and costs of organic and Fair Trade coffee have been discussed in previous section, particularly in terms of economic benefits through bonuses or premiums and minimum prices from Fair Trade coffees both for Arabica and Robusta. For example, as shown in Figure 2, Fair Trade coffee price for Arabica has always been higher than

New York or conventional price. During the coffee crisis in 2001 when the New York coffee price was just slightly above 0.40 US\$/lb, the Fair Trade coffee price was about 1.25 US\$/lb, about 300% higher.

Figure 2: Comparison of Fair Trade and New York Prices for the Arabica Coffee Market 1989-2010:



Source: FLO (2011c)

Again, as reported by Blackmand and Naranjo (2010), one significant benefit from organic certification is the price premium, an average 10%-20% higher than the normal coffee price in the international market depending on the coffee quality. Another benefit is the lower cost of production. Growers have noticed decreasing of input costs, particularly from purchasing chemical fertilizers, while at the same time coffee quality has been improved from adopting the organic production approach.

The disadvantage of adopting organic certification is the approach requires more labor hours, increasing labor costs. At the same time, yields from this approach are lower. Also, transaction costs including fees to obtain the certification, annual monitoring and reporting are very high. Coffee growers are responsible for all these costs, and the annual

monitoring cost alone may be up to 5% of sales. Moreover, during the transition period which normally takes a couple of years, without any principle benefits from certification, growers have to cover this monitoring fee.

Economic Benefits

Economic benefits to members of Fair Trade cooperatives helped many coffee producers in Nicaragua during the coffee price crisis in 2001-04 by providing price premiums which were almost double the normal market price. However, after 2004, the Fair Trade coffee price was not much different than the general coffee market price as there has been more supply of coffee from non-certifying sources. This demonstrated that Fair Trade does not really have a strong bargaining power (Valkila and Nygren 2009). Additionally, due to excess capacity in Fair Trade and because of requirements prior to becoming members, many small producers have withdrawn from or refrained from joining a Fair Trade body. Some of these requirements include the increasing amount of work to maintain their coffee plants, and more involved roles and meetings. This additional work and roles were reported to take too much of the farmers time at the cost of participating in other income earning activities (Jaffee 2007b; Valkila and Nygren 2009).

In relation to Fair Trade coffee production, organic coffee production does require more hours of labor working in the coffee field, which will increase the labor costs. However, findings by Poudel, et al. (2010) in their financial variability study of organic coffee production in Gulmi district of Nepal showed positive net return after the fourth year of the production. At the 6th year of the payback period the Internal Rate of Return was as high as 43.47%. These are very positive indicators for organic coffee producers in

Gulmi. However, this is not the case for some organic coffee producers in Nicaragua.

Valkila (2009) compared organic and conventional coffee production and found that low market prices, the existence of a high organic premium, will cause organic farmers to be better off. However, the situation is the opposite at high market prices but a low organic premium as presented in Table 9. Valkila (2009) also indicated that with intensive labor such as carrying heavy sacks of organic material with no mechanical help, “Fair Trade organic farmers and their hired labor are not very well compensated for producing organic coffee”.

Table 9: Estimated Farmer Income/ha in 2 Scenarios: Low Market Prices, High Organic Premium, and High Market Prices, Low Organic Premium in Nicaragua

Farm pair	Unit	Organic farm production 789kg/ha	Conventional farm production 1,183 kg/ha	Organic farm production 789kg/ha	Conventional farm production 1,183 kg/ha
		Low market prices, high organic premium		High market prices, low organic premium	
Farm gate price of coffee	US\$/lb	1.11	0.85	1.27	1.18
Gross Income	US\$	1,929	2,215	2,207	3,075
Cost of production	US\$ or per kg	1,668 or 2.11	2,137 or 1.81	1,668 or 2.11	2,137 or 1.81
Profit	US\$	261	78	539	938

Source: Valkila (2009)

Production

In terms of production benefits, the average coffee yield was reported to be higher for those who are members of Fair Trade organizations than for those who are not in Yagavila and Teotlasco regions in Mexico. This was because the coffee trees of Fair Trade farmers are younger and farmers applied organic production methods (Jaffee 2007b). This finding is opposite of Blackmand and Naranjo (2010). However, this

comparison was made with the conventional farmers whose coffee trees were much older and received less care (Jaffee 2007b). Also, in terms of economic benefit as presented in Jaffee (2007b), the average total price received for Fair Trade farmers was double the conventional farmers. With the higher yield and significantly higher price the total income from all coffee sales for Fair Trade farmers was roughly twice that for conventional farmers. This finding has been further supported by Méndez, et al. (2010) on small-scale coffee farmer's households who either receive Fair Trade or organic certification or both. Nevertheless, for an individual household, the average coffee volumes sold were low and many certified producers did not sell all their production at certified prices. Also, the labor use in total person-days for Fair Trade production is three times that of conventional production. Moreover, due to the coffee crisis and despite the positive net income particular for Fair Trade coffee producers, both coffee producer groups had negative net household income although Fair Trade producers suffered less (Jaffee 2007b).

Other Benefits and Costs

Beside a previously mentioned economics and production benefits from organic and Fair Trade certification, these certifications also have a positive effect on savings and credit. However, they did not have a discernable impact on other livelihood-related factors, such as education, and incidence of migration at the household level in Central America and Mexico (Méndez, et al. 2010). This finding is different from what Valkila and Nygren (2009) discovered in Nicaragua and Poudel, et al. (2010) found from the organic coffee production study in the community of Gulmi District in Nepal. As stated by Poudel, et al. (2010), despite, a remarkably high annual fee for renewal of organic

certification, the coffee producers who adopted this production method reported to receive indirect benefits to their community livelihood and production environment from joining the cooperatives. In addition to these economics and social benefits, as stated by Giovannucci and Koekoek (2003), for many coffee farmers, they have also experienced non-economic gains from organic coffee productions including:

- Improved natural resource management and biodiversity conservation;
- Crop resilience to weather and climactic risk;
- On-farm diversification and fewer external input costs reduce financial exposure;
- Community or organizational development and increased use of rural labor; and
- Fewer health risks due to misuse of Agrochemicals.

2.2.5 Current Study Methods and Tools of Organic and Fair Trade Coffee

Many studies have been done on the impacts of Fair Trade coffee with different approaches. Utting (2009) developed the Impact Assessment Framework for Fair Trade coffee or responsible trade coffee. The objectives of this framework were to investigate changes on livelihood, standard of living and sustainable development from responsible trade; identify some disagreement and giving up situations between different local groups; and to identify potential new alternative solutions and practices to improve the situation of responsible trade. The results from applying this framework in the northern Nicaragua Fair Trade coffee context, although with some constraints and drawn backs, the framework has provided some positive contributions on sustainable livelihoods, organization capacity, and policy and institution developments (Utting 2009).

Interestingly, the study method used by Poudel, et al. (2010) was slightly different from others. While many previous studies focused mainly on the short-term gross margin,

Poudel, et al. had adopted the financial evaluation methods to investigate the money value over the long- term. The indicators used in this financial evaluation included Net Present Value (NPV), Internal Rate of Return (IRR), Benefit-Cost ratio and Payback Period. However, only the organic coffee production side had been investigated.

A recent study by Beuchelt and Zeller (2011) looking at organic and conventional coffee producers groups also included organic-Fair Trade producer groups in their analysis. Their findings on the economic profit found that the average farm gate price is 0.20 US\$/kg different (organic and organic-Fair Trade coffee are higher) and the yield of green coffee is the highest under organic coffee production (very interesting finding as in most cases organic coffee yield are lower than conventional yield), economic profit of organic coffee producer group is about twice as high as the other two groups. However, through break-even analysis, the per capita net coffee income among the three groups is not that significant, with the conventional group's income the highest. With all these findings, Beuchelt and Zeller (2011) summarized that "Over a period of ten years, organic and organic-Fair Trade farmers have become poorer relative to conventional producers" because "Per capita net coffee incomes are insufficient to cover basic needs of all coffee producing households. Certified producers are more often found below the absolute poverty line than conventional producers". A further strong conclusion is made that "coffee yield levels, profitability and efficiency need to be increased, because prices for certified coffee cannot compensate for low productivity, land or labor constraints". This conclusion has lead to many debates, particularly between those who are in favor of these certified coffee movements, and those who always have doubt and concerns about the movements. However, for countries such as Laos that has just started to integrate

these certifications into its coffee production, these issues have to be considered thoroughly. This is to ensure that Laos will be able to amplify and embrace the benefits of the movements, while minimizing the costs.

Fair Trade and organic coffee certifications have no ability to alter the structural imbalances in the world coffee trade. However, to a certain extent, certification has improved the livelihoods and labor rights of disadvantage coffee producers and laborers in the South (Valkila and Nygren, 2010). Most research regarding organic and Fair Trade coffee has occurred in Mexico, Central America, and South America regions and more recently in Africa. However, in Asia and Oceanic regions, while there has been a growing trend in organic and Fair Trade coffee, the research is still limited for the regions. Thus, more research and study in this region is required. The next chapter will investigate Laos's coffee sector, an Asian country with considerable potential to expand coffee production in the organic and Fair Trade markets.

CHAPTER 3

3. ORGANIC AND FAIR TRADE COFFEE IN LAO PDR

3.1 The Organic and Fair Trade Agriculture in Lao PDR

Previously, the overviews of organic and Fair Trade movements and coffees have been presented at the global level. In Laos, the concepts of organic agriculture and Fair Trade are new. In cooperation with the Government of Laos (GoL), the organic sector has been promoted and supported by a number of international Non-Government Organizations (NGOs) and donors (GNENF 2008; Markandya and Setboonsarng 2008). The concept of organic agriculture was introduced at the same time as sustainable agriculture in the late 1990s, but the market linkages were not introduced to the sector until mid-2000s (GNENF 2008). According to Green Net and Earth Net Foundation (2008), since the mid-2000s organic agriculture marketing has been on the agenda among Laos' agriculture authorities and NGOS as a key part of the poverty eradication strategy in the country development plan. Thus, one of the important implementations to support the marketing of organic agriculture occurred in 2004 when the Laos Department of Agriculture in collaboration with HELVETAS, a private organization for development cooperation from Switzerland, established a project to promote organic agriculture in

Laos called “Promotion of Organic Farming and Marketing in Laos (PROFIL 2008). The four main purposes of the project are listed as follow:

- Creating enabling frame conditions for organic farming in the Laos;
- Supporting producers in the production of organic products required by the market;
- Introducing and selling locally produced organic products on domestic markets; and
- The gradual development of regional and international markets for organic products from the Laos

To further support the project and other related organic projects and activities, the Minister of Ministry of Agriculture and Forestry (MAF) issued the Laos Organic Agriculture Standards in 2005 as a guideline for anyone or any project that would be involved with the organic activities (MAF 2005). Following and based on the IFOAM foundation standards, the objectives of the Laos Organic Agriculture Standards are to “promote Clean Agriculture within the agriculture and forestry sectors, and to ensure that the management of agricultural production in Laos is in accordance with the Agriculture Law” (MAF 2005).

Additionally, to continuously support and promote the organic agriculture in Laos, there have been numerous studies on the topic. The most recent studies on organic agriculture in Laos are mainly on rice. As stated by Markandya and Setboonsarng (2008), rice is still the major commodity to be developed within organic agriculture systems in Laos, particularly sticky rice. It is reported that Laos has the highest number of rice varieties in the world which could be promoted as “unique products” or “Geographical

Indications product under WTO”. One of the studies is on organic rice contract farming. It was a detail study that was conducted in Vientiane. The purpose of this study was to statistically evaluate the possibility of the practice as a development guide for small farmers to increase their income and be part of the country’s rural poverty reduction plan (Setboonsarng, et al. 2008).

Similar to the concept of organic, the Fair Trade concept is very new for Laos. Recently, by seeing the possibility that Fair Trade can help to improve small producers’ livelihood, and to provide consumers with high quality products, Fair Trade Laos (FTL) was established and is still under development by small group of entrepreneurs and NGOs (FTL 2010). The guidelines that the FTL Certification will follow are those of the World Fair Trade Organization (WFTO) and FLO (FTL 2010). Some of the FTL members include coffee, silk, handicraft and cosmetic producers. For coffee, “Laos Mountain Coffee” is one of the well known small roasting companies in Laos. The company has reported to be a new champion of the WFTO and is under the process of applying for organic and Fair Trade certifications. The company expects to be granted certification in 2011. The company reports they only buy their green coffee from villages that are Fair Trade certified (Laos Mountain Coffee 2011).

The first coffee producer group in Laos that was certified as Fair Trade from FLO was Jhai Coffee Farmer Cooperative. It was certified in 2005 (Fair Trade Network of Asian Producers 2005). Since then, there has been no annual renewing of the Certification. The Cooperative is one of the projects funded by the Jhai Foundation, which was established in 1997 and is based in San Francisco, in the United States. The project had assisted hundreds of coffee farmers in 51 villages in Champasack province to

operate as a cooperative, introduced effective coffee cultivation practices, and assisted in accessing the United States coffee market. However, according to the Jhai Foundation, the villages that formed the cooperative have become separated and operate independently (Jhai Foundation 2011). Many of the villages which used to be under this cooperative have become members of a new coffee organization, known as “The Bolaven Plateau Coffee Producers Group Association” or “L’Association des Groupements de Producteurs du Plateau des Bolaven “(AGPC). Currently, this is the only organization that had been certified by FLO since 2009 in producing coffee by small farmers groups (AGPC 2009). Besides being certified as Fair Trade, AGPC also has received certification in producing organic coffees in 2009 from Organic Agriculture Certification organization from Thailand (ACT), which is the alliance of the IFOAM (AGPC 2010). Another coffee producing body which has been a certified organic coffee producer is the Sinouk coffee company. It has been certified from three organic certification bodies Laos including the Laos Organic Agriculture, Thailand (ACT) and The European Union (Organic Farming- the Institute for Ethical and Environmental Certification (ICEA)) (Sinouk Coffee 2011).

3.2 The Lao PDR Coffee Sector

3.2.1 The Coffee History and Evolution

For Laos, coffee is one of the most important and biggest cash crops (FAO 2010). Coffee production in Laos started about 100 years ago when the country was colonized by the French. The Arabica coffee trees of Bourbon and Typica varieties were first planted around the 1920s on the Bolaven Plateau. The first actual harvest was not until the 1930s. During this time, the coffee production fluctuated due to war and disease

which restricted the development of the Laos coffee. Since the 1950s, the continued adverse effects of frost and leaf rust disease led to the introduction of more resistant varieties, mainly Robusta. Since then, production had improved but was abandoned due to the war for independence. However, after Laos became independent in 1975, the coffee sector was closely being monitored by the government who collected, traded, and exported with setting prices. This government-controlled sector enabled farmers to harvest more yield but resulted in reducing coffee quality because less care was given to each coffee production step (plantations to harvest to processing). The State-controlled sector lasted until around the 1990s. Since then, there have been continuing improvements in the coffee sector that have been driven by the country's new economic mechanism in 1986, the increasing price of coffee in 1994, and the devaluation of national currency due to the Asian Financial Crisis. At the same time, the national authorities, with the support of the development project introduced the new Arabica variety, known as dwarf-variety Catimor that has a high productivity. Since then, the production area for this Arabica variety has increased from less than 1% in 1990 to about 13% in 2007 on the Bolaven Plateau as shown in Table 10 (Galindo et al. 2007).

Table 10: Evolution of Coffee Surface and Species Share in the Bolaven Plateau

Year	Total surface (ha)	Robusta %	Arabica%
1990	17,066	>99%	Residual Typica
1999	25,000	98.5%	1.5%
2007	45,000	87%	13%

Source: Galindo et al. (2007)

3.2.2 Coffee Harvested Area and Production

Coffee cultivation is concentrated in the Southern region, which accounts for almost 100% of the total harvested area of about 46,758 ha in 2009. Compared to 2008,

the harvested area has been reduced by about 10,000 ha. Within this region Champasack is the lead coffee growing province, followed by Saravan and Sekong province. Coffee in these three provinces has been grown almost exclusively on the “Bolaven Plateau”. In 2009, the coffee cultivation area in Champasack province covered up to about 57% of the total harvested area. Total Production in 2009 was 37,000 metric tons (MT) of green coffee. Although harvested area was lower in 2009, the harvested volume was greater than in 2008 as shown in Table 11.

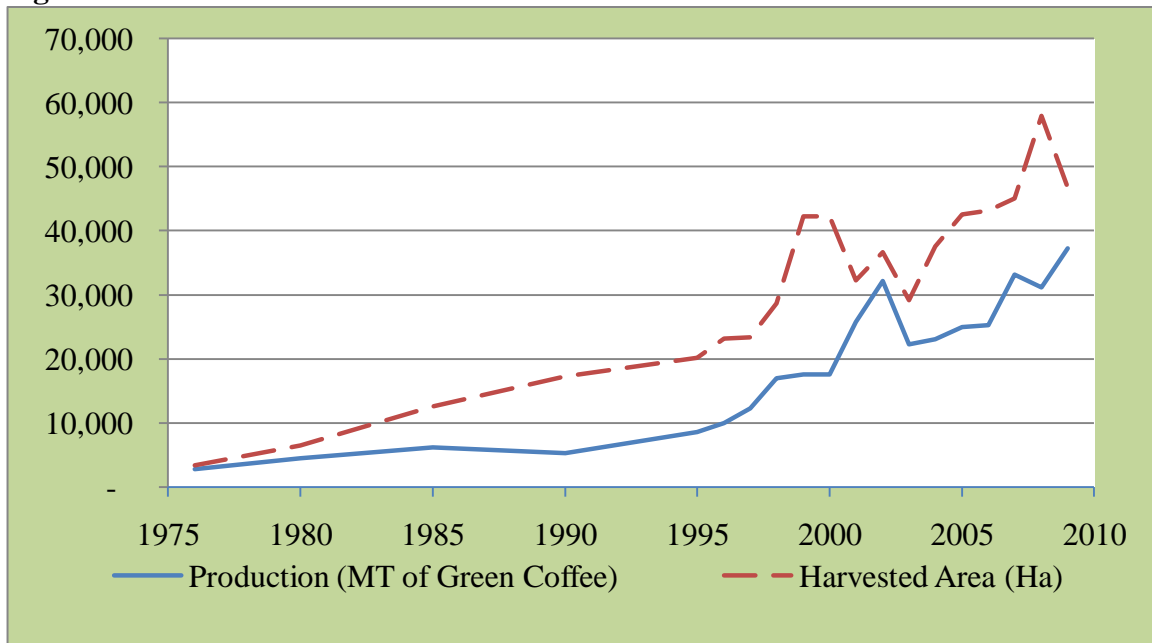
Table 11: Laos Coffee Harvested Area and Production

	2007	2008	2009	2007	2008	2009
	Harvested Area (Ha)			Production (MT of green coffee)		
Northern Region	-	330	15	-	60	3
Central Region	225	85	75	130	195	65
Southern Region	44,765	57,460	46,668	33,070	30,870	37,184
Saravan	15,545	18,740	15,077	8,350	5,440	8,552
Sekong	4,175	4,515	4,516	3,230	1,805	1,806
Champasack	24,780	33,940	26,627	21,300	23,410	26,468
Attapeu	265	265	448	190	215	358
Grand Total	44,990	57,875	46,758	33,200	31,125	37,252
% of Southern Region	99.5%	99.3%	99.8%	99.6%	99.2%	99.8%

Source: DSL (2010b)

The coffee harvested area in Laos has been increased continuously since 1976 with the highest area harvested of 57,000 ha recorded in 2008 before declining to about 47,000 ha in 2009 as shown in Table 11 and Figure 3. Production has increased continuously since 1976 except during the coffee crisis from 1999 to 2003, with harvested quantity fluctuating from about 17,000 tons to more than 32,000 tons. Recently, the production is at about 37,000 tons as shown in Figure 3. Production yield per ha is less than 1 MT of Green Coffee.

Figure 3: Coffee Harvested Area and Production in Laos from 1976 to 2009



Source: DSL (2010b)

3.2.3 The Bolaven Plateau

Geography

Located in the Southern region of Laos, the Bolaven Plateau or locally known as Phouphiang Bolavén (See Appendix A for map) is very distinctive. Known as a home for coffee plantations in Laos, Tulet (2009) stated that the Bolaven Plateau is unique by its physical description and ethnic location. The Plateau has the largest extension from north-west to south east of about 90 km in length and 60 km in width, which provide a total area of 5,400 km². The Plateau is part of the Khorat Basin. The Plateau's surface is mostly flat or gently sloping with average elevations around 1,000 meter, and highest point at 1,716 meter above sea level (a.s.l) (Halcrow Water 1999). Recently, a study conducted by Toro (2011) using satellite imagery data, and geographic information system (GIS), measured the Plateau area to be around 3,750-4,000 km². This

measurement was based on the geomorphic/geologic (the flat surface) feature of a plateau. However, the suitable total land to be used for coffee production is about 4,800 km² (480,000 ha) at altitudes 500m or greater (Duris et al. 2002; Sallée 2007). The Plateau covers three provinces in the south include Champasak (two districts: Paksong and Batieng), Sekong (Thateng district) and Saravane (Laongam district) (Duris et al. 2002; Sallée 2007).

The physical environment and landscape of the Plateau consist of schists and Trias sandstone, sloping increase steadily from the Southwest to the Northeast (Duris et al. 2002; Halcrow Water 1999). The forming of this plateau occurred during the quaternary period, when a powerful volcano erupted and covered the area from South and Southwest to the Mekong plain (Halcrow Water 1999).

The Bolaven Plateau has a very distinctive natural feature and biodiversity. It has two national protected areas, the Duong Hua Sau, covering 910 km², and the Xe Pian, covering 2,665 km². Also, there are two provincial protected areas including the Houay Souy located in Sanamxay district and the Kong River. Moreover, there is a district protected area known as Dong Bak, which covers 12.4 km². Currently, these protected areas are under threat by mining development (Lazarus 2009).

The recent study by Sallée (2007) based on the ecological aspects had divided the Plateau into 3 zones including altitudes above 900 m (high land areas), altitude from 500 to 900 m (transition areas), and altitude from 200 to 500 m (the piedmont areas). The first two zones are where coffee has been mainly cultivated. One is the altitudes above 900 m, where Robusta is not generally grown in other countries but it has been in Laos. This has given Robusta grown in Laos at this altitude to be known as a unique coffee in the world.

No country has reported production of this variety at these altitudes. Arabica is mainly cultivated in the high land areas, which consist of basaltic underground with red and black soils. Primary dense forest, secondary clear forest, hydromorphical grassland and Imperata savannah are the natural vegetations at these altitudes. These areas provide suitable soils for growing Arabica. Robusta is also found in this high altitude and at middle altitude with basaltic underground soil. However, black soil is not widely presented. The natural vegetation is the transition of rainforest and semi-dry forest of low lands.

Climate

The Bolaven Plateau has a mono-modal or tropical climate, with annual total average rainfall from 2 000 to 3 500 mm depending on altitudes, starting from about March to October and known to be the highest rainfall region in Laos. Mean annual average temperature is from 23.2 to 32.4 Celsius, and is considered to be stable. However, the night temperatures around Paksong region can drop to 5°C or lower during the dry season. Thus, this low temperature often results in a frost environment that affects the young un-shaded coffee plants. This condition has been alleviated by the presence of a strong haze during this season as well. The extension of coffee production at 1, 200 to 1,300 m has been restricted at these altitudes due to this low temperature. Also, mainly for Robusta, without irrigation at altitudes below 600 m, the coffee plants suffer from drought (Sallée 2007; Duris et al. 2002).

Changes in climatic conditions in the region have been observed. It has been noticed that since the colonial period, the average temperature had dropped by 0.8°C and with significant decreased rainfall at about 700 mm during the month of June to

September. Consequently, the dry season becomes longer by another 1.5 months, affecting the harvests of coffee particularly in 2005 and 2006. The causes are said to come from global warming, but the large area of deforestation in the region has made the condition worse (Sallée 2007).

3.2.4 Current Coffee Developing Trends

Laos's coffee industry is very small compared to its neighbors, particularly Vietnam which stands in the second place following Brazil in term of total coffee production and exports. The coffee production in Laos is mostly small scale, generally less than 5 ha. The coffee is produced mainly for export. The world coffee crisis in the early 2000s resulted in a significant decrease in the world coffee price. While the price from the coffee crisis was at the lowest value in December 2001, limited access to price information allowed continued investment in Laos coffee production so that production continued to expand even as prices fell. Similar to other coffee producing countries, Laos' coffee industry was affected by this crisis (Southichack, 2009).

Since the easing of the crisis, there have been more investments from foreign-owned firms operating in the industry. The investments from these firms are more than 10 times larger in size than the traditional farms. The benefits expected from the investment by these firms are more access to international market, more improved production techniques and capital investment, improved farm revenue, and technological transfer. Despite the benefits to the coffee industry from these firms, some of the problems for the industry are that Laos coffee price is influenced by the world market price. This shows that the Laos coffee producers are always in a vulnerable position. Also, although the production area has expanded, the output per ha is low compared to

neighboring coffee producers like Vietnam (Southichack 2009). However, as reported by Pongkhao (2008) in *Vientiane Times*, Mr. Sinouk the President of the Laos Coffee Association stated that “Laos coffee is building a reputation in many countries for its good quality. The association does not aim to compete with producers in terms of quantity, but will focus on quality, as there are already several Asian nations producing large amounts of coffee.” Although Vietnam has stayed in the second position of world coffee production, Laos should not be concerned as Vietnam has no control in determining the world coffee price (Fontenay and Leung 2002). It is considered possible for Laos to compete with Vietnam in terms of coffee quantity if Laos can arrange the technical advice as reported in *Coffee ASEAN* (2008b). If Laos is to follow what Vietnam has done, more land has to be cleared and more input has to be applied, and more of laborers are required. However, this is considered to be in the opposite direction of sustainable development in the country if this expansion leads to negative impacts to society and the environment.

The current trend in Laos is not in the direction similar to Vietnam. Key factors that are to be used to show that there has been improvement in Laos coffee production are the certification for the product as organic and Fair Trade. According to Giovannucci and Pierrot (2010), Laos has been listed as one of the 40 countries in the world to receive organic certification for their coffee production. However, Laos is an occasional exporter and the amount of exported organic coffee is small and unknown.

Again, most of the coffee production takes place in the Southern Bolaven Plateau region. The Plateau accounts for more than 99% of the total production area, and more than 80% of the households in the region have their main income source from coffee

production (Galindo and Sallée 2007). However, the country's coffee production makes up less than 0.3% of the world's output (GDS 2005). Thus, it is hard for the country to compete with other countries such as Vietnam and Thailand. Nevertheless, Laos coffee farming has the unique feature that the majority of coffee producers are small scale and are more amenable to the organic production approach. These small scale producers are more suitable for this approach as they have been known to adopt organic methods by default as most of them cannot afford and access agro-chemicals and fertilizers. Thus, most of their coffee production areas have not been affected by chemical inputs. As a result, this is a positive feature for attempting to obtain the organic and Fair Trade certifications (GDS 2005).

3.2.5 Coffee Varieties Grown

According to Duris et al. (2002), the coffee variety that was first introduced to Laos by the French around the 1920s is the two varieties of *Coffea arabica*, Typica and Bourbon. These coffee varieties were quickly spread and grown in the villages in the upland areas ranging between 600 and 1,200 m a.s.l at the Bolaven Plateau. However, since 1950, after the leaf rust epidemics attacked during the 1940s, the resistant varieties include *Coffea canephora* (Robusta), *Coffea liberica* and *Coffea excelsa* slowly replaced Arabica. From these three resistant varieties, Robusta had been widely grown more than other two. Since that time Robusta production areas increased. In the late 1960s, Robusta covered almost the entire of the total production area. However, recently the growing area for Robusta varieties have begun to decline in response to better prices and more demand from the international markets for Arabica. With these indicators from Arabica

coffee, Laos tends to grow more and more of *Coffea arabica* (GDS 2005; Galindo et al. 2007).

Catimor were introduced to Laos in 1993 (GDS 2005). It was found in Portugal in 1959, a hybrid between Timor coffee (resistant to rust) and Caturra or Katsura coffee (a Brazilian variety). Besides having an important characteristic in rust resistance, the coffee tree's maturation is quick and gives very high yields equivalent to the yield of other commercial coffee varieties. Methods of fertilization and shade monitoring are very important in cultivating this coffee variety (GDS 2005; Coffee Research Institute 2006). There are numerous varieties of Catimor. In Laos, there are 7 varieties grown by which Catimor 133 and LC1162 are the two most preferable varieties. Catimor coffee varieties perform well at locations with altitude between 500 to 1,200 m a.s.l, particularly above 1,000 m a.s.l that receive over 2,000 mm annual rainfall, and at temperatures between 8°C and 2°C. The Bolaven Plateau has these geographical characteristics that are advantageous for the growing of Catimor (GDS 2005). In this area, the age of this coffee variety is from 10 to 15 years (GDS 2005; Galindo et al. 2007).

Robusta is originally from western Africa. Interestingly, it was not known as a species of *Coffea* when it was first discovered. It was not until the 18th century, about a century after Arabica had documented that Robusta was recognized. The characteristics of this coffee plant are the root system is shallow and can grow up to 10 meters. It has a high level of resistant to pest and disease. Also, compared to Arabica it is said to have greater crop yield, and taste bitter (Princeton University 2006). In terms of production lifespan, it can live up to 50 years. However, the trees tend to be cut down in the first ten year by local farmers (GDS 2005).

3.2.6 Cropping Systems

Currently, coffee cropping systems in Laos are mainly for *Coffea canephora* - Robusta and *Coffea arabica* – Catimor dwarf-variety. In addition, *Coffea arabica* – Typica is also cultivated but in very small areas. According to Galindo et al. (2007), the cropping system for Catimor is a highly intensive production system, requiring about 110 worker-days (one day of work carried out by one worker) per hectare of annual labor at harvest. This number of days is double the numbers of worker-days- required for Robusta, and about 4 times for Typica. Also, for Catimor, more activities of field management are required than for the other two. The technical itinerary for Robusta and Typica are mainly weeding before harvest, harvest and maintenance the coffee trees at the distance that cattle can walk through. However, for Catimor under farmers' system and commercial plantations the technical itinerary includes 2-3 weedings/year (particularly at juvenile stages), some mulching and organic fertilizer (compost from cattle manure and coffee pulp) for each coffee tree, pruning (coffee and shade trees), harvest, sanitary picking after harvest (for Coffee Berry Borer control), and replacement (nurseries). In addition, for commercial plantations specifically, chemical fertilizers and pesticide are being applied to the coffee trees. In brief, more inputs are required for Catimor than Robusta or Typica cropping system. The low input cropping system for these two varieties indicates that they are low-risk cropping systems. However, to a certain level, these two varieties, particularly Typica, are under threat of being replaced by the Catimor.

Other characteristics of these coffee varieties are that the coffee plantation lifespans for Typica and Robusta are about 50 years, 5 times longer than Catimor.

Although, the Catimor lifespan is shorter than other two, coffee cherries can be harvested for the first time in the third year after planting. For Typica, first harvest begins in the fourth year and for Robusta harvest begins in the fifth year. Moreover, coffee tree density is greater for Catimor than for the other two, resulting in greater yield as shown in Table 12 (GDS 2005). However, yield per tree is about the same for all varieties, at approximately 1.5 kg per tree.

Table 12: Comparison of Basic Characteristics of Varieties of Coffee Grown and Field Management Practicing in Laos

Variety	Density		Weeding		Harvest
	(a) ⁷	(b) ⁸	(a)	(b)	
	Trees/ha		Numbers per season		Month
Robusta	1,100	1,111	1	1	Jan-Mar
Typica	2,500	1,111	2	1	Dec-Jan
Catimor	4,000	5,000	2	2-3	Dec-Jan
Variety	Yield Rate (kg/ha) ⁹				Conversion Ratio
	(a)	(b)	(a)	(b)	
	Cherry (C)		Green (G)		C:G
Robusta	1,800	450-2,700	400	100-600	4.5
Typica	3,600	<900	600	<150	6
Catimor	6,000	3,600-9,000	1,000	600-1,500	6

Source: Modified from GDS (2005)

As shown in Table 12, weeding is generally practiced one time per year for Robusta in September, and two times for Typica and Catimor between July and November, and probably another one more in May before starting of the new coffee season for Catimor (mainly for the young coffee plants). Mainly for Catimor, pruning is practiced between March and April. Harvesting takes place around February for Robusta and in December and January for Typica and Catimor (GDS 2005). See Appendix B, for

7) GDS (2005);

8) Galindo et al. (2007);

9) Estimate value using GDS (2005) Conversion Ratio

crop or phonological cycle for Arabica coffee in Laos. For more detail of cropping cycle and management practices that are applicable to Laos's condition, please refer to Winston et al. (2005) and Central Coffee Research Institute-India (2008).

3.2.7 Processing Systems

In Laos, the dry method is mainly used in processing Robusta coffee from ripe cherries to green coffee, while for Arabica varieties the wet method is used.

Arabica

The processing system for Arabica using wet method for turning ripe cherries to parchment coffee can take up to 14 days. Fermentation and washing the cherries can take up to 4 days. After that, drying washed parchment coffee can take 7-10 days depending on the climate and temperature (Central Coffee Research Institute-India 2008). Through this processing method as summarized in Table 13 and through all the related operations, only about 19 kg of washed green coffee can be produced from 100 kg of red cherries.

Table 13: Arabica Wet Processing System on Bolaven Plateau

Operation	Product Obtained	Theoretical yield (kg)
Reception	95% red cherries	100
Selection by floating	First quality red cherries	97
Mechanical pulping	Humid parchment coffee with mucilage	54
Fermentation or mechanical demucilaginating	Humid parchment coffee	45
Washing	Washed humid parchment coffee	45
Drying on racks	Dry parchment coffee at 12-15% Relative Humidity (RH)	23
Hulling	Green Coffee at 12-15% RH	19

Source: Sallée (2007)

Robusta

The processing system for Robusta is slightly faster than Arabica as under the dry method, cherries do not need to be fermented. In the sunny good temperature days, it should take about 10-12 days for the coffee to be fully dry. Also, once every hour, coffee should be stirred and ridged in order to facilitate an equal level of drying (Central Coffee Research Institute-India 2008). Under the dry processing method summarized in Table 14, only about 22 kg of natural green coffee can be produced from 100 kg of red cherries.

Table 14: Robusta Dry Process System on Bolaven Plateau

Operation	Product Obtained	Theoretical yield (kg)
Reception	30-50 red cherries	100
Drying on bare ground, tarpaulin, tables or concreted area	15-23% RH Dried Cherries	42 kg (1f 12% RH which is the international standard)
Hulling in modified rice-huller	15-20% RH green coffee	22 kg (if 12% RH)

Source: Sallée (2007)

For both processing methods, at drying stages, in the evening time processing coffee should be heaped and covered with material that can prevent coffee from coming into with the mist (Central Coffee Research Institute-India 2008).

3.2.8 The Coffee Stakeholders

3.2.8.1 Producers – Individual Famers

The primary coffee producers in Laos are individual small farmers. The actual number of these individual farmers is hard to estimate. According to Duris et al. (2002), from the census conducted in late 1998, about 17,000 families (in 247 villages) were involved in coffee production. Their average production area was 2.05 ha per family at an altitude between 400 and 1,200 m a.s.l. The number has decreased down to 15,000 families (about 82,000 people) from 125 villages according to Tulet (2009), using the village baseline data collection from the PAB project, and 2007 producers' survey.

However, from Phonh-axa report for Oxfam Australia in 2006, the estimated number was 23,000 families from the Southern provinces (assuming Attapeu province had also been included, still the numbers are different). There have been inconsistent reports of the numbers of coffee producers. However, more updated numbers shall be available nationwide after the completion of National household survey later in 2011. Despite this variation, one fact that should always be acknowledged is that members of this coffee community include many ethnic minority groups that depend on earnings from coffee harvesting to maintain their livelihoods.

Galindo et al. (2007) study of household's characteristics and coffee production from 400 households (20 villages), located at altitudes above 600 m a.s.l in the Bolaven Plateau had identified four main coffee farmers typology groups as summarized in Table 15. About 70 to 85% of these farmers have coffee production surface of less than 5 ha and more than half of this area has been allocated for growing Robusta. Also, about 50% of the households from these groups except large scale, obtained pre-harvest loan. Importantly, more than 50% of coffee farmers from all groups obtain more than 50% of their households' income from coffee production.

Table 15: Some Characterization of Coffee Farmer's Typology Groups

Group	Large-scale wealthy diversified farmers	Mid scale diversified coffee producers	Small-scale diversified coffee producers	Small-scale not diversified coffee producers
% of sample	10-15%	20-25%	30-35%	20-25%
Coffee surface	5-15 ha (Robusta (R): 6-10; Arabia (A): 2-4)	4-5 ha (R: 2-4; A: 1-2)	1-3 ha (R: 1-2; A: 0-1)	
Other crops	Quite diversified (upland rice, other crops, vegetables, fruit)	Diversified (vegetables, rain fed rice, fruit trees, etc.)	Diversified (vegetables, rain fed rice, fruit trees, etc.)	Not diversified

Group	Large-scale wealthy diversified farmers	Mid scale diversified coffee producers	Small-scale diversified coffee producers	Small-scale not diversified coffee producers
	trees, etc)			
Cattle	8-50	2-5	0-1	
Means of transportation	Tok-tok (Tractor) (75% of sample)	Motorbike. Some have tok-tok	Motorbikes. Few have tok-tok	Motorbikes. Very few have tok-tok
Type of coffee sold	R unsorted green coffee and A parchment	R: unsorted green and dried-cherries A: cherries and parchment	R: both unsorted green and dried-cherries A: mostly cherries	
Social status	Rich and medium	Medium	Medium and poor	
Annual gross income ¹⁰	45 million KIP (~4,500 US\$)	20 million KIP (~2,000 US\$)	10 million KIP (~1,000 US\$)	8 million KIP (<1,000 US\$)
% of households' income from coffee	>90% (50% of the sample)	>90% (23% of the sample) 50-90% (60% of the sample)	>90% (25% of the sample) 50-90% (57% of the sample)	>90% (40% of the sample) 50-90% (40% of the sample)
Workforce	Mostly external waged labor	Family and external labor	Mostly family and occasional waged labor during coffee harvest	

Source: Galindo et al. 2007

Tulet (2009), exploitations of coffee production area of his study by interviewing 200 coffee farmers in 2006-07 are also divided into four main groups as Galindo et al. (2007). However, his grouping was mainly referred to coffee production surface which include 25% of farmers farm less than 1 ha, 47% farm between 1 and 3 ha, 25% farm between 3 and 6 ha, and 3% farm more than 6 ha.

3.2.8.2 Producers – Local Private Companies

10) These amounts have been calculated with 2006-07 campaign which was very good for yields and prices. Average annual coffee gross income could be lower.

Established in 1998, Dao Heuang Coffee or Dao Coffee Company is considered to be the largest Laos coffee estate. The Company has a fully integrated operation from growing, processing, and roasting to exporting (GDS 2005). It has over 700 ha of land for coffee production, but only 300 ha have actually been grown with coffee in the Bolaven Plateau, Paksong district (Tulet 2009). Within its own plantation, the Company has more than 150 permanent laborers. Besides growing their own coffee, the Company also buys coffee cherries from both small and medium-scale producers on the Bolaven Plateau (Dao Heuang Coffee 2011). Under processing, the Company has a pulping, hulling facilities and warehouse located about 20 km away from Pakse district, central Champasack province (GDS 2005). The pulping/washing facility can handle 100 tons of cherries per day. The Company also has a large concrete outdoor drying area in Plateau. However, under non-preferable drying climate such as less sun or cold temperature on the Plateau, the Company has trucks to transport the coffee beans to lower altitudes in Pakse to complete the drying process. The huller and dryer capacity is 40 tons per hour dry process and 8 tons per hour wet/dry process (Dao Heuang Coffee 2011).

Sinouk Coffee Company is another well-known local private coffee producer, but is a medium scale producer. The Company started up as a green beans trader in 1995. The Company later invested in setting up a high quality coffee bean processing machine, and developed the coffee plantation in 1997. However, the Company was not well-known during that time. It was not until 2003, after the Company began to roast and create the Sinouk brand name and launched the brand new Sinouk Coffee products supply to the market, that the company drew attention. Currently, besides purchasing selected quality coffee from others small and medium coffee producers in the region, the Company has 85

ha of its own coffee production in Paksong (LCB 2011), which also has been developed as a beautiful tourist destination in the region (Sinouk Café 2010).

These two companies, in addition to producing green beans for export, also roast locally and produce different types of roasted coffee products such as instant coffee with different blending, 3-in-1 packages (ready to drink soluble coffee) with different mixes and flavors (which is very preferable by the local consumers) and roasted beans. These products are sold locally and exported to international markets, particularly in the Southeast Asian region such as Thai, Cambodia and Vietnam.

In addition to these two companies, there were 10 registered companies with Paksong District Planning and Administration Office-PDPAO (2008-09 financial years). It is a district that covers most of the Bolaven Plateau surface. The total registered area that these companies made for coffee production was estimated to be 1,388 ha with about 60% of this area being young plantations. Four out of these companies have coffee production areas ranging from about 40 ha to 90 ha, and six of them have coffee production area ranging from about 100 to 400 ha (PDPAO 2010).

3.2.8.3 Producers – International Private Companies

According to PDPAO (2010), in 2008-09, there were 16 private international companies registered with the Office. For coffee production, about 2,855 ha had been registered by these companies and 80% of this area is still young coffee plantations. Twelve of these investing companies were from Thailand and Vietnam, while the remained were from Taiwan, China, Malaysia, India, Canada and one unidentified. The registered coffee production area sizes by these companies ranged from about 10 to 830 ha. Eight out sixteen companies had a production area less than 100 ha, while seven of

them had between 100 and 555 ha, and one had 830 ha. The Company with the biggest coffee production area is called “Paksong Highland”, which is the investment company from Thailand. The total area that the Company has been approved for is 3,101 ha. About half of this approved area has been allocated for tree plantation (unknown tree species), while the remainder is assumed to be for coffee plantation (PDPAO 2010). According to Laos Certify Body office-LCB (2011), the company has purposed to register 350 ha of its coffee plantations as organic coffee plantation with the office, and will further purpose another 250 ha which is still in the transition stage.

3.2.8.4 Producers – Producers Organizations

Before this current Laos coffee era, small coffee producers had to struggle with many issues. One of the issues was that small coffee producers produced low quality coffee beans under inappropriate practices and management. Also, coffee prices were determined and controlled by a middle man, and was set at the level below the cost of farmers’ production. Moreover, access to market information, particularly at the international level was restricted and controlled by the major exporter organizations. From these issues, small coffee farmers had no bargaining power. Farmers grew coffee and accepted what was given by those who seemed to know more about the markets. This kept the farmers and their families at the poverty line with limited options to improve their livelihood. By knowing these issues, the government of Laos who always desires to move its people out from this poverty line and seeks ways to improve the overall economy has cooperated and obtained assistance from many international development organizations. Thus, with the support from government, non-government organizations and development projects, the famers’ organizations have been created. The three most

well-known and successful projects supporting coffee producers groups included Oxfam Australia, Jhai Coffee Farmers Cooperative or JCFC, and Point d'Application des Bolaven (Bolaven Application Point) or PAB and the AGPC. The common goal of these projects for the small coffee farmer was to help them to produce high quality Arabica beans and sell in value added- markets such as the Fair Trade market. Thus, farmer's income from coffee can be more diversified and increased (Galindo et al. 2007).

Oxfam Australia: In 2004, the organization worked in five villages in the Bolaven plateau include Katouad and Nonsung located in Paksong district of Champasack province, Chunla and Kapeu in Tateng district of Sekong province , and Vanghao in Laognam district of Saravan province. From these villages, 13 Production Groups (PGs) were formed involving a total of 197 families and half of the participants were women. In 2006, the numbers of participating families increased to 339. A work plan was developed for the groups. Besides the seed funds, credit funds of PGs was established using income generated from pulping and hulling services, and from saving. To improve quality and organic coffee market access, training on techniques for organic and specialty coffee production, exchange field trips to Vietnam, and machines for production and processing were provided. The achievement was outstanding for the PG of Katouad village that obtained the highest production level and continued production throughout the project lifespan. Moreover, the village was able to produce organic coffee that meets the Japanese market standards and received a higher price than local markets. For the remaining villages, overall, they are able to produce a better quality coffee and the volume has increased by using wet-processing methods. These villages have the Laos Mountain Coffee Company as their main buyer, which also provides a higher price than

the general local coffee price (Phonh-axa 2006). The project was discontinued after the establishment of AGPC in 2007, which shares a common vision and plan with Oxfam Australia Laos.

JCFC: The Cooperative was established about the same time as Oxfam Australia in 2004. The Cooperative was funded by a development program from the United States called “Jhai Foundation”. In 2007, the Cooperative involved more than 500 families from 12 villages from the Bolaven Plateau. Joining the Cooperative was on a volunteer basis but farmers were required to cultivate Arabica coffee, particularly the Typica variety. This was because the main markets preferred Arabica. The United States and France were the two important markets that imported high quality Fair Trade Arabica coffee from JCFC. Community processing centers included pulping machines. Farmers pulped their cherries at the centers but continue to processes on their own but under the supervision and advice from JCFC staff at every processing step. Famers had to commit to deliver quality parchment coffee at the pre set Cooperative standard. In 2007, the Cooperative was able to export around 36 MT to its main markets (Galindo et al. 2007). Currently, despite the ending of the official support from the Jhai Foundation, the remaining members decided to stay under the name of JCFC (after the establishment of AGPC in 2007, members were informed to decide to join either JCFC or AGPC) working in corporation with an American expert and Laos Mountain Coffee to ensure the continuation of the Cooperative (Lomany 2011; Durnford 2011).

PAB and AGPC: These projects have been funded by the French government. The establishment of these projects can be traced back to 1983 when the first Laotian coffee sector evaluation took place and resulted in the first stage of the coffee

rehabilitation and development program (1983 to 1991). From this program, average yields had increased from less than 300kg/ha in 1983 to about 400-459 kg/ha in 1990-91. The second operation of this evaluation was from 1992 to 1995, when the program called, the “Laos Upland Development Project” (LUADP) was established and funded by the World Bank and a French organization. The funding from the French organization was allocated for two CIRAD coffee specialists (Centre de coopération internationale en recherche agronomique pour le développement (International Center Agricultural Research for Development). Ban Itou (Itou village) experimental station was established to produce improved planting material, and team research and development in selecting Robusta and Arabica varieties were created and were introduced with small coffee farmers. After the completion of this second operation, in 1996, the Agence française pour le développement- AFD (French Development Agency) conducted a feasibility study to develop coffee in Laos. Thus, in late 1997 the project called Projet de développement rural du plateau des Bolaven - PDRPB (Rural Development for the Bolaven Plateau Project) was established and focused on coffee production (Duris et al. 2002). To support the eradication of poverty in Laos by 2020, by following the general policy of the Government of Laos, in 2004, the “Programme of Capitalisation in Support to Rural Development policy” (PCADR – Programme de Capitalisation en Appui a la politique de Développement Rural) was established (Tulet 2009). It is a rural development program working in several provinces includes Champasack with the objective to “better articulate local implementation level and policy making at MAF level” (UNDP 2006). One of its projects is PAB that aims to promote high quality coffee (Arabica and Robusta) in order to improve coffee producer’s income. Thus, the wet-

processing method was brought in, another small revolution for Laos coffee sector. Since 2005, 53 groups (include about 2,625 families) of coffee producers in the Bolaven Plateau joined the group. The outcomes from group's creation are the collective processing center and group fund for each group. The uses of the group fund must be for group operation, processing center, and for loans to group members who are in urgent need for cash.

A secondary level structure of PAB called "AGPC" was formed in 2007 with the same 53 group members from PAB (Tulet 2009). The purpose was to represent the producers from these groups in front of provincial, national, and international authorities; encourage the production and commercialization of quality coffee in order to reach export capacity, enter the national market for roast coffee, to put in place "symbolic" signs of quality (Geographic Indication, Fair Trade, organic, etc); search for funds; and to participate in project management for its members.

3.2.8.5 Local Coffee Traders

According to Galindo et al. (2007), some of the key local coffee traders included village buyers and coffee collectors, and wholesalers from Pakse and Laongam districts. Also, known as middle-buyers, most of village buyers and coffee collectors are generally farmers who also have their own coffee plantation. These buyers and collectors have direct contact with and know farmers and their production, and most of them have a direct connection with wholesalers/exporters. They generally purchase unprocessed coffee (Arabica cherries and Robusta dried cherries) from other farmers living in their own and surrounding villages with production from 1 to 100 tons, than process to coffee beans by themselves before selling to wholesalers and exporters. Besides being traders,

some of these buyers provide informal credit with high interest and involve pre-harvest loans.

In terms of wholesalers there are 5 of them in Paksong and 2 to 3 in Laongam. Coffee is the main selling products, but they also trade different agricultural products. For some wholesalers, they also have their own coffee plantation and were former village buyers who know how to trade and keep good connection with coffee producers. Each wholesaler will generally cover 30 to 50 villages within the district boundary

The wholesalers will also collect directly from the farms. Besides purchase of coffee from individual farmers and they purchase coffee from village buyers and coffee collectors. Generally, there is no contract agreement between wholesaler and coffee farmer as their transactions are generally through verbal agreement. Similar to village coffee buyers and collectors, most of these wholesalers also provide loans to farmers both in cash or in kind, such as with rice, through a traditional loan system or pre-harvest loans. Monthly interest rates are from 3 to 5%. Most of the loans take place between July and September, toward the end of rainy season when household rice for most coffee farmers becomes short or runs out. Farmers generally pay back in March after Robusta has been harvested. With the giving of credit, wholesalers secure their coffee supply. Wholesalers who have knowledge about farmers who supply coffee to them are in a good position as the agreed loans between them are based on “trust” (Galindo et al. 2007).

3.2.8.6 Exporters

Currently, the key actor in Laos coffee exports is the “Laos Coffee Association (LCA)” which had been renamed from the “Laos Coffee Export Association” in 2005. Under the supervision of the Chamber of Commerce, this Association was established

through a Prime Minister's decree in June 14, 1994. The purpose of the association is to strengthen the coffee export sector and gathers all export related data. Currently, the LCA includes 38 companies as members. These members are allocated under one of the three groups; producers, roasters, and exporters (LCA 2010).

According to Galindo et al. (2007), the establishment of the Association led to a situation where only members are allowed to export. Members have to pay the Association a fixed membership fee and 20 KIP/kg (about 0.002US\$/kg) of exported green coffee. Any non-member company, national or foreign, is obligated to practice under one of the LCA member companies to export coffee from Laos. In exchange for their service, these member companies will receive a sale commission. Several conditions have to be met to become LCA's member. One crucial condition is to have a certain amount of capital to obtain an exporter license from the trade department. The benefits from Association membership are still unclear, and Laos's exporters have exported coffee without quality standards. Moreover, despite LCA, the dominant exporter (70% of the total coffee production) in Laos continues to be the Dao Heung Company. Thus, the Association seems to operate as an oligopoly exporter. However, producers groups such as AGPC do not export through LCA but have developed direct contacts with their own niche markets.

3.2.8.7 The Laos Coffee National Committee

In June 25, 2010, according to the Agreement letter No. 58/PMO approved by the Prime Minister at the Prime Minister Office, the Laos Coffee National Committee (Conseil National du Café Laos – CNCL) was created. The establishment has been supported by the Trade Capacity Building Programme II, (Programme De Renforcement

Des Capacités Commerciales – PRCC II), that is funded by AFD. The general objective of the CNCL under PRCC II is to improve and strengthen the cooperation among Laos coffee stakeholders and more specifically are to develop strategic plan in for Laos coffee development, promote Laos coffee in international markets, and represent Laos in the ICO. The establishment of this committee means that LCA, AGPC and other coffee related stakeholders are under the same umbrella and will be supported and guided by CNCL (PRCC 2010; PMO 2010). The establishment of the CNCL is another milestone for the Laos's coffee sector.

3.2.8.8 Roasters

The growth of the coffee sector in Laos over the last decade has resulted in the growth of domestic coffee consumption. According to Galindo et al. 2007, roasters in Laos use downgraded export quality coffee beans in the domestic market. Also, the domestic coffee market depends on the type of products, consumption locations, selling prices, and groups of consumers. There are two main roasting approaches in Laos including the European and local style. The European-style has been practiced by numbers of industrial or semi-industrial roasters such as Dao Heuang Coffee, Sinouk Coffee and Laos Mountain Coffee. On the other hand, the local-style coffee roasting is performed by a number of small and medium roasting companies from Pakse and Vientiane. These roasters use hand-made roasting machines and flavor additives such as melted palm sugar, margarine and alcohol. It has been estimated that about 600-800 tons of green coffee have been roasted annually for the domestic market with more than half using the local- style coffee roasting method. More recently, companies like Dao Heuang Coffee and Sinouk have produced instant coffees including 3 in 1 coffees to meet the

demand of domestic consumers previously consumed coffee products from Thailand. Galindo et al. (2007) also reported that no Laos Company that currently roasts export quality coffee. The main reason for this is the high local demand for fresh roast. Consumers prefer fresh roasted good quality coffee beans. Selling of roasted coffee in Laos is through traditional retailing shops such as mini-marts, coffee shops and restaurants. Currently, to promote their products and add more value to their coffee (hand-prepared coffee beverages), some roasters have set up their own coffee shops and stands (Galindo et al. 2007).

3.2.8.9 Local Coffee Retailers, Shops and Consumers

Currently, Laos coffee products (mainly instant coffee from Dao Heung and Sinouk Coffee) are being displayed and sold next to other imported coffee in many retail shops in major cities such as Vientiane, Pakse and Luagprabang. Roasted coffee beans or grounded “European style” coffee are also being sold in the retail shops, coffee-shops, restaurants and hotels with the main buyers being foreign residents and wealthy Laos consumers (Galindo et al. 2007). Some of this type of coffee has been prepared (Karma Café) and packed specifically by Laos Mountain Coffee to sell in the NGO office such as COPE (Cooperative Orthotics and Prosthetics Enterprise). Profits from selling coffee go to support the disabled people in Laos (COPE 2011). For the local-style coffee, some coffee is sold in retail shops and local markets mainly to the urban Laos consumers (Galindo et al. 2007).

The numbers of coffee shops have expanded recently, particularly in the center of the main cities. Laos is now experiencing an increasing numbers of tourists, foreign residents, and middle to wealthy class Laos citizens who would like to have places for

socializing. One of the most well-known coffee shops in Laos is “Joma Bakery Café” or “Joma” shop, that serves both coffee and bakery products. These shops have been opened since 1996, but have not been known as “Joma” until 2004. Since then the number of shops and consumers have increased. In Laos, there are three shops, two in Vientiane and one in Luangprabang. Like Starbucks, the Joma could be developed as a Francine coffee shop throughout Southeast Asia. Currently besides Laos, the shop has been opened in Vietnam and plans exist to open in Thailand and Cambodia. The shop has its own coffee name, blends and roasted products and the source of the coffee beans is claimed to be from the Fair Trade farmers in southern Laos (Spohr 2011). Besides “Joma”, there is also “Sinouk Café” and “Dao Coffee” shops that have opened both in Pakse and Vientiane, as “True Coffee”, and “Delta Coffee” shops. The common features of these shops are they both served coffee beverages and bakery in the modern style which meets the tastes of foreign and middle-high class local consumers. From personal experience of the author, slightly different and more variety than others, “Sinouk Café” seems to have more coffee beverage menu. Despite the growth of these modern style coffee shops, Laos traditional local-style coffee is still being prepared (using cloth coffee filter) and sold at many big and small restaurants. Particularly, small restaurants which have the simple menu like noodles.

Again, the increasing numbers of coffee shops in Laos is in relation with the increasing number of consumers and according to Galindo et al. (2007), domestic coffee consumers are characterized by type of products and consumption behavior. As stated by Spohr, the country manager of “Joma” (interview in April 2011), in the last few years, the shop has experienced an increasing number of local consumers (middle-high class),

particularly at their second shop in Vientiane, where there is a kid play center. “Joma” has also, created a picture menu that has brought more local male customers. As pointed out by Spohr, some of the Laos men found it difficult in deciding what to order from the menu, but with the pictures menu they seem to be more confident in ordering what they want. Moreover, with available internet, some consumers will also do their work at the shop. “Joma” has planned to develop a personal work space for these groups of consumers in the future.

3.2.9 The Laos Coffee Export Supply Chain

The main coffee export supply chains depend on the types of exported products (species and processing methods), buyers and final destination. However, except for farmers groups all coffee producers export through the LCA. According to Galindo et al. (2007), Laos exported coffee follows the mainstream export routes of Fair Average Quality (FAQ) natural Robusta and washed Arabica, and the niche markets of washed Arabica and Robusta (exclusively for Arabica)

The first two mainstream routes comprise almost 100% of Laos exported coffee (about 80% for FAQ natural Robusta and 20% for washed Arabica). The final product from both routes is green coffee without firm quality standards-FAQ which results in lower green coffee prices.

(See Appendix C, for Export supply chains of Scheme of washed Arabica and natural Robusta circuits, and niche markets circuit.)

In 2007-2008, the export quantity through these routes was more than 20,000 MT but had dropped to less than 12,000 MT in 2009-10 as shown in Table 16. At the time when Galindo et al. (2007) study took place, the third route accounted for about 0.5%

(less than 100 MT of washed Arabica) of the total export amount. The key exporters are the coffee producers' groups. The existence of AGPC has led to an increase in the amount exported. AGPC's total export is greater than 100 MT since 2007 and has been continuously increasing for both washed Arabica (Catimor) and Robusta. In 2009-10, the percentage of exported quantity through the niche market is more than 4% as show in Table 16.

Table 16: Estimated Total Export Quantity of Coffee Products from all Circuit

Year	Quantity export of green bean in MT		Total export from both circuits	% through niche market
	Through niche market circuit	Through mainstream markets circuit		
2007-2008	198.65	20,873.00	21,064.09	0.9%
2008-2009	470.70	13,487.00	13,948.28	3.3%
2009-2010	554.67	11,167.95	11,677.69	4.4%

Source: LCA (2010) and AGPC (2010)

The prices received for Arabica by the AGPC producers since 2007 has been greater than 2.10 US\$/kg and higher than the prices received from middle buyers or wholesalers as shown in Table 17. Moreover, these prices received from AGPC excluded Fair Trade premium. From 2007-10, the Fair Trade premium was at 0.20 US\$/lb (0.44 US\$/kg) and 0.10 US\$ /lb for organic (0.22 US\$/kg). Interestingly, according to LCA (2010), the average exported value of Arabica to international market for 2009-10 was at 1.70 US\$/kg (Total value of 7.69 million US\$, with highest was from Japan at 2.23US\$/kg).

Table 17: Price Received of Washed Arabica by AGPC Members Compared to Middle Buyer Price Since 2007

FY	Price Received through AGPC		Price Through middle buyers/wholesalers	
	LAK/kg	US\$/kg ¹¹	LAK/kg	US\$/kg ¹¹
2007-2008	20,200	2.21	14,500	1.58
2008-2009	18,097	2.10	11,000	1.28
2009-2010	20,425	2.42	18,000	2.13

Source: AGPC 2010

3.2.10 The International Laos Coffee Markets

According to the LCA (2010), Laos has exported coffee to 26 countries in Europe, America, and Asia.. However, only some of these have imported coffee from Laos continuously since 2006. These countries are Vietnam, Thailand, Japan, and Taiwan from Asian region, and Poland, Germany, Belgium, and Italy in Europe. Vietnam has been the biggest coffee market for Laos’s coffee in the Asian region, while Poland has been the largest market in the European region. By region, Laos’s dominant international markets are still from the Europe. As presented in Table 18. In 2006, about 71.4% of the total Laos exported coffee products were to European countries. However, the percentage to Europe has been declining.

Table 18: Laos Exported Coffee Markets by Regions, 2006-2009

Regions	2006	2007	2009
Europe (%)	71.4%	52.4%	48.0%
Asia and other region (%)	28.4%	27.0%	42.4%
America (%)	0.3%	20.6%	9.6%

Source: LCA (2010)

In terms of quantity and value of Laos coffee exports, the quantity and value had increased from 2006-07. The export quantity was around 6,900 MT with around US\$

11) Estimated value by using annual average exchange rate of 9,158.083 for 2007-08; 8,168.083 for 2008-09; 8440.875 for 2009-10 (DSL, 2010c)

8.50 million in value in 2006. The increase was more than double for quantity and triple for value in 2007. However, after 2007, both quantity and value of the exported coffee products decreased to less than 12,000 MT and US\$ 14.8 million in value in 2009 as shown in Table 19 (LCA 2010). The reduction in exports was due to the impact on production from Coffee Berry Borers and the 2009 frost (PDAFO 2009). Besides, Robusta, Arabica and Excelsa, Laos also exports instant coffee to Vietnam, Russia and Cambodia.

Table 19: Exported Quantity and Value of Laos Coffee, and Total Production 2006-2010

Year	Export quantity in MT ¹²	Total Value in '000 US\$	% of Robusta	Total production (MT)	% of Total production
2006	6,877	8,475	80%	25,250	27%
2007	20,873	29,750	83%	33,070	63%
2008	13,487	23,476	n.a	30,870	44%
2009	11,168	14,798	57%	37,184	30%
2010	14,875 ¹³	34,055 ¹³	66%	N.A	N.A

Source: LCA (2010)

The total exported quantity excepted for year 2007 was less than 50% of the total production as shown in Table 19. Also, the exported quantity and value as presented in Table 19 is slightly different from what FAO (2010) reported as presented in Table 20. Under the same available data years, overall FAO data for both coffee export quantity and value is higher except for year 2007. The differences might be the result of instant coffee quantity and value data not being presented by LCA (2010). Also, the more recent estimated data used by FAO is based on trading partner's database. This inconsistency in the available data has created difficulty for conducting study and analysis for

12) Export quantity of Robusta, Arabica, Excelsa

13) quantity and value from three provinces: Champasak, Saravanh and Xekong (CPAFO 2011)

researchers in relation to Laos’s coffee, and it is one of the weaknesses that LCA needs to overcome.

Table 20: Exported Quantity and Value of Laos coffee, 2000-2008

Year	Export Quantity (MT)	Export Value (‘000 US\$)
2000	16,990	18,700
2001	17,940	19,700
2002	16,684	10,294
2003	13,959	10,973
2004	16,024	12,995
2005	14,124	13,157
2006	7,266	9,360
2007	16,886	24,994
2008	14,316	29,394

Source: FAO (2010)

3.2.11 Organic and Fair Trade Coffee

As mentioned earlier, most of the Laos coffee farmers practice organic coffee production by default. However, as stated earlier there are only two officially certified organic coffee producers in Laos, Sinouk Café and AGPC, and AGPC has also received Fair Trade. There is no data on the total production from these two grower stakeholders. The current available statistics is shown in Table 16.

During this research, several coffee producing companies have applied for organic certification through the LCB from Department of Agriculture, MAF and the data from these are summarized in Table 21. The total certified organic known area is about 680 ha and about 485 ha is still in the transition stage.

Table 21: Lists of Operators Obtained and Applied for Organic Certification from LCB

Operators	Description	Total Production area (ha)	Certified organic	In-conversion stage
Sinouk Café	Operator	85	85	
AGPC	Group	N/A	247.26	168.28
Paksong Highland	Operator	3,101	350	250
Bolaven Farm	Operator	67	N/A	67
Coffee OXFAM	N/A	N/A	N/A	N/A
Laos Mountain Coffee	Group	N/A	N/A	N/A
Thevada Coffee	Operator	N/A	N/A	N/A

Source: LCB (2011)

CHAPTER 4

4. RESEARCH APPROACH AND METHODODO

4.1 Survey Design and Data Collection Method

4.1.1 Stakeholders Identification and Data Collection Method

The data used in this study are both from primary and secondary sources. Primary data was obtained from personal communication through interviewing and conducting the surveys with the stakeholders as summarized in Table 22. Primary data was collected using a quantitative approach of Focus Group Interviews (FGI) at the village level and interviews of coffee producers at household level. The questionnaires were mainly divided into three sections. The first section was for obtaining general socio-economic information. The second section was directly related to the coffee production. Due to time constraints and the focus of the study, questions about coffee production are mainly on the Arabica (Catimor variety) production. The last section was regarding the environmental issues and managements, which was mainly recording of the observation by the author.

Table 22: Main Primary Study's Data Collect Stakeholders, Sources, and Expected Findings

Stakeholders (Location)	Findings and obtained data
Coffee primary producers groups at village level. (Paksong)	Socio-economic data and situation; benefits and costs from participating with the AGPC; aggregated production costs and selling statistics
Coffee primary producers at household level. (Paksong)	Coffee field and production management and maintaining; benefits and costs from being members of the group; individual production costs and selling statistics;
AGPC at Management level: Trade, Production and Administration departments. (Pakse)	Management and operation of AGPC; Production statistics from group members; Products marketing and promoting strategies; support programs/activities to coffee farmers
LMC at management level. (Paksong)	General perspective and information of Laos coffee production; small coffee producers from JCF groups information
Laos Certify Body, MAF. (Vientiane)	Related rules and regulations to obtain certification; List of granted and requested for certification companies.
Provincial Agriculture and Forestry Office, Department of Agriculture, MAF.(Pakse)	Policies, Laws and Regulations support coffee sector; Reports; Marketing and promoting strategies; agriculture statistic at provincial level
District Agriculture and Forestry Office, MAF. (Paksong)	Policies, Laws and Regulations support coffee sector; Reports; agriculture statistic at district level.
OXFAM Australia in Laos. (Vientiane)	Background information and Reports of coffee producers groups in Bolaven Plateau
Joma Café. (Vientiane)	Marketing; consumers; General perspective and information of Laos coffee consumption
Sinouk Café. (Vientiane)	Marketing; General perspective and information of Laos coffee production.
Lao Coffee Association. (Pakse)	Obtain members of Association and trade statistics; related rule and regulation

In addition to primary data, secondary data from published and unpublished documents, reports and relevant organizations have been collected.

4.1.2 Field Work

The intensive field work at Paksong district was conducted from March 23 to April 1, 2011 when the coffee harvesting season had been completed. During this time

participants were more available and willing to participate with the study as they were not in their coffee fields. Prior to conducting the surveys, pre-arrangement was made to inform the target groups the purposes of the study and survey. The survey was pre-tested with one target group prior to actual collection and amendments were made to some of the questions. The questionnaires were prepared in English. However, the survey was conducted in the local language. The field work was conducted at 10 villages. A total of 7 days were used for the field work with these villages including visiting each village to conduct the interview with the FGI, followed by the interview at the household levels, and farm visits at the end of the visit.

4.1.3 Sample Size, Site and Case Study Selection

The field study was conducted in the Bolaven Plateau of Paksong district, Champasack province (See Appendix A for map of location). The district is known as the home for coffee plantations in Laos and majority of the coffee producers in this district have adopted the organic production approach which is the focus of the study. The decision on the study sample size was determined by taking into account different factors included research and survey cost, time, human resource, accessibility and availability of interviewees and assistants. Specific request was made for villages and participants with different income level, and for women to participate the FGI meeting.

The sample size was 10 out of 88 villages in Paksong district, representing about 11% of the total villages. The common characteristic of these selected villages are that they are located 1,000 m a.s.l., the majority of the coffee farmers from these villages have registered as AGPC cooperative member. The AGPC has been selected for the case study

because it is currently the largest organization of small coffee producers and operates under organic and Fair Trade principles.

Participants in the FGI from these 10 villages included the village chief, president, a representative from the coffee production committee, an accountant, a coffee production monitoring person and 2 group members of the producer group (PG).

Interviews at the household level were with two coffee producers who also attended the FGI. At FGI level, it was expected that at least 7 people would attend from each village. However, the actual numbers were not as expected for some villages due to ceremonial events include weddings, funerals and meetings prepared for the National Assembly election (was held in April 30, 2011) during the field visits. Thus, the participants in the FGI were lower than expected. Table 23 provides the names and altitudes of the sample villages, and summarizes the date of visit and numbers of the participants in the meeting. A total of 66 people attended the meeting representing about 4.3% of the total people from these 10 villages.

Table 23: Name, Altitudes, Date of visit, and Participant’s Numbers in the 10 Sample Villages

No.	Villages	Altitude meters a.s.l	Date of Visit	No. of participants	
				Total	Female
1	Maysaisomboun	1,000	24/3/2011	7	0
2	Lak 43 (Km 43)	1,065	25/3/2011	6	2
3	Phoumakor	1,220	26/3/2011	8	3
4	Phoudamkhouane	1,000	27/3/2011	9	3
5	Nongyathueng ¹⁴	1,000 ¹⁵	27/3/2011	5	1
6	Nong Luang	1,180	28/3/2011	7	0
7	PhouOay	1,310	28/3/2011	3	0
8	Kapheu	1,120	29/3/2011	8	1

14). Non AGPC member

15). Toro (2011)

No.	Villages	Altitude meters a.s.l	Date of Visit	No. of participants	
				Total	Female
9	Xetapong	1,190	29/3/2011	9	3
10	Katuat	1,200	30/3/2011	4	0
	Individual coffee famers ¹⁴		31/3/2011	2	1
	Total			68	14

Source: AGPC 2010

At household interview level, a total of 22 farmers were interviewed and 19 coffee plots/farms of these famers were visited. Two of these farmers were not practicing organic coffee production and were not part of these producers groups. Due to time constraint, only one of these two farmer's coffee farm was visited. Also, farm visit at Nogyathueng village was not made as it is not yet a member of the AGPC organization. However, the farmers from this village claimed to adopt organic production method. The famers from this village has formed into group and applied to become member of AGPC.

4.2 Field Work Rising Issues

Once again the scope of the field study was based on the availability of the interviewees, assistants from the AGPC organization and related stakeholders, time and available funds. With a short time frame and preparation of the interviewees mainly at the individual farmer level, some issues in data collection had appeared which include:

- Detailed production costs from each producers group are not available. The available data of the costs are at the processing level which is not the required data for the analysis in this study. At individual producer/household demonstrated no form of recorded data. It must be acknowledged that, what matters for these farmers are to ensure that the actual field work required in their coffee plots are being accomplished. It is difficult for them to record what they actually do and

spend. However, the estimated time spent on each activity of their coffee production, and production costs and returns were obtained through group interview estimates and from an AGPC report.

- Only two non-organic coffee farmers were interviewed and only one of them was able to provide detailed information regarding his coffee production and field management. Contacts were made with one large scale producer, but due to short notice, arrangement for the responsible person to answer the questions could not be made. Communication was also made through email, but it seemed the responder has been very occupied.

4.3 Economic Estimation and Financial Indicators

4.3.1 Conceptual Framework

In this study, the impacts of the organic coffee production versus the commercial production methods can be determined using the dynamic financial evaluation methods, and take into account the value of money both in short-term and long-term. Thus, the conceptual models for this study are based on the framework used by Fleming (1998) and Sosa et al. (2004), Valkila (2009), and Beuchelt and Zeller (2011) to determine Gross Margin (GM), and Campbell and Brown (2007) and Poudel et al. (2010) to determine Net Present Value (NPV) and Internal Rate of Return (IRR).

4.3.1.1 Gross Margin

GM can be determined as a function of Gross Return (GR) and variables costs/operating costs which include Materials Costs (MC) and Labor Costs (LC), and Other Costs (OC) in a particular period. Therefore, our first model will be presented as:

$$GM = f(GR_i, MC_i, LC_i, OC_i, e_{it}), i = 1, 2, \dots, n.$$

GR is a function of prices and yields. In this study it is a combination of revenue from selling coffee and other crops which have been interplanted, and/or can be harvested in the same area as coffee. According to Sosa et al. (2004), annual and perennial crops have been grown between rows of the coffee plantations. This is known as a polyculture system. For some farmers, these interplanted crops play two important functions, they generate supplementary income and prevent surface soil from eroding during rainy season. For the majority of small coffee farmers, these interplanted crops are important food sources to feed their family. Example of interplanted includes bananas, vegetables, and other fruit trees. However, it must be understood that not all of these interplanted crops will be grown or harvested for sell in the market.

Materials Costs include compost, fertilizer, lime, foliar fertilizer, herbicides, fungicides/insecticides, food for pickers, miscellaneous and other related inputs for coffee production. Material Costs is a function of material prices and amount of material required. Labor Costs include both hired and family labor, and is a function of labor fee per day and the number of man-days (total number of the actual labor use multiply the total day used for the activity) required for each coffee plot activity. The following Table 24 summaries Gross Return Sources, Variable costs required per hectare (ha) for GM calculation of conventional and organic coffee production each year (not include establishment year).

Table 24: Annual Gross Return Sources, Variable Costs required per ha for Gross Margin Calculation of Conventional and Organic Coffee Production

Variables/Management	Conventional Production	Organic Production
Gross Return	Can be produced? Yes or No	
Return from Coffee	Yes	Yes
Return from other crops	No	Yes

Variables/Management	Conventional Production	Organic Production
Variable Costs	Is it required? Yes or No	
<i>Materials</i>		
Compost	No	Yes
N fertilizer	Yes	No
NPK fertilizer	Yes	No
Foliar fertilizer	Yes	No
Herbicides	Yes	No
Fungicides/Insecticides	Yes	No
Food for pickers	Yes	Yes
Miscellaneous	Yes	Yes
<i>Labor Costs</i>	<i>Is it required? Yes or No and for how many days?</i>	
Manual Weeding	Yes for 6 days	Yes for 40 days
Herbicide application	Yes for 6 days	No
Foliar dressing	Yes for 3 days	No
Fertilization	Yes for 7 days	No
Compost preparation/application	No	Yes for 25 days
Coffee tree pruning	Yes for 3 days	Yes for 2 days
Shade tree pruning	No	Yes for 4 days
<i>Other Costs</i>		
Harvest Costs	Yes	Yes
Processing costs	Yes	Yes
Miscellaneous	Yes	Yes
Administration/transport	Yes	yes
Interest rate	Yes	Yes

Source: Modified from Sosa et al. (2004)

As can be observed from Table 24, more material inputs are required for conventional production than organic production. However, more man-days are required in organic production practice than another.

According to Fleming (1998), to compare the financial and productive efficiency of similar-sized coffee farms, Gross margin is a reliable tool. The importance of this tool is that it shows the actual minimum margin that a farm must produce in order to stay in business. A positive gross margin would allow the producer to continue operating at least

in a short run. However, this tool does not show a farm's long-term viability. Thus, two good long-term financial analysis measurements are NPV and IRR.

4.3.1.2 Net Present Value and Internal Rate of Return

NPV is a function of Gross Return (GR), Capital Costs (KC), and variable costs/operating costs which include Materials Costs (MC), Labor Costs (LC) and Other Costs (OC) and the Discount Rate (DR) over long-term period. Generally, the period will be the project lifespan, which for the new coffee variety can be between 10 and 20 years. Therefore, our second model will be presented as:

$$NPV = f(GR_t, KC, MC_t, LC_t, OC_t, DR, e_t), t = 1, \dots, T.$$

Note that the difference between GM and NPV is that KC and DR are included in the function. Also, the function takes into account the long-term period of the project. KC is the initial investment money that is required during the first year (zero "0" year) or two. The main invested money can be for purchasing new land; setting up the irrigation system and electricity installation; buying vehicles (trucks and tractors) for transporting labors and cherries during the harvesting season; and tools such as grass cutting machines; and fees for land clearance and preparation. The DR is "the interest rate used in discounted cash flow analysis to determine the present value of future cash flows. The discount rate takes into account the time value of money (the idea that money available now is worth more than the same amount of money available in the future because it could be earning interest) and the risk or uncertainty of the anticipated future cash flows (which might be less than expected)" (Investopedia 2011). As stated by Campbell and Brown (2007), the DR that should be used in calculating the NPV should incorporate

both the domestic government bond rate and the rate of return that the firm requires on their equity capital and the rate which will give a positive NPV.

The understanding of DR is important in determining IRR as IRR is the function of lower discount rate, difference between the two discount rate (highest rate which gives positive NPV value and the rate which gives negative NPV value), NPV at the lower discount rate, sum of the absolute values of the NPV (Campbell and Brown 2007) and can be written as following:

$$IRR=f(\text{lower discount rate, difference between the two discount rate, NPV at the lower discount rate, sum of the absolute values of the NPV})$$

Simply, IRR is the discount rate which makes NPV equal to zero and should be greater than the interest rate of the money borrowing for the investment from the banks or any other sources.

4.3.2 Empirical Model

Gross Margin Analysis measures the profit or loss made from an enterprise or business or the differences between the gross revenue and the variable costs (Linh and Baulch 2009) (Equation 1). GM analysis is used to gain better understanding as to how sales revenue relates to cost structures mainly the variable costs, which include material inputs, family and hired labors. Thus, better decision making on how to manage and allocate the numbers of input and output factors for crops and livestock production can be made (Malaiyandi et al. (2010). Fleming (1998) developed a computer-spreadsheet economic budget based on a 4-acre Kona coffee farm and consists of more than 100 variables and users can adjust to particular coffee farming conditions.

Equation 1: Gross Margin (Malyiyandi, et al. 2010)

$$GM = \sum P_y Y_y - \sum_{i=1}^n P_i X_i$$

GM = Gross Margin in LAK/ha (Lao KIP per ha)

P_y = Prices of coffee and other products in LAK/kg

Y_y = Quantity of coffee and other products in kg/ha

n = the total time of the project

P_i = Price of each i^{th} input in LAK/kg

X_i = Quantity of input used per ha of coffee unit for each i^{th} input in kg/ha

For the second model, NPV is the “difference between the discounted present value of future benefits and the discounted present value of future costs” (Equation 2), and IRR is the discount rate that makes NPV equal zero (Campbell and Brown 2007).

Equation 2: Net Present Value (Poudel et al. 2010)

$$NPV = \sum_{t=1}^n \frac{C_t}{(1+r)^t} - C_0$$

t = the time of the cash flow

n = the total time of the project

r = the discount rate

C_t = the net cash flow (the amount of cash) at time t .

C_0 = the capital outlay at beginning of the investment time ($t = 0$)

To use both or either the short-term or long-term model to evaluate the economic/financial performance of any agricultural production system, some assumptions must to be made. The decision making rules are as following:

Table 25: Decision Making Framework

Financial Tools	Decision Criteria				
	Accept	Indifference	Reject	If	Prefer
GM	>0	Equal to 0	<0	OFM>NOM	OFM ¹⁶
				NOM>OFM	NOM ¹⁷
NPV	>0	Equal to 0	<0	OFM>NOM	OFM
				NOM>OFM	NOM
IRR	>Cost of capital (Interest Rate (I))	Equal to I	<I	OFM>NOM	OFM
				NOM>OFM	NOM

Source: Modified from Poudel et al. 2010

4.4 Assumptions, Variable Selection and Analytical Techniques

From the field work in Paksong district, the data for the calculations of GM, NPV and IRR for organic coffee farmers who adopt OFM was drawn and based on the data obtained from the interview at the village level. For non-organic farmers, the data was provided from the interview of one non-organic coffee farmer. However, this farmer has a high capital investment for his coffee farm (irrigation and electricity installation) and can apply fertilizer both organic and non-organic and foliar protection more than twice a year. Moreover, he is able to pay both for permanent and seasonal labors. Thus, for the non-organic coffee farmer, the amount of inputs will be only at 1 time per year. Also, the installation of electricity and irrigation, and payment of permanent labor is not included in the calculation for the low capital non-organic farmers. Details of the assumptions and variable used will be covered in Chapter 5.

The models for GM, NPV and IRR calculations for data analyses were developed using Microsoft Office Excel 2003/2007.

16). OFM: Organic and Fair Trade Production Method

17) NOM: Non-organic and Fair Trade Production Method

4.5 Hypotheses

The first hypothesis is that the small coffee producers who adopt organic and Fair Trade production method (OFM) will have positive Gross Margins, but not significantly greater than producers who adopt non-organic production method (NOM). This Hypothesis is based on the fact that although OFM will receive higher coffee price than NOM and have no higher input costs (fertilizer, herbicides, etc), OFM will require a higher number of labor hours for the coffee tree management and maintenance. More importantly, the received yield will be considerably lower than for NOM farmers. This hypothesis has been supported by Sosa et al. (2004) who found that the number of days required for field management and maintenance, which always involve man-labor, under organic coffee production was 71 days, while under conventional only 25 days are required. Beuchelt and Manfred (2011) also found that organic producer use more labor, but have lower input costs.

The second hypothesis is that the NPV and IRR for producers who adopt OFM will be higher than those who adopt NOM. Over the long run, the growers will receive higher prices from adopting OFM (dual certification include organic-Fair Trade certification, which is the case under AGPC organization) and yields from this method will be increased and improved.

The final hypothesis is that OFM will provide greater community and environmental benefits than NOM. This is based on the fact that there is greater biodiversity that growers utilize in OM compared to NOM, particularly from shaded and fruit trees which are considered to be other income and food sources for growers. Also, local coffee market prices should be driven higher by producer groups of OFM as market

supply sources and access to more prices information are available. Moreover, non-synthetic inputs are not permitted to be used under OFM coffee farms.

CHAPTER 5

5. FINDINGS AND DISCUSSIONS

5.1 Non-Empirical Findings and Discussion from Secondary Reports

5.1.1 The Social-Economics Impacts of Laos Coffee Sector at National Level

Worldwide, Laos coffee production contributes less than 1% to world total production. However, there is an increasing trend in production. As presented in Table 26, in 2007-08 the production was less than 0.5 million bags, but has increased to more than 0.62 million bags in 2009-10.

Table 26: Laos Coffee Production Compare to the World Coffee Production 2007/08-2009/10

	2007/08	2008/09	2009/10
Laos Production in MT of green coffee(a)	33,200	31,125	37,252
Laos Production in 60-kg bags	553,333	518,750	620,867
World Production in 60-kg bags(b)	126,800,000	126,100,000	126,200,000
% of Laos to World coffee production	0.44%	0.41%	0.49%

Sources: (a) DSL (2010b), (b) ICO (2010c)

At the nation level, coffee is one of the major cash crop agricultural activities and represents one of the principle export products from Laos since 1976 (DSL 2010a).

According to FAO (2010), coffee has always been in the largest quantity and highest value exported agricultural product from Laos. More recently, as part of the strategy to

become a World Trade Organization (WTO) member (Laos applied for WTO membership since 1997), Laos has placed coffee as the product to develop into a high-value agricultural export products (Wiemann et al. 2009).

According to Wiemann et al. (2009), some of the elements for a product to be considered as a high value products are scarcity, high quality, processing and compliance with special standards (organic/Fair Trade standards and branding for example). In addition to these elements, these high-value products have to be able to contribute a positive impact on human development (poverty reduction and promotion of gender equality). Moreover, the products should meet the goal of environmental sustainability. Coffee in Laos has these elements.

In 2009-10, the three southern coffee production provinces (mainly Champassak) contributed to more than US\$ 34.1 million worth of coffee export (included instant coffee, mainly to Cambodia from Dao Hueang Coffee Company) (CPAFO 2011). The export quantity and value have gradually increased although with certain periods of downturn. The contribution of this exported coffee value to the country's GDP is not significant. It was less than 1% of the total country GDP since 2002. However, prior the year 2000s, the contribution was greater than 1%, with almost 4% in 1998 (Table 27) and was at the highest value that Laos coffee sector has ever achieved. Thawaensimphet et al. (2003) noted that it "was a golden year for the producers and traders of Lao coffee...". However, this percentage was partly achieved because of the decreased of the country GDP which resulted from the Asian financial crisis that occurred in late 1997. During that time there was inflation that affected the LAK (Laos KIP currency) jumping from under 1,000 LAK/1US\$ in 1997 to more than 4,000 LAK/1.00US\$. Laos has always

been a net importer for many products such as processed food, beverage and tobacco, and material to be used in many producing industries such as clothes (DSL 2010a). Thus, with the crisis, consumers were significantly affected. Coffee exporters were secure from the crisis as the trade currency was in US\$. This may also be the case for some medium to large scale coffee producers. However, many of the small scale producers had to purchase rice and food at higher prices with the same or lesser return for their coffee.

Table 27: Coffee Contribution to the Laos National GDP, 1992-09 in (million US\$)

	1992	1993	1994	1995	1996	1997	1998	1999	2000
National GDP (a)	1,197	1,328	1,539	1,746	1,864	1,748	1,286	1,453	1,743
Coffee(a)	2.40	4.10	3.10	21.30	25.00	19.20	48.00	15.20	12.10
%	0.20	0.31	0.20	1.22	1.34	1.10	3.73	1.05	0.69
	2001	2002	2003	2004	2005	2006	2007	2008	2009
National GDP (b)	1,673	1,758	2,024	2,376	2,726	3,564	4,226	5,313	5,598
Coffee ©	19.70	10.29	10.97	13.00	13.16	9.36	24.99	29.39	34.1(d)
%	1.18	0.59	0.54	0.55	0.48	0.26	0.59	0.55	0.61

Sources: (a) Thawaensimphet et al. (2003); (b) IMF (2010); (c) FAO (2010); (d)CPAFO (2011)

5.1.2 Local Social-Economics Impacts

The Positive Contributions

Under the current production and export level less than 40,000 MT, Laos has no influence on the global coffee market. However, for the three southern provinces on the Bolaven Plateau, the coffee exports have contributed to the region's economic development. In this area there are about 150,000 inhabitants with more than half of them involved in coffee production. Among these people more than half of them have more than 50% of their income from coffee production, while about 34% said coffee is the only income source. Also, the coffee production in Laos has created jobs during harvesting

season and for related sectors such as exporting and roasting industries (Tulet 2009). At the same time, it has boosted the country's trading sector as it is said to be the only agricultural product that goes through 100% of the formal trade route (Wiemann et al. 2009). Moreover, the service sector has been improved through the increasing numbers of coffee retail shops (as there more competition among the shops) as can be observed in the big cities such as Vientiane, Pakse and Luangprabang

Adapting to the Bolaven Plateau

Many of the current coffee producers were from different locations on the Bolaven Plateau after Laos declared independence in 1975. These people used to practice shifting cultivation, mainly growing rice. In addition to their struggle in adapting to the new environment and livelihood, they had to learn how to cultivate coffee (part of GoL country development plans), which they could not consume, but had to produce as cash crops which they also have very limited market information to sell (Tulet 2009). With the selling sources they know, middle-buyers or wholesalers were able to take advantage of them. As reported by Thawaensimphet et al. (2003), these traders used different approaches to maximize their profits. Some of the methods were to alter the measuring tools, such as the tin bins, by beating them into a round shape to contain more coffee cherries or beans, to use slightly bigger bins than what farmers used (12 kg size bin rather than 8 to 10 kg), to use scales that were 6 to 10% under-weight, or to use larger bags that can stretch. Some of these middle buyers would set high prices for equipment, food, bedding or medicines that farmers would like to exchange with coffee, while the price for coffee would be driven as low as possible. Currently, some of these situations still occur for some coffee farmers, particularly those located in remote areas with limited access to

market information such as small scale farmers in Attapeau province. Farmers reported that the use of traditional containers (tin bins) is still common among these small scale farmers in this remote area. Consequently, a standardized measurement could not be made and comparisons of coffee yields in the study area were very difficult. Thus, production yield from the study area cannot be obtained and presented. For these farmers, with no standardized measurement, they will always be taken advantage of by middle buyers.

Based on Pilz's (2010) findings many issues have been raised for coffee production in this region with recommendations for improvement. Attapeau province is located close to the three main coffee production provinces, with similar climatic condition and is said to have fertile soils (mainly volcanic soils) that facilitate coffee cultivation and could attract investment in coffee production. These investments would bring new technology that will improve coffee production in the region. However, this raises the questions of how many of the small producers in the region may benefit? Would the investment induce producers to move away from their current activities that have been reported to be unproductive? What about the inflow of labor from neighboring areas and countries and the competition among land uses with other developing activities?

New Technology, Production and Processing Method

More recently, new techniques and technology have been brought to some coffee producers in these coffee producing regions, but has yet to arrive in Attapeau. The new technology is mainly the wet processing machines and methods (See section 3.2.7 for detail of the processing methods), which comes with the introduction of the new coffee

dwarf variety – Catimor. Despite facing some difficulties when first adopting this new technology and approach; farmers who have adopted the method have observed improvement in their coffee quality as well as their income (Tulet 2009). However, the small farmers who have benefited from this technology and method are those who are part of the coffee producers groups such as the AGPC. This producer group has brought technology and provided training on how to produce quality coffee for 53 coffee producers' groups from 53 villages, 30 in Paksong (Champasack province), 21 in Laosnam (Saravanh province), and 2 in Thateng districts (Xekong province). This accounts for about 2,700 producer families in total (Tulet 2009; AGPC 2010). In addition to improving their coffee quality, livestock have been raised by 20 producers from these producers groups. Moreover, from members' annual registration charge, back-payment of inputs from the group to its members, and part of the PAB program funding for the construction of collective processing plants, the groups have managed to create their own group funds (Tulet 2009).

Dishonest Trading Systems and Financially Secure Issues

The outcomes from the AGPC have been positively reported. However, these numbers of producer families represent only about 18% of the total 15,000 coffee producing families. In a study (Thawaensimphet et al. 2003) of 9 villages in Paksong, Thateng and Laosnam districts small coffee producer in particular were found to have been taken advantage of by dishonest trading systems and have difficulty becoming financially secure. Moreover, some of these farmers sold their un-harvested coffee for below production costs (possibly due to an urgent need for cash) bartered for merchandise, borrowed money with high interest charges from credit providers, and have

no record of how much they actually spend on their production, Consequently, these factors have made it difficult to break out from the poverty cycle. Thawaensimphet et al. (2003) further pointed out that the irregular and improper transactions with these traders creates a long-term distraction to the Laos coffee market generally. For these small producers, these problems provide no incentive to improve the quality of their coffee to obtain a better price.

Income and Production Costs Variance

The empirical section by Thawensimphet et al. (2003), which compared the return and production cost variance (income) among small, medium and large scale farms confirmed that the small scale coffee producers is least profitable. As illustrated in Table 28, either under 4-9 year old or older Robusta coffee plantation, the average variance of net return from coffee production for these small scale producers was very small, just equal or less to 0.05 US\$/ kg. Small scale producers from five out of the 9 villages under both production lifespan had negative return unlike their larger counterparts. One possible explanation for this difference could result from high production costs, low price received, and lower coffee yield.

Table 28: Income of Small, Medium and Large scale Robusta coffee producers, 1997-2001 (US\$/kg of husked coffee)

No.	Community	Income and Cost Variance for producers at			Income and Cost Variance for producers at		
		Small (< 2 ha)	Medium (2-4 ha)	Large (5 ha or >)	Small (< 2 ha)	Medium (2-4 ha)	Large (5 ha or >)
Paksong District		4-9 Year old coffee			Over 9 Year-old coffee		
1	Mai Xaisomboun	-0.01	0.20	0.21	0.39	-0.17	0.34
2	Phumon	0.14	0.12	0.18	-0.13	0.12	0.23
3	Kafeu	-0.01	0.38	0.03	-0.29	-0.17	0.15
Thateng District		4-9 Year old coffee			Over 9 Year-old coffee		

No.	Community	Income and Cost Variance for producers at			Income and Cost Variance for producers at		
		Small (< 2 ha)	Medium (2-4 ha)	Large (5 ha or >)	Small (< 2 ha)	Medium (2-4 ha)	Large (5 ha or >)
4	Hua Xe	0.12	0.42	n/a	0.17	0.28	n/a
5	Jumla	-0.37	0.08	n/a	-0.15	0.15	n/a
6	Nonglao	-0.16	0.36	n/a	-0.06	-0.02	n/a
Lao Ngam District		4-9 Year old coffee			Over 9 Year-old coffee		
7	Dongnoi	-0.17	-0.19	0.33	0.36	0.11	0.20
8	Pakgud Nyai	0.17	0.41	0.26	-0.02	0.22	0.21
9	Nongchua	0.48	-0.23	0.23	0.14	0.38	0.22
Average		0.02	0.17	0.21	0.05	0.10	0.23

Source: Thawaensimphet et al. (2003)

Bargaining Power

Receiving low coffee prices were and have been the lead issue with coffee producers, particularly at the small scale level. However, since forming into coffee producer groups, there has been no change in coffee price bargaining or the negotiating position for these coffee producers. According to Gebert (2010), there was no indication that the groups have bargaining power for higher coffee prices. However, some are able to receive better prices from buyers who directly contact them. More observations are that Laos coffee prices are determined by the international coffee prices, where the Laos coffee sector has no bargaining power due to the low production level and the absence of Laos in any international coffee organization. Some farmers urgently need cash and have to sell their coffee before harvest, this practice has weakened their bargaining position. For some farmers who have managed to sell coffee directly to larger buyers/wholesalers they may have received higher price, but with the set “quality standards” and penalties of not meeting the required beans set by these buyers, the actual prices received by famers are often 20% less. Moreover, for farmers who have to deliver coffee directly to buyers,

taking into account the transportation cost, the coffee prices will still be lower. Gebert (2010) further observations are, for coffee producers group from Vang Ngao Village (initially supported by Oxfam Australia) who could manage to produce a high quality Arabica, they might be able to receive a higher price. However, he points out that “it has little to do with bargaining power and more to do with particular buyers recognizing the quality and being willing to pay for it”. Thus, the most important bargaining point is that farmers are able to produce a high quality coffee. This point is supported by Lewin et al. (2004). These authors reported that “Coffee quality and consistency are found to be the most important criteria for the decisions of both European and North American coffee companies purchasing sustainable coffees” (see more Giovannucci 2001; Giovannucci and Koekoek 2003; Lewin et al. 2004 pp.113-114).

The sustainable coffee market, including organic and Fair Trade coffee, requires high quality coffee beans to enter the European and North American market. However, Gebert (2010) observed that there are several large buyers where high quality coffee beans are not the priority as these beans will be used to produce instant coffee. Thus, the temporary increase of coffee prices might be due to the competition among these buyers and has nothing “to do with farmers bargaining power”. However, could the higher price be due to the lower supply levels in certain period, thus, coffee prices must be driven higher by farmers? Isn't this the bargaining power that small coffee producers have?

Positive findings have been observed by Fraser (2009) for the coffee producers groups regarding their bargaining power, particularly the 72 farmers of Vang Gnao village coffee producers group. They have been growing coffee since the 1970s. However, it was not until receiving the support from Oxfam Australia that farmer's

coffee production situation has improved. One of the improvements that has been noted is that “...working as a group, they have been empowered and are in a better position to negotiate with buyers than when they were selling as individual growers”. Moreover, for farmers who are member of the AGPC receive better prices than selling through middle buyers or wholesalers (See Table 18). Some of the services that AGPC provides to ensure small farmers have bargaining power are: surveying the production of coffee each season to determine the volume that members can be expected to provide for marketing through the association; regulating the quality of coffee being provided to buyers by groups and their members; negotiating prices and signing contracts with buyers on behalf of AGPC members; monitoring international coffee prices and marketing trends and disseminating this information to members; and linking farmers to technical advice and advanced coffee production and processing techniques.

The study by TDF-MDTF (2009) has also provided a positive aspect in forming the coffee producers groups, which has provided better coffee price negotiation for the small coffee producers. The study reported that “Working as a group, AGPC members have been economically empowered and are in a better position to negotiate with buyers than they were when they were selling raw coffee beans as individual growers”. More notes have been made by TDF-MDTF that “By processing their raw coffee using the wet mills, they are able to add value to their assets and to create wealth, thus alleviating poverty”.

However, for the AGPC’s members and other coffee farmers to be alleviated from poverty, other unsolved current issues such as health, education, and food insecurity issues must be resolved. Particularly, many people in the rural area still live below the

poverty line and face insufficient food and the competition between coffee and food for scarce land resources is major issue.

5.1.3 Coffee and Food Security in Laos

Food security exists “when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life”. This definition was agreed to at the World Food Summit of 1996. Food security foundations are based on food availability which refers to “sufficient quantities of food available on a consistent basis”, food accessibility which means “having sufficient resources to obtain appropriate foods for a nutritious diet”, and food utility which means “ appropriate use based on knowledge of basic nutrition and care, as well as adequate water and sanitation” (WHO 2011). In the Laos context, according to EC-FAO Food Security Programme (2011) definition food security is “to ensure enough food and food stuff for every person at any time, both in material and economic aspects, with increasing demand on nutrition quality, hygiene, and balance so as to improve health and enable normal development and efficient work." The related definition and foundations of food security have also been included in the Laos’s “Strategy for Agricultural Development 2011 to 2020”. In this Agricultural Development strategy, overcoming food insecurity is the first priority and is expected to be achieved by 2015 through agriculture and livestock activities (MAF 2010).

There is a very strong relationship between food insecurity and poverty. Tweeten (1999) stated that “because it is the poor who lack access to food, alleviating food insecurity means alleviating poverty”. Thus, to escape or alleviate poverty and food insecurity, ensuring economic growth for the countries that still face these issues is crucial. Many elements have to be considered to ensure food security. These include

natural resources, institutions and attitudes. Through savings, investment and technical efficiency and the economic management of the three elements, the country shall be able to accumulate capital to contribute to economic development, and eventually the well being of the nation.

What role does coffee play in economic progress and food security? Coffee is part of the natural resources element, which has been activated and managed by the other two main elements, ensuring it will then contribute to the overall country capital accumulation, economic development and well-being. Again for Laos, natural resources are the very important capital. Coffee is part of this capital. Although it only contributes to a very tiny proportion of the total GDP, it still contributes importantly at the local level as mentioned earlier.

According to UNDP-LAO (2010), the poverty rate in Laos has gradually decreased from about 50% in 1992 to less than 30% in 2008. Thus, the country is on track to meet the Millennium Development Goal target of halving poverty by 2015. However, there is an increasing gap between the haves and have nots. The UNDP-LAO (2010) also noted that the incidence of food poverty has been decreased (average number of months without sufficient rice in villages have decreased). Note that rice, particularly, sticky rice, is the main staple for the majority of Laotian families, but not in the areas affected by unexploded ordnance (UXO) or difficult to access. Despite, this improvement, a study on food security in Laos by the World Food Programme (WFP 2011) revealed that, rural households still account for about 78% of the total household (exclude households from Vientiane Capital). Within these rural households, there were about 109 thousand households or 16.4% account poor and borderline level of food

insecurity. Most of these households will still have insufficient rice for several months of the years. Part of this food insecurity in Laos's results from insufficient availability of food and markets. Although the MAF reported to have a net production and self-sufficiency rice status, the marketable surplus is still low. Thus, Laos still must import rice from neighbor's countries, particularly Thailand to meet the local consumption (WFP 2011).

At the Bolaven plateau specifically, according to the prepared map of the poverty rate per village and poverty density by WFP (WFP 2011), the plateau areas show less than 20% of poverty villages and poverty density was lower than other regions. However, similar to other coffee producing countries during the coffee crisis small scale coffee producers and seasonal laborers in the Bolaven plateau were highly affected. According to Thawensimphet et al. (2003), the impacts were that many small coffee producers experienced rice shortages and some of them faced insufficient rice for up to six months. Generally, in a year of good coffee prices when farmers could produce up to 600 kg/ha of coffee, they would be able to purchase about 2,400 to 3,000 kg of rice, which will be more than enough to feed a family or household of six members. However, with the dropping coffee price, this same amount of coffee production only allowed them to buy about one-fourth of the rice that they used to buy and could only sustain their families for about half a year. Seasonal laborers who mostly live below poverty line and already face a rice shortage were even more affected by this crisis.

The crisis happened about 10 years ago and there have been many developments and improvement in the Laos' coffee sector since that time. However, it is unsure how food secure these small coffee farmers have become? The EC-FAO Food Security

Programme (2011) noted that “In the long term, cash crop cultivation is also likely to have negative impacts on food and production in the Laos”?

5.1.4 The Rising Challenges and Issues for Laos Coffee Sector

Some of the rising challenges and issues for the Laos coffee sector and the small scale producers in particular have been discussed in detail in Tulet (2009).

5.1.4.1 Land Use Issues

Land concessions: As stated earlier, several big and many small to medium size companies have been granted with land concessions for growing coffee and other plants and crops on the Bolaven Plateau. The total approved land size is considered small, but it has already created many concerns in local communities. There are two key concerns. First, available and productivity agricultural lands are considered small and limited. For coffee, the estimated available production area is less than 100,000 ha. Thus, more cautious and clearer consideration must be made between the available land and the size requested for concession. Second, most of the approved lands are concentrated in the Northern part of the plateau. Thus, the pressure is greater among the local people in this region than other regions regarding whether they will be able to expand their agriculture production.

Restrictions in access to land: Big companies tend to be granted easy access to land, while farmers have to account the “very serious difficulties” in certifying their current land use if they wish to hand it down to their descendents. Also, in terms of productive land, the document that indicates the right for the majority of the farmers is a “land use certification” on their current land, despite the fact that these persons have occupied and used the land for many decades. Farmers do not have the ownership to this

type of land. Also, families with over 14 active family members (member who can work) are only allowed to dispose of three hectares with one hectare for paddy cultivation. However, if the families are not able to manage the land after three years, the land can be taken away from them, unlike the concessions land where most of the land is still unused. More issues in access to land arise when there is a new household.

Only some directly benefit from the concessions: It is deniable that the companies with these land concessions do bring some benefits to local communities in terms of the new techniques that some farmers have tried to apply to their crops, and development of the community infrastructures such as schools. These companies also provide short-term jobs mainly for those who do not have enough land. Payment is generally 20,000 LAK/day (about 2.50 US\$/day) with an extra of another 20,000 LAK by the end of the month as a bonus, but only if they come to work every day (includes Sundays). The tasks are extensive and vary with this daily payment. Jobs have also been provided during the harvesting (picking) season, which they will generally pay wages based on a kilo or per bag, but it is not always an honest transaction. However, as most of these daily or seasonal workers are local farmers who also have their own farming land, local hiring is difficult for some companies and thus some have imported labor from other regions and/or countries.

5.1.4.2 Processing project

There are two main types of processing installations in the region, large rubber tree plantations and others coffee processing. One of the rubber processing factories is managed by the Viet-Laos Rubber Company. This Vietnamese company has been approved with 10,000 ha for growing rubber in Bachieng district (Northern part of the

Bolaven plateau). The plantation has just started to develop and no production has taken place, still the Company would like to increase the growing area to 20,000 ha.

For coffee processing projects, companies that have been granted land for growing coffee have to have the processing factory as well. Knowing in Latin America, this practice is called “beneficios”. High numbers of labors are required in this coffee processing. Although, one of the coffee producing companies (has been approved up to about 3,100 ha) plans to use machines in all their production processes, still the Company expects to employ 3,000 people when the plantation is fully operating (harvestable coffee trees and processing factory). Again the plantation has just been established and will take several more years to be fully operated. Concerns have been raised regarding continuously managing and maintaining machines and the availability of highly qualified staff to do the job, some of which will be from outside the region. With the existing processing factory and coffee plantations (Dao Heung Company), 150 Vietnamese and 35 Laos workers are employed to operate the factory. The factory must purchase additional cherries because the amount that they can harvest from their concession land is not yet sufficient to run the processing plant at an economic level. It only accounts for about half of what the Company had exported in 2008.

With the current development and operating plan, it should have created local issues as a result of the competition for land and the inflow of the labors to the region, particularly for the newly establish Companies from Vietnam and Thailand. However, particularly for the coffee processing sector, unless these companies can supply coffee bean at level necessary to meet their machines processing capacity and the export market

by themselves, small-medium coffee producers are still in a good position because the larger companies will continue to rely on the production from these farmers.

5.1.4.3 Hydro and Mining Projects

Less concern is present in the local communities on the Bolaven plateau regarding the land concessions given for development projects like hydropower and mining compared to other land use concession development projects. Referring to Figure 49, which shows a map of the current and planned hydropower plants and poverty incidence from a World Bank report (2010). The map indicates several operating plants and those in planning in the area, with one under construction in the northern part of the plateau. Although, pollution is not directly being generated from these hydropower dams, during construction large numbers of workers are required. Thus, for the coffee producers, it is expected that they will be competing for labor with these large Hydropower projects.

Competing for labor by coffee producers is expected to occur with other mining projects as well. Referring to Figure 50 in the same report by the World Bank (2010) a map of mining concessions and poverty incidence is provided. In Champasack province, the concentration of the concession for the mining projects is in the South and Southeast of the Paksong district. Directly within the Plateau, according to Lazarus (2009) there were four mining concessions on the plateau including Sino Australian Resources (Laos) Co. (Sarco), Yishida, Southeast Asia Economic and Technical Cooperation (SAETC), and LSI.

In Attapeau province, the mining is concentrated in the eastern part in an area with high poverty incidence (greater than 60 to 70%). These concession areas coincide with the areas where a recent feasibility study on the coffee sector in Attapeau by Pilz

(2010) took place. This raises the question whether the plan to develop and improve coffee production for small coffee producers can be effective or not in this region. Although, it is not report here, where and when the constructions of these mining concessions will take place, these mining projects will have both positive and negative impacts on the coffee producers in the region. Possible positive impacts are mainly the improvement and development of the infrastructure (e.g. roads), which will aid in developing the regional economy, particularly in Attapeau province. Possible negative impacts are the competition for labors in the region and the inflow of the labors from other regions and neighboring countries (which could create other issues such as competing for land use and cross culture issues).

5.1.4.4 Introduction of New Variety and the Environment Issues

New *Coffea arabica*-dwarf variety, mainly the “Catimor” has recently been introduced to the region. With the advantages of the variety that it can be harvested in a shorter period, it is tolerant to frost and has a higher yield, there has been an increasing trend in the production of this variety and production area. The production area of Catimor was less than 15% in 2007. However, because of the advantages listed the variety has been promoted by development organizations, and supported by a better price than Robusta and more demand from the world markets. The production area will increase even more in the future. According to Salleé (2007), it is expected that by ten years time, Laos will grow more Arabica than Robusta. This increase in production area somehow has created a threat to the production area of Robusta *on* the Bolaven plateau, which is said to be “unique in the world” as no country has grown this variety at altitudes higher than 700 m a.s.l. Many of these Robusta coffee trees were planted and have been

left to develop and grow with little or no field maintenance, in the more diverse environment with more trees and shrub varieties for some in the forest. The increase in this new variety, most often grown by replacing an existing plantation of *Coffea Arabica*, has resulted in the clearing and destruction of forest areas. The introduction of this new variety also generate threat to *Coffea Typica* , the variety preferred by the Japanese market. The growing of this new variety and field maintenance and management methods from development projects such as AGPC has resulted in lower diversity in coffee plantations. However, under AGPC, organic production must be the method of practice by the groups' members. Thus, there is less impact on the soil and surrounding environment, and no health issue from herbicide or fertilizer application by coffee producers.

This new variety is not only being grown by the AGPC members, but also by companies with large scale land concession. Most of these companies do not adopt the organic production methods (however, recently some of them have applied for organic certification from the Laos Certifying Body and are in the transition stage). This will indirectly benefit some coffee farmers that are located close to (and at lower altitudes to) this large plantation if fertilizer both organic and non-organic are being applied and somehow are washed down to their coffee farm. However, these farms cannot be said to produce organic coffee. Also, most of the large scale coffee plantations grow coffee without shade, thus, insect, pest and weed control relies on pesticides and herbicides. When these chemical are being applied in these large scale plantations, they will affect small-medium scale producers who do not rely on chemical inputs, particularly from insects and pests. This is because these insects and pests will migrate to coffee

plantations with no protection. The environmental impacts of coffee plantations in Laos have not been explored. For future research this shall be one of the interesting topics to be studied, particularly after the introduction of the new coffee variety.

5.2 General Information and Findings of the Study Area

5.2.1 Geography

The study took place in Paksong district which is located about 50 km to the northeast of Champasack province. It has a total area of about 348,736 ha (3,487.35 km²). One well-known features of this district is that the majority of the area is located on the Bolaven Plateau (PDPAO, 2009).

For the 10 sample villages, although located in the same district, there have been several noticeable climatic and topography differences among them. Geographically, as shown in Table 29, all villages are located at altitudes greater than 1,000 meters with Phou Oay located at the highest elevation of 1,310 meters and closest to the center district. The village that is located furthest to the center district is Maysaisomboun village. Travel to these villages except for Katuat, Lak 43 and PhouOay villages is difficult, especially during the rainy season when roads become inaccessible for small vehicles. Villages like Maysaisomboun and Phoudamkhouane cannot be accessed as the road turns to mud and small streams cut off the road.

During the visit from the end of March to early April 2011 (end of the dry season), out of the 10 sample villages, Nong Luang was the only village that did not show any sign of dryness or drought. Coffee plots and plants observed in the village did not exhibit wilting symptom. One supporting reason for this difference is the villages is

located close proximity to Dong Hoa Sao National Conservation Forest. This forest influences the micro-climate of the village.

Table 29: Villages Altitudes and Distance from Centre District

Villages	Altitude meters a.s.l	Location from District	Distance (km) from center village to District Administration Office	Type of Road
Katuat	1,200	East	12	Asphalt
Lak 43 (Km 43)	1,065	West	7	Asphalt
Maysaisomboun	1,000	North West	27	Dirt
Phoudamkhouane	1,000	North East	18	Dirt
Nongyathueng	1,000	North	15	Dirt
Kapheu	1,120	North	12	Dirt
Xetapong	1,190	North	7	Dirt
Nong Luang	1,180	South	12	Dirt
Phoumakor	1,220	South	10	Dirt
PhouOay	1,310	South	4	Dirt

Source: Field Work in March-April 2011

5.2.2 Demographic

In 2010, the Paksong district consisted of 11,686 households with a total population of 66,104, and females accounting for 32,655 (PDPAO, 2010). The average number of persons per household is about 5.6. The district is divided into 10 groups of 88 villages. There is a total of 17 ethnic groups in the district. “Yrou” ethnic group accounts for about 65% (under Mon-Khmer Language Family) and; Laos Loum account for 20% (under Lao-Tai Language Family). The average population density is about 5.3 ha/person. Average population growth rate is at 2.9% per year. The majority of the population (90%) lives in the remote areas and 95% of these people’s livelihood involves agricultural activities (PDPAO 2009).

The study covered 10 out of 88 villages in Paksong district which accounts for about 11% of the total numbers of villages. Detailed demographic data of each sample village is summarized in Table 30.

Table 30: Demographic of 10 Sample Villages in Paksong District

Villages	Families	Households	Population	
Visited Villages	Total		Total	Female
Maysaisomboun	187	162	944	452
Lak 43 (Km 43)	347	304	1,793	763
Phoumakor	60	52	312	145
Phoudamkhouane	227	188	1,044	509
Nongyathueng	104	92	520	208
Nong Luang	109	94	514	222
PhouOay	94	92	519	264
Xetapong	171	171	878	418
Kapheu	186	179	1,263	622
Katuat	135	122	954	493
Total from Sample Villages	1,620	1,456	8,741	4,096
Total in Paksong District		11,686	66,104	32,655
% of Sample Villages		12.46%	13.22%	12.54%

Sources: Field Visiting in March-April 2011

The majority of the population in the 10 sample villages is of the Laos ethnicity (61%)¹⁸ followed by Yrou (34%). The majority of the population is Buddhist with less than 6% Animist and 2.5% Christian.

The demographics of the 22 sample households is summarized in Table 31, and consisted of 159 people that 50% were female. Average household size was 7.2 people per household which is higher than average for the district and village levels. In just over half of these households, children aged 12 and above are considered as household

¹⁸ note that this is not said to be all pure Lao ethnicity as there have been cross marriage between ethnicities, which parents of these cross marriage often refer their new born children under Lao

workforce that can help in coffee farming activities and other livelihood / income generating activities. In the other households, parents have placed a priority on schooling for their children and adults make up the bulk of household labor. With a limited labor force, this has become one of the main constraints to the expansion of the household coffee production and adoption of organic production practices.

Table 31: Demographic of 22 Sample households

	Numbers	Organic	Non-organic	Total
Total members number in the household	Total	146	13	159
	Female	79	8	87
Adult members (21 years and above)	Total	81	3	84
	Female	40	2	42
Children (20 years old and below)	12-20	38	5	43
	0-12	27	4	31

Sources: Field Visiting in March-April 2011

The majority of the people from these household are Lao Loum (15 households) followed by Laven (Lavi) and Xuay ethnicity (under Mon-Khmer Language Family). All households stated that they are Buddhist. However, some households were observed to also practice Animism.

5.3 Socio-Economic of Paksong District and Sample Villages-the Study Area

5.3.1 Livelihood

District

The district GDP from year 2004 to 2008 was at 116.92 billion LAK (about US\$13.7 million) based on fixed price in 1996. The average GDP growth rate was at 8.3% per annum during this period (PDAPO 2009). GDP per capita was at US\$ 643 per annum. In 2008, the main contribution to GDP was from the agriculture and forestry sectors which accounted for about 83% (coffee contribute to more than half of this percentage).

In Paksong, 95% of people's livelihood has been involved in agriculture activities. The most important agriculture activities in the district include coffee, vegetables and livestock. The total coffee production area was 34,378 ha with actual harvesting of coffee cherries occurring on 22,795 ha. Productivity was about 0.93 ton/ha (of green coffee) yielding about 21,116 tons/year, an increase of 23% over the previous five years. Other important crops in the district include tea, cabbages, and potatoes yielding up to about 13,000 tons/year. Livestock raising (cattle, pig and poultry) and aquaculture are also important activities in the local economy.

Sample Villages

As with majority of the people in Paksong district, agriculture is the most important activity for the people in the 10 sample villages. The majority of the households in the sample villages obtain more than 90% of their income from agriculture activities, particularly from growing coffee. Vegetables have also been grown in most of the sample villages, but mostly for household consumption. In Nongyathueng and Xetapong large amount of vegetables are grown for sell and export to Thailand. Livestock (mainly cattle) have also been raised. For the villages, Livestock production is an indicator of their wealthy status. The livestock serve as both a store of wealth and important organic fertilizer for their coffee plantation.

5.3.2 Income and Expenditure of Sample Villages

The total income of the 9 sample villages for 2009-10 was estimated at 32,183 million LAK (US\$3.78 million) representing about 28% of the district's total income. Details of the income from each village is summarized in Table 32, and ranges from about 920 million LAK (US\$0.11 million) to about 11,000 million LAK (US\$1.29

million) for the year 2010. All of the sample villages reported increases of 5% to 70% in village income compared to the previous year. The increase in income was reportedly from increased yields from their coffee production.

Table 32: Income of 10 Sample Villages, 2009-10

Villages	Total no. of Household	Approximately income for the village in 2009-2010. LAO KIP (LAK)	US\$ (Exchange rate =8,441 ¹⁹ LAK/US\$)
Maysaisomboun	162	6,298,000,000	746,131.18
Lak 43 (Km 43)	304	5,320,000,000	630,266.41
Phoumakor	52	920,000,000	108,993.44
Phoudamkhouane	188	11,000,000,000	1,303,182.43
Nongyathueng	92	2,000,000,000	236,942.26
Nong Luang	94	940,000,000	111,362.86
PhouOay	92	N/A	
Xetapong	171	1,475,000,000	174,744.92
Kapheu	179	2,400,000,000	284,330.71
Katuat	122	1,830,000,000	216,802.17
Total	1,456	32,183,000,000	3,812,756.38
% of household under each annual income levels	<50 million or <5,900 US\$ (low income)	50 million to 100 million or US\$5,900 to US\$11,800 (medium income)	>100 million or >US\$11,800 (high income)
	63.61%	32.13%	4.26%

Sources: Field Visiting in March-April 2011

The majority of the households in the 9 villages have incomes of less than 50 million LAK per annum. The first priority expenditure from the above income (Table 32) for these ten villages is purchasing rice. For people in these villages and the majority of the Laos people, rice is an important staple for every household, especially sticky rice. Thus, ensuring that the household has rice is essential. Following rice, other important household expenditures include food, clothes, medical care, and education for those who

19) DSL (2010c)

still have children of school age. remaining income is usually reinvested in their farming business - coffee plots, buying tools for clearing and preparing the land, compost and natural fertilizer, saving to pay for next year labor; and paying off loans to banks (with about 14-18% of interest per year) and private sources (which can be up to 40% or more per month, but mostly it is a short term loan and in small amount when some farmers require urgent money).

At the household level, 11 out of 20 organic coffee farmer households had income less than 50 million LAK in 2009-2010 crop years. Six households had income between 50-100 million LAK and only 3 households reported greater than 100 million LAK. For the non-organic farming households, one had income greater than 100 million LAK and the other had income between 50-100 million LAK as shown in Table 33. These two households have their houses located in the central Paksong district, while their farms are located at PhouOay village.

For fifteen of the organic coffee producing households more than 95% of their income is from coffee production, while for one household, coffee contributes only 30% of total income. The remaining households obtain 50 to 80% of their household income from coffee. For the non-organic coffee producing households, one has slightly more than 50% of their total household income come from coffee production with the remaining percentage of the income for this household from trading and support from cousin overseas. For the other non-organic coffee producer, coffee contributes less than 50% to the total household income. Some of the activities besides growing coffee that the household has been involved in include running a restaurant and guesthouse. Coffee has contributed at different levels for each household total income. However, compared to the

previous year's cultivation, income from coffee production has increased from less than 10% to more than 80% for almost every coffee producer household except for one who suffered a poor harvest in the previous years.

Table 33: Income of Sample household level, 2009-2010

Income levels	Numbers of Household Coffee Producers Under Different Annual Income Level	
	Organic	Non-organic
<50 million or <5,900 US\$ (low income)	11	
50 million to 100 million or US\$5,900 to US\$11,800 (medium income)	6	1
>100 million >US\$11,800 (high income)	3	1
Total	20	2

Source: Field Visit March-April 2011

5.3.3 Wealth Status and Food Security

Majority of the households (73%) in the sample villages regarded themselves as “sufficiently well off”. Of the remaining households 14% were regarded as “Very well off” and 13% as “Poor”. The poorest village is Xetapong. More than 84% of the household from this village were reported to be poor as shown in Table 34. In addition to determining wealth through income level, wealth indicators include housing infrastructure (roofing material, the number of rooms, toilet facilities); main source of energy for cooking and drinking; and ownership of other assets.

Six of the sample villages reported that more than 97% of the households in their village have access to electricity. Three sample villages reported that less than 60% have access to electricity. All villages reported that the main energy for cooking is either charcoal or wood. Sixty percent of the households in the sample villages have no toilet. Drinking water is from underground water for the majority of the households. Increasing

sanitation and water supply facilities are key aspects of the sample villages' development plans

Table 34: Wealthy Status of Sample Villages

Villages	Total no. of Household	No. of Household that are		
		Very well off	Sufficiently well off	Poor (marginal-"hand to mouth" -with SOME land
Maysaisomboun	162	18	142	2
Lak 43 (Km 43)	304	50	254	
Phoumakor	52	10	42	
Phoudamkhouane	188	23	165	
Nongyathueng	92	40	47	5
Nong Luang	94	15	65	14
PhouOay	92	11	81	
Xetapong	171	2	25	144
Kapheu	179	26	150	3
Katuat	122	12	104	6
Total	1,456	196	994	174
%		14%	73%	13%

Source: Field Visit March-April 2011

In Laos food security (rice availability) is used as a major indicator of poverty / wealth. Table 35 provides information on rice security in the study area. In three villages the majority of households experience rice insufficiency for over 6-8 months a year. Interviews and observations in these villages highlighted there reasons for this: a) land availability / suitability; b): government restrictions on shifting cultivation; and c): low capacity to purchase rice due to low cash crop production.

Table 35: Rice Sufficiency of the Sample Villages

Villages	Total no. of Household	The numbers household			
		with rice all year?	with rice for 9 – 11 months	with rice for 6 – 8 months	with rice for 3 – 5 months
Maysaisomboun	162	160	2	0	0
Lak 43 (Km 43)	304	304	0	0	0
Phoumakor	52	52	0	0	0
Phoudamkhouane	188	163	0	25	0
Nongyathueng	92	92	0	0	0
Nong Luang	94	54	0	40	0
PhouOay	92	92	0	0	0
Xetapong	171	30	0	0	141
Kapheu	179	176	3	0	0
Katuat	122	6	0	116	0
Total	1,456	1,129	5	181	141
%		77.51%	0.34%	12.43%	9.68%

Source: Field Visit March-April 2011

Information collected from the household surveys indicates that part of their income from coffee is used to improve house structures and buy household assets.

- Housing: 15 out of 22 households have traditional raised wooden houses which allow them to store their vehicle and other large household items underneath. The lower section can then be developed into another living area when the household has sufficient funds. Six of the sample households have completed these renovations and have two floor houses, the upper floor is mainly wood and the lower floor is concrete. One of the households is constructing a new concrete house.
- Sanitation: 9 out of the 22 sample households have bucket toilets and the rest have no toilet. All households have access to village clean water supply. Some wealthy households have installed piping for a direct household water supply.

- Household assets: All sample households have televisions, mobile phones and radios. These are important communication sources, connecting them with the outside world and access to marketing / trading information.
- Transportation: Available forms of transportation are motorbike, tractor and trucks. Twenty households have at least one form of transportation, while 7 households have all three forms. Those households that have a truck and/or tractor provide transportation services for those who do not have the vehicle.

Transportation is important because coffee farming areas are usually located away from village settlements, during harvest season in particular, farmers will make multiple trips from farm to their processing center. However, farmers generally try to minimize their trips during other times because of the cost of fuel.

5.3.4 Education and Language

Education

In July 2008, the Paksong district announced a district target that at least everyone be provided a primary school education. All villages in the study areas have primary schools. Lak 43 is the only village with a Lower secondary school. Most children ages 6 and above are encouraged to go to school. Unfortunately, there are many barriers to school attendance including: a) location - most children walk/ ride to school and for some this can be up to 2 hours per day; b) lack of teachers; c) lack of study and teaching materials; and d) the need to assist in family livelihood activities. As a result some of them have to discontinue their study.

The household survey indicated that at least 2 members of each household have attended and finished primary school. 5 of the 22 households had members that have

completed their education at a technical or higher training level. For households who still have children, the head of households or parents are keen to encourage and seek financial resources to enable them to continue their study to the highest level possible.

While supporting education is a high priority, households are often challenged with the balance between education and the need for household labor for farming activities.

Language

While 65% of the population comes from the Yrou ethnic group, the most common spoken language in the district and the sample villages is Laos. The Yrou language comes from the Mon-Khmer language family and is still being spoken among the families who come from a Yrou ethnic background but has become less used at the village level. The heads of every household are literate and can fluently speak and understand the Laos language.

5.3.5 District and Villages Infrastructure

Important district and villages infrastructure includes:

- **Roads:** The district has a relatively good road network although 16% of the villages are still difficult to access and cannot be accessed during the raining season.
- **Electricity:** Just over half of the villages in the district have access to grid electricity and in those villages 40% of households are connected. The district has a target for 90% of the villages and the households to have access to electricity by 2014. In the sample villages, the majority of the households (90%) have access to

electricity. However, in Kapheu and Nongyatheung and Xethanpong access is much lower.

- Sanitation: A pipe water system is present in the central district. Water supply for this pipe comes from underground water. The majority of the people in the district rely on underground water, followed by streams, and open-well. All sample villages mainly rely on underground water. Some villages have also constructed a central water tank to store the water and supply water through pipe to households.
- Health facilities: The district has 1 hospital with 15 beds, and 7 village healthcare centers with 21 beds. There is a total of 65 healthcare staff of which 5 are doctors and 28 are tertiary qualified nurses. This gives a proportion of 1 nurse per 1,000 people, which is very low. In the remote areas there are medicines boxes available in 24 villages. Despite, these imbalances of healthcare facilities available for the total number of people for the entire district, the region reports low incidents of sever health issues like malaria and diarrhea. In the sample villages the first point of call are village nurses (both traditional and science nurses). In case the illness is serious, villagers will either travel to the district hospital which is generally take about 30 minutes to 1 hour of travelling, or to Champasack province hospital which is located about 1 to 2 hours away from the village. The most common death incident in the sample villages is sickness at old age.
- Building infrastructure: key buildings beside the hospital present in the central district includes banks, guesthouses and a hotel, market and restaurants. In the sample villages, beside primary school and temples, all have coffee processing centers.

5.3.6 Land Use and Allocation

Paksong District

The majority of land in Paksong district is forest (58%) and agriculture (29%) (Table 36). The remaining land is used for grazing (9%) and residential / development areas (4%). Agriculture land is primarily used for growing coffee, growing vegetables and other crops, and raising livestock.

Table 36: Land Use and Land Allocation in Paksong District.

Land Allocation	Total Area (ha)	Total Area (%)
Forest	201,576.5	58%
Agriculture	102,564.5	29%
Grazing	31,940.0	9%
Resident and construction	12,655.0	4%
Total	348,736.0	100%

Source: Paksong District Agriculture and Forestry Office (PDAFO) (2009)

Thirty four percent of agricultural land has been allocated for growing coffee as shown in Table 37. Less than 5% has been allocated for growing vegetable, fruit and rice. There is a large percentage (63%) of agricultural land that is classified as unknown or unidentified land. This could potentially be allocated as concessions to private investors for trees plantation, growing coffee or may yet to be identified or recorded by the land officers. Part of it could be allocated for mining activities as several have been proposed and are under feasibility study in the southern region of the district.

Table 37: Land Allocation for Agriculture Activities in Paksong District

Agriculture Land Allocation	Total Area (ha)	Total Area (%)
Coffee	34,817.42	33.95%
Vegetable - Rained Season	2,417.55	2.36%
Fruit	970.00	0.95%
Rice - Rained Season	236.54	0.23%
Unknown/Unidentified	64,122.99	62.52%
Total	102,564.50	100%

Source: PDAFO (2009)

Sample Villages

At the sample villages the total land represents almost 4% of the total land in Paksong district. Six out of the ten villages have total land area ranging from 1,000 to 1,600 ha, while two have less than 1,000 ha, and another two have more than 2,000 ha. As shown in Table 38, about 50% of the total land areas in these villages are for coffee production with about one quarter allocated for forest area. Clearly for two villages Nongythueng and Xetapong, they have allocated land for growing vegetable.

Table 38: Land Allocation of the Sample Villages

Villages	Total Area (ha)	Land Allocation (ha)				
		Residential	Garden	Coffee Production	Forest (all types of forest)	Grazing, Vacancy and Other Unidentified lands
Maysaisomboun	2,558	14		1,260	532	752
Lak 43 (Km 43)	567	124		300	16	126
Phoumakor	1,321	5		300	1,016	
Phoudamkhouane	1,146	72		1,069		6
Nongyathueng	1,385	3	200	970	213	
Nong Luang	966	16		402		548
PhouOay	1,100			800		300
Xetapong	1,554	147	100	646		661
Kapheu	2,186	22		375	1,160	629
Katuat	1,038	29		500		509
Total	13,820	432	300	6,622	2,937	3,530
%	100%	3.1%	2.2%	47.9%	21.2%	25.5%

Source: Field Visit March-April 2011

Village level interviews indicate that all household in the study area have “Land Use Certificates”, mainly for agriculture land. Land title is also available for housing area within the village center. All except Katuat village reports to have land extension for

agricultural activities. The most important agricultural activities following coffee is growing vegetables (in 7 villages), and raising livestock (in 5 villages).

5.3.7 Land Use Issues

Villages and households in the study area have different priorities and land use issues. However, the most common concern include: a) limited water resources; b) lack of labors; c) lower soil quality; and d) disease and pest attacking their coffee plantation. Limited water resources, especially changing climatic condition affecting rainfall have been reported by 6 villages. Lack of labor is also a key issue in some villages / households resulting in their inability to expand farming areas and causing issues during harvesting season. The labor fee per kg of coffee collected has increased in recent years presenting higher costs for those 4 villages with labor shortage issues

A more specific land use issue was raised by farmers in Xetapong village, regarding a land concession provided to foreign investors for growing coffee and planting industrial trees and other crops. This concession has restricted the potential expansion of village agricultural activities by the farmers as there is no more available land for them. Also, concerns have been raised about the production method used by these investors for their coffee and other crops. Chemical fertilizers, insecticide and un-shaded coffee production method have been applied. The application of this method by these investors has affected village farmers coffee plots and farms located near to these big plantations. Famers reported an incident of their coffee plots being attacked with more insects in recent years and believe this is connected to the establishment of the coffee plantations by these investors. Village coffee plantations do not have any protection from insects as they

do not apply insecticide. During the field work, the author had visited one of the un-shade coffee plantations by that is still at the juvenile stage.

5.3.8 Coffee Production Area and Yield in the Sample Villages

5.3.8.1 Production Area and Variety

One-third of agricultural land has been used for growing coffee confirming the importance of coffee production in Paksong district (PDAFO 2009). This coffee growing area represents about 10% of the total land area in the district. The coffee harvesting area for the district represents about 60% of the country's total coffee harvested area. In addition there are thousands of recently planted Catimor coffee plantation hectares in the district. According to recent PDAFO (2009) data, about 65% of the coffee growing area has been allocated to Robusta, 34% to Catimor and 1% to Typica (see Table 39).

Table 39: Land Allocation for growing Coffee by Variety in Paksong

Agriculture Land Allocation for Coffee	Total Area (ha)	Total Area (%)
<i>Coffea robusta</i>		
- Harvested Area	21,146.00	
- New Growing Area	462.20	
- Pruning/Replanted Area	310.60	
- Non-Management Area	787.20	
<i>Sub-total</i>	22,706.00	65%
<i>Coffea arabica (Catimor, dwarf-variety)</i>		
- Harvested Area	7,293.00	
- Young Coffee Area	1,534.00	
- New Growing Area	2,857.00	
<i>Sub-total</i>	11,684.00	34%
<i>Coffea arabica (Typica)</i>		
- Harvested Area	295.90	
- Young Coffee Area	33.50	
- New Growing Area	96.02	
- Pruning/Replanted Area	2.00	
<i>Sub-total</i>	427.42	1%
Total	34,817.42	100%

Source: PDAFO (2009)

The total allocated area for coffee production in the 10 sample villages is about 6,600 ha. This represents about 19% of the total coffee production in the district. Five of the villages still grow more Robusta than Catimor. However, there has been a changing trend. It is likely that more Catimor will soon exceed Robusta in hectares grown. The main reasons for this change is that farmers in the region have experienced higher yields with this variety; shorter harvested periods (as reported by farmers they can harvest/pick coffee cherries in third year after growing); and higher levels of drought tolerance than the other two varieties. More importantly, the price for this variety is presently higher than Robusta. Thus, with these positive characteristics there is a potential for Catimor to overtake Robusta in the next 10 years. However, there are also a number of factors that may result on Robusta plantations remaining. These include: a) limited financial capital and labor ; b) strong ancestral connections to these plantations; c) preference to maintain exiting Robusta as a secondary income source because requires less care and maintenance and still provides farmers with adequate yields.

This trend is supported by information gained during household surveying. Those households with available capital reported that in the upcoming season (2010-11), more coffee Catimor trees will be planned on their farms.

Since the arrival of Catimor, those that have the capacity to adopt and effectively manage this variety have seen improvements in yields and income for their households. One household coffee farmer was able to buy a brand new truck; another was able to buy a hand grass cutting machine and motorbike for his children. One non-organic farmer stated that “Catimor variety is the new revolution of the Laos coffee sector”. However, there are always tradeoffs to these benefits. These include: a) more care and labor days

must be spent in managing and maintaining Catimor fields during cultivation; b) correct hand picking methods must be carried out during the harvest of coffee cherries; and c) precise processing approaches are required including machines and time to ensure good quality parchments are being produced.

For some farmers who have just started to grow this variety and are still in the converting and learning stage, the benefits of Catimor are yet to be realized. However, seeing the successes from some of their friends has encouraged them to continue the hard work. But for some farmers, with considerably steep landscape, limited capital to purchase organic fertilizer and labor, conversion to Catimor has resulted in lower productivity.

5.3.8.2 Farmers Scale

Base on and the AGPC members' data for 2008, the majority of farms in the 9 villages (Nongyathueng is not a member), are small scale farmers farming less than 4 ha. These farmers account for about 74% of all farmers in the study area. Medium and large scale farmers account for about 24%. The large-scale coffee farmers under AGPC have coffee production areas of up to 11 ha. However, again there are less than 10 of them, and under IFOAM principles, these famers are considered as small size producers.

Table 40: Farmers Scale Based on Galindo et al. (2007) classification at Sample Villages

Sample Villages	AGPC members (no. of families)	Large-scale farmers	Mid scale farmers	Small-scale farmers	Unclassified
	2008 data	>5 ha	4-5 ha	<4 ha	
Maysaisomboun	77	10	17	41	9
Lak 43 (Km 43)	89	5	10	74	
Phoumakor	39	11	7	21	
Phoudamkhouane	72	15	12	45	
Nongyathueng	N/A				
Nong Luang	78	11	12	55	
PhouOay	43	19	2	22	
Xetapong	73	2	3	68	
Kapheu	113	4	14	95	
Katuat	80	2	9	69	
Total	664	79	86	490	9
	%	12%	13%	74%	1%

Source: Field Visit March-April 2011

At the household level 10 out of 22 farmers are large scale-coffee farmers, while 9 are medium-scale and only one is a small-scale farmer as shown in Table 41. The small-scale farmer has a household consisting of two elderly people (but still in healthy condition), and no labor. Most of their land has been given away to their adult children. The large-scale farmers have land areas ranging from 5.3 to 15 ha and the small-scale farms have about 1.5 ha. For the two non-organic farmers, one farmer has a total land area of 10 ha and the other has 18 ha. About 77% of their land has been allocated for growing coffee.

Table 41: Farmers Scale Based on Galindo et al. (2007) classification at Sample Households

Type of Sample Households	Large-scale farmers	Mid scale farmers	Small-scale farmers	Total land	Allocated land for coffee plantation
	>5 ha	4-5 ha	<4 ha	(ha)	(ha)
Organic	10	9	1	127	98.5
Non-organic	2			28.32	22

Source: Field Visit March-April 2011

For the organic coffee farmers, they and their families have been involved in coffee production for at least 2 decades, thus coffee production is a very important component of their livelihood.

5.3.8.3 Production Yield

The productivity of the different coffee varieties in the district is provided in Table 42. As reported previously, Catimor has the highest yield per hectare followed by Robusta and Typica. Interestingly Robusta while planted on an area about 3 times bigger than Typica, only yields approximately 30% more than Catimor

Table 42: Productivity of the common green coffee variety grown in Laos.

	Robusta	Catimor	Typica
Total Area (Ha)	21,146.0	7,293.0	295.9
Estimated Yield (Tonne/Ha)	0.8	1.5	0.4
Total Yield (Tonnes/Ha)	16,916.8	10,939.5	118.4

Source: PDAFO (2009)

The estimated average yield (1.8 tons / ha) of green Catimor coffee bean in the sample villages is about 0.3 to 0.6 tones/ha higher than the district data as shown in Table 43. (Assuming every coffee tree gives coffee cherries, thus, actual numbers shall be varied). This is confirmed by AGPC members data from 9 sample villages which indicates that 95% of the members were able to produce more than 1 ton per ha of green

coffee – with the maximum record of 2.6 tons per ha in Lak 43 village. However, for some villages the difference is significantly greater. Nongyathueng (not a member of AGPC), reportedly can harvest up to 3 tones/ha of green coffee. The difference between each village’s harvested yield depends on the application of field management methods including: a) coffee plant spacing; b) numbers of coffee trees planted per ha; c) amount of fertilizer application d) existence of shade trees; and d) age of the coffee trees.

Table 43: Estimate Productivity of the Green Coffee Catimor in the ten Sample villages

Sample Village	Approximate numbers of coffee trees plant per ha under different spacing (m x m)		Approximate coffee cherries kg per tree per season	Approximately green coffee per season (Tones/ha) ²⁰	
	2x1.5	1.5x1.5 or <		2x1.5	1.5x1.5 or <
Maysaisomboun	3,300	4,000	2.5	1.34	1.63
Lak 43	3,300		3	1.61	
Phoumakor	3,300		3	1.61	
Phoudamkhouane	3,500		3-5	1.71-2.85	
Nongyathueng		4,000	3-5		1.95-3.26
Nong Luang		4,300	3		2.10
PhouOay	3,300		3-5	1.61-2.69	
Xetapong		4,000	2.5		1.63
Kapheu		4,000	2		1.30
Katuat		4,000	3		1.96
Average	3,340	4,050	3.3	1.80	2.18

Source: Field Visit March-April 2011

At household, the average yield for households in 2010 varied from less than 0.2 tons/ha to almost 1.8 tons/ha of green coffee (Table 44). The average yield was at about 1 ton of green coffee per ha lower than the village level. Note that household No. 21 is a non-organic producer, which can produce about 1.22 tons/ha of green coffee. However,

20) Based on AGPC parameter, 6.135 kg of coffee cherries = 1 kg of green coffee bean

the lower yield posted for this farm in previous season's impacts was due to frost and disease.

Table 44: Estimate Productivity of the Green Coffee Catimor in the ten Sample Households

Household	Approximately, numbers of coffee trees planted per ha	Estimated Green coffee (Ton per ha)				
		2006	2007	2008	2009	2010
No.1	4,000	-	-	0.08	1.14	1.63
No.2	3,000	-	-	0.04	0.57	1.06
No.3	4,000	-	-	0.07	0.49	1.14
No.6	3,000	-	0.31	0.65	1.14	1.30
No.9	4,000	-	-	0.16	0.33	1.09
No.10	4,000	1.14	0.98	1.14	1.30	1.79
No.11	4,300	-	-	0.07	0.14	0.17
No.12	4,000	-	-	0.02	0.03	0.68
No.13	4,000	-	0.10	0.13	0.29	0.23
No.14	3,300	0.27	0.27	0.41	0.61	1.14
No.16	4,500	-	-	0.005	0.65	1.22
No.17	2,500	-	0.01	0.11	0.24	0.33
No.18	2,000	-	-	0.33	0.81	0.65
No.19	4,000	0.16	0.33	0.43	0.33	0.76
No.20	4,000	-	-	0.33	0.65	1.30
No.21	3,300	-	-	0.29	0.61	1.22

Source: Field Visit March-April 2011

5.3.9 Coffee Production Method in the Study Area

Cropping System Environment

Adopting Catimor and the associated cropping system is considered new for most coffee producers in the ten sample villages. Most of them have been growing this variety for less than ten years and are still in the learning and adapting stage. Shade trees are required for growing Catimor. However, it is not known what proportion of the total Catimor growing area in the district is planted in this way. The shade tree cropping system means less activities are done to alter the farmers growing coffee land surface,

and most of the large original trees are maintained. Figure 4 shows an example of a secondary forest shade tree coffee cropping system which relies on a vast number of tree and plant species. This type of system has traditionally been used for growing old coffee variety – farmers allowing secondary forest to grow within their coffee plantations. However for new Catimor plantations, the trend is to clear land and plant single (or few) varieties of shade trees. The most commonly used shade tree variety in the study area is the *Erythrina subumbrans* (“Tton Tong”, is the local name) or the December tree, which belong to the Leguminosae family.

Figure 4: Forest like Shade Trees Organic Coffee Cropping System



Source: Nong Luang Village

According to Yusuf (1997), *E. subumbrans* is “one of the best shade trees for a wide range of crops”, if it is grown in an area not highly affected by diseases and pest. It

is a fast growing tree with the important property fixing atmospheric nitrogen, where its leaves and branches are easily decomposed, and its shade can be adapted well to the main crop requirements. It is a great source of natural fertilizer as 100 g dry matter of decomposing *E. submubrans* contains about 1.5-3 g of Nitrogen, 0.2-0.35g of Phosphorus and 1-2 g of Potassium (Yusuf 1997). In the study area, *E. submubrans* can be easily propagated (using stem cutting) and grown. FAO supports the use of this tree in their guidelines and lists other potential trees species including *Gliricidia sepium* (Khae Falang), *Cassia siamea*(Khi Lek), *Melia azedarach*, (Khao Dao Sang, Neem or Bead tree), and *Paulownia tomentosa* (Princess tree) (Winston et al. 2005).

In the study area Tton Tong is the most widespread shade tree grown with Catimor. The majority of the farmers reported that about 500 to 555 trees of *E. submubrans* are grown in 1 ha of about 3,300 coffee trees. The interviewed farmers said they do not have to buy this plant, but can easily propagate from the trees that they already have and share among coffee farmers. Besides this species, fruit trees such as jackfruit, papaya, banana, pineapple and other natural trees which have shading property and grown for households consumption are represented in the sample farms (See Figure 5 to 8 for examples of Catimor cropping system under *E. submubrans* trees and others) Moreover, some of the local vegetables such as lemongrass, chilies and eggplants are also intercropped in young coffee plots. In farms visited during this study, fruits and vegetables are not grown for commercial market nor are they in proper or large intercropping system. There are verbal reports that there have been some coffee farmers who practice proper intercropping between coffee and rice or vegetables in the first few years of growing coffee in the study area.

Figure 5: Well developed organic coffee plot under *E. submubrans* and other trees



Figure 6: Well developed organic coffee plot mainly under *E. submubrans* trees



Source: Figure 5- Maysaisomboun Village and Figure 6- Phoudamkhouane Village

Figure 7: Well developed organic coffee plot under *E. submubrans* and other trees



Figure 8: Well developed organic coffee plot under *E. submubrans* and other trees



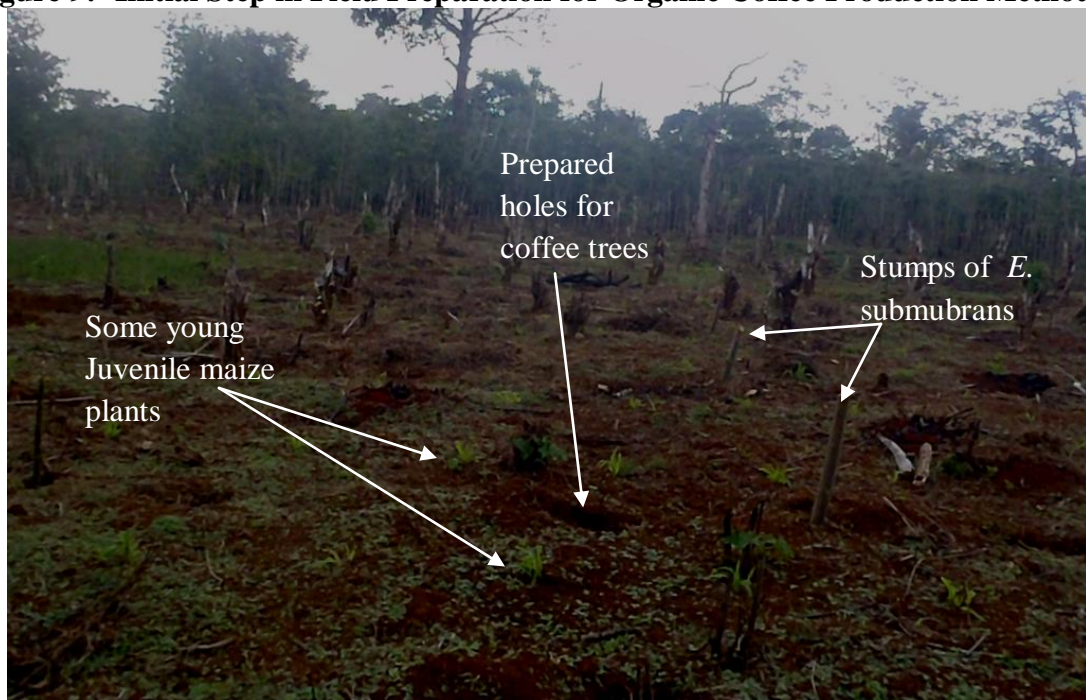
Source: Figure 7- Xetapong Village and Figure 8- PhouOay Village

Preparation of the Catimor Field

For organic farming, the initial step that farmers take to prepare a Catimor field is to clear and remove or cut most of the grass, shrubs and trees that will be competing for

nutrients or not benefiting the coffee trees. Manual labor is used in preparing the coffee field. Next, some of the short term crops such as maize will be planted (if applicable) at the same time as the shade trees are established. After that, organic compost will be placed in holes that have been prepared for the coffee trees. Because only manual labor is used, some of the old coffee tree stumps and weeds cannot be fully removed as shown in Figure 9.

Figure 9: Initial Step in Field Preparation for Organic Coffee Production Method



Source: Lak 43 village

In contrast, the one non-organic coffee farm observed during the study has access to large amounts of capital for labor and machinery. Tractors with installed clearing equipment are used in land clearing and field preparation. Thus, all trees stumps and weeds have been removed (Figure 10). However, the farm owner does maintain the

residual from the clearing process and prepares this for compost to be reapplied back to the area.

Figure 10: Initial Step in Field Preparation for Non-Organic Coffee Production Method



Source: Non-organic coffee farm in PhouOay Village

This non-organic farm mainly grows Catimor. Chemical fertilizers, insecticides and pesticides are being applied in the existing coffee plots. However, the farmer has also adopted and integrated organic cropping system approach to his farm to enhance the soil fertility. Organic compost has been prepared and *E. submubrans* trees have been grown in this non-organic farm as shown in Figure 11 and 12.

Figure 11: Prepared Organic Compost (mixed of livestock manure and rice milling)



Figure 12: Well developed non organic coffee plot under *E. submubrans* trees



Source: Non-organic coffee farm in PhouOay Village for Figure 11 and 12

The common feature that both organic and non-organic coffee farmers (for farms fully established) is that their main expenditure is on labors, mainly during harvesting season. Farmers generally pay for the labor per kg of picked coffee cherries, generally in the range of 500-1,000 LAK/kg (0.06-0.12 US\$/kg).

Processing System

The wet method is used in processing Catimor in the ten sample villages. As they are members of AGPC, the processing takes place at the processing center known as “Centre Collectif de Traitement du Café par Voie Humide - CCTCVH (Collective Center for the Wet-Processing of coffee)”. An example of one of the processing centers used by the coffee producer’s group in Nong Luang village is shown in Figure 13. The upper top left corner is a picture of the main building of the center where the coffee is dried on wooden racks. The top right corner of the Figure is the picture of the pulping machine to remove the skin of the coffee cherries. The two bottom pictures show the channel for the waste water from washed and milled coffee.

Figure 13: Nong Luang Coffee Producers Groups Wet Processing Center



Source: Nong Luang Village

Figure 14 illustrates activities involved in the wet processing method from turning coffee cherries to parchments.

Figure 14: Involved Steps of Wet Processing from Coffee Cherries to Parchments



Source: AGPC 2011b

5.3.10 Markets

Members of the AGPC have prearranged agreements about the quantity of coffee to be supplied. The member's group will harvest and process coffee parchments that meet the standard quality and deliver to AGPC. For the parchments or cherries that do not meet the standards, farmers will sell them through normal channels including village buyers

(middle-men), coffee collectors, and wholesalers. When travelling from Pakse to Paksong close to and within the central district it can be observed that there are big advertisement boards/signs reading “We buy coffee” with contact phones numbers displayed

5.4 Working as a Cooperative under AGPC

5.4.1 AGPC Operation and Its Members

AGPC has a total of 53 coffee producers groups with a total of 2,662 members (families). The numbers of groups remain the same, but the number of members has increased slightly (2%) since the AGPC was established (in 2007). The 9 villages visited during this study represent about 16% of the total AGPC producer groups and 25% of the total number of members (Table 45). All of these villages formed their groups in 2006, with the exception of Katouat village which formed its group in 2003. The numbers of members in the 9 villages/groups have remained the same, except for Phoudamkhouane which had decreased, while Maysaisomboune which had increased.

Table 45: Numbers of members of producers groups Under AGPC in the Sample Villages

Group Name	Numbers of members in the group based on 2011 report	Numbers of members in the group based on 2009 report
Katouat	76	76
Phou Oy	43	43
Phoudamkhouane	43	72
Maysaisomboune	72	49
Kapheu	113	113
Lak 43	89	89
Nonglouang	78	78
Phoumakô	39	39
Xétapoung	73	73
Total 9 Groups	626	632
Total of 53 Groups of AGPC member	2,662	2,609
%	23.5%	24.2%

Source: AGPC 2010

The key objective of the AGPC is to represent the producers from these groups in front of provincial, national, and international authorities to promote and sell Laos coffee. Thus, AGPC functions like a representative office for these 53 producer groups. To support the groups three main departments have been established under the management of the organization including the Trade, Production, and Administration departments. Within each department there are sub-sector services and management, and within each producers group there is also a management and administration division (See Appendix D for AGPC and Producers Group Member of AGPC Flow Chart).

5.4.2 Benefits and Constraints of becoming members of AGPC

During focal group discussions and household surveys, farmers were asked about the benefits and constraints of organic farming and membership in AGPC. The most frequent answers are listed in the order of importance as following:

- Receive higher coffee price;
- Safer for growers;
- Enhance and maintain soil fertility;
- Obtain support and assistant to the village and learn new techniques;
- Benefit consumers and environment;
- Support the government program;
- Access to better quality beans (after receiving training);
- Demand from international markets; and
- Lower input costs.

In relation to the response “received higher coffee price”, farmers also stated that they have a stronger bargaining position with middlemen. Since forming the group, the

coffee prices received by farmers through middlemen have improved and increased although not as high as the price provide through AGPC.

The question was also asked “why have some coffee producers in the village chosen not to practice organic coffee production solely and become members of AGPC?”

The common answers are listed below:

- Intensive labor required and additional time for caring for the coffee trees;
- Preference in using synthetic inputs or equipment that is not permitted under AGPC requirements for organic production;
- Lower yields;
- Time required to attend group meetings;
- Insufficient organic compost plus high transportation costs for delivery, and some farmers do not know how to prepare correctly;
- Preference for an upfront price; and
- Late adopters - Non-members are still observing the outcomes of AGPC members.

5.4.3 Rules and Regulations

The establishment of AGPC complies with the laws and regulations of Laos, and other donor requirements. Relevant national laws and regulations include: Agriculture law (1998 version); Organic Agriculture Standards (2005 version); Laos Certify Body Standards (2010), and Decree on Cooperative (2010 version). Also, as the organization is operated at provincial level, it has to comply with the required regulations at this level. Moreover, as AGPC is operating and promoting organic and Fair Trade activities, it also

complies with the organic and Fair Trade standards and principles from IFOAM and FLO.

To ensure the rights of coffee farmers and producers groups are being embraced, the Interior Regulation of AGPC has been prepared and shall be finalized very soon. Also, the Internal Control System of Bio Agriculture Manual for AGPC was developed to guide the group's inspectors. This is to ensure that farmers and producer groups' activities are being closely monitored and comply with the organizations regulations, international standards and markets requirements. Meeting these requirements is one crucial factor for the sustainability and reputation of the organization, which is said to operate under organic and Fair Trade principles.

There are also processing requirements to ensure the coffee meets the required export quality. These requirements are based on the type III coffee of the CCTCVH standards which transforms coffee cherries into dried parchment coffee (12% Relative Humidity) (Tulet 2009). 10 principles have been developed that members of AGPC producer groups must comply with:

- 1) The center will only accept 100% ripe coffee cherries and will not accept unripe green coffee, black, half ripe or other types of cherries;
- 2) The center will only accept fully ripe and fresh cherries that have been picked within the same day (no overnight cherries);
- 3) The cherries will then be further selected during the washing process. Those cherries that float will be removed from the container and be processed as type II coffee;

- 4) The selected cherries will be pulped in a machine that has to be cleaned and set to the required standard;
- 5) After that the pulped cherries (white beans) are sent to a channel where water is continuously running to remove the mucilage from the beans. At the same time, the inspectors will check for the percentage of white beans;
- 6) The selected parchments will then be fermented or soaked in clean water over night time (for 12 hours) and must be washed the following morning prior to drying in the drying panels;
- 7) When the fermented parchments are being washed, the floated beans must be removed and further processed as type II coffee;
- 8) The parchments are then dried under the sun and stirred very often in the first two days to ensure that drying is equally distributed. At night time the drying parchments must be covered with sheets to avoid moisture from attaching to the bean. Also, the remaining cherries and other substances beside required parchments must be removed;
- 9) When the parchments are dried to 11 to 12% of Relative Humidity (using a measurement tool), they are stored in a bag, weighed and then placed in a clean location with good air circulation; and
- 10) Good quality coffee beans start from clean tools and areas, thus, every area at the processing center must be in a clean condition and tidied up every day.

A big plastic poster listing these ten principles has been prepared for all members of producers groups and is displayed in the processing center. This display is presented in all 9 processing centers visited during this study.

5.4.4 Products and Markets

Since the establishment of AGPC in 2007, through the CCTCVH group wet processing center, the total amount of processed parchments of Arabica and Robusta have increased. In 2007-08, it was less than 200 MT, however, in 2009-10, the processed parchments more than double to about 554 MT (see Table 46) 100% of these parchments were transported to the factory (the construction of AGPC factory, warehouse and lap testing building were completed at the end of 2010) for hulling (removal of the crust in order to obtain the washed green coffee). Almost 100% of the washed green coffee was exported to international markets.

Table 46: Total products of AGPC member's producers groups 2007/08-2009/10

FY	Arabica (MT)		Robusta (MT)		Total (MT)	
	Cherries	Parchment ²¹	Cherries	Parchment ²²	Cherries	Parchment
2007-08	945	179	66	19	1,011	198
2008-09	2,358	446	84	24	2,441	470
2009-10	2,280	431	418	123	2,698	554

Source: AGPC 2010

The 2009-2010 total products made up a total of 23 shipping containers (a 20 foot) exported mainly to Switzerland and France. It is expected that the exported volume will increase to more than 30 containers in 2010-11 and more than 70% of the total export will be Arabica.

In 2009-10, the actual total delivered Arabica cherries was 2,280 tons from 40 producer groups compared to the expected amount of 3,251 tons - 30% lower than the expected. Out of the 40 producers groups that supply Arabica coffee, only 6 of them can meet the target volume. The 9 groups visited during this study represented more than

21). 6.135 kg of cherries=1 kg of parchments

22). 3.38 kg of cherries = 1 kg of parchments

32% of the total Arabica yield and about 28% of the actual parchment production. Of the 9 groups, only the Maysaisomboune group was able to meet its target and was able to supply AGPC with more than 340 tons of cherries or about 71 tons of coffee parchments (see Table 47). Maysaisomboune represented about 16% of the total actual harvested yield and processed parchments.

Table 47: Amount of Arabica coffee being processed at AGPC Wet Processing Centers in 2009-2010

No.	Group Name	Expected/ Planned Harvesting Cherries (Kg)	Actual Cherries Deliver to the Center (Kg)	Achieved Percentage	Actual Produced Parchments (Kg)
1	Katouat	28,300	-	0%	-
2	Phou Oy	250,950	136,398	54%	28,036
3	Phoudamkhouane	120,400	107,322	89%	21,342
4	Maysaisomboune	340,700	377,189	111%	70,976
5	Kapheu	153,800	42,690	28%	7,745
6	Lak 43	132,350	31,335	24%	5,216
7	Nonglouang	57,330	34,054	59%	6,677
8	Phoumakô	43,800	8,349	19%	1,581
9	Xétapoung	32,000	12,265	38%	2,323
	Total 9 Groups	1,159,630	749,602	65%	122,185
	Total 40 AGPC member	3,251,650	2,280,058	70%	430,770
	%	35.7%	32.9%		28.4%

Source: AGPC 2010

5.4.5 The Economics Benefits AGPC's Delivers to Its Members

AGPC Returns:

The financial benefits from exporting and selling coffee through AGPC have continued to grow. In 2007-08, the total return from was 3.3 billion LAK. Since then the value has increased more than three times in less than 5 years and now totals 11.8 billion

LAK (excluding the Fair Trade premium) as shown in Table 48. From this total sale value, Arabica accounted for more than 80%.

Table 48: Total Sales and Returns by AGPC from 2007-2010

FY	Total Sale Volume (MT)		Return	
	Parchments	Green Bean ²³	Billion LAK	US\$ Equivalent ²⁴
2007-08	198	161	3.3	360,337.42
2008-09	470	384	7.6	930,450.88
2009-10	554	400	11.8	1,397,959.33

Source: AGPC (2010)

After deducting all the related expenses and payments to AGPC members, AGPC has been able to accumulate 11.84 billion LAK up to August 2010. This money will be reinvested into supporting the function of the group.

How does AGPC determine the price for its member:

AGPC data indicates that Arabica and Robusta parchment prices provided to members have been greater than local market prices. Prices paid to AGPC from its markets are green coffee prices. Prices given to AGPC members are green coffee price minus cost (parchment prices). Based on AGPC 2009-10 Liquidation (Financial) Report on washed Arabica, the price for washed Arabica parchments was 20,425 LAK/kg (2.46 US\$/kg using 8,292.08 LAK/US\$ exchange rate).

This price was determined by taking the total revenue, minus total expenditures (excluding Fair Trade) and dividing by the amount of parchments received. Table 49 provides a summary of AGPC 2009-2010 Liquidation report on Washed Arabica product (AGPC 2011c). There were 20 sale transactions presented in this report. Out of these total transactions, 9 were certified Fair Trade-bio (organic) coffee sales, 3 Fair Trade coffee

23). Estimate quantity for both Arabica and Robusta

24). Estimated value by using annual average exchange rate of 9,158.083 for 2007-08 FY; 8,168.083 for 2008-09 FY; 8440.875 for 2009-10 FY (DSL, 2010c)

sales, and the remaining from coffee samples and local trading. The total trade value for these transactions after bank fees were deducted was 10,000 million LAK (1.2 Million US\$). The dollar value includes all income from international trading, while the value in Laos KIP includes both converted dollar traded value plus local traded value.

The Fair Trade premium was from international market sources and included 7 transactions for a total of 615 million LAK. This Fair Trade premium was deducted from the total sale value in LAK, equaling 9,600 million LAK. After that, total expenditure of more than 822 million LAK from related expenses under AGPC management was deducted as shown in Table 49. However, it has to be noted that Fair Trade and Organic Certification fees are not included in this calculation. According to what has paid by AGPC, the Fair Trade annual fee was 6,000 Euro or about US\$, 8,500 and the organic fee was 200,000 Thai Baht or US\$. 6,500 From this calculation the final income after deducting the Fair Trade premium and all related expenses was 8,800 million LAK. This final value was then divided by the total delivered parchments of more than 430 thousand kg, providing the price of washed Arabica parchments provided to coffee farmers of 20,425 LAK/kg as shown in Table 50.

Table 49: Summary of AGPC 2009-2010 Liquidation report on Washed Arabica

	Values & Volume	Notes
Total Sell Value in (US\$)	1,211,936	Sum of 2008/09 and 2009-/0 values
USA Bank Fee (US\$)	1,180	
LDB Bank fee (0.1%)	1,211	
Total Sell Remain (US\$)	1,209,545	
Average Exchange Rate (LAK/US\$)	8,292	
Total Sell Value in (LAK)	10,116,851,145	Sum values with different exchange rates in each month
Total Green Beans (kg)	350,783	2009-10 CY volumes

	Values & Volume	Notes
Fair Trade (FT) Premium (LAK)	615,412,260	6 FT-BIO + 1 FT values
Last Value (LAK)	9,621,446,885	Excludes Fair Trade premium value
AGPC Expenses	Value in LAK	Equivalent to US\$
Sack and Logo	124,768,904	15,047
Transport	258,007,640	31,115
Assurance	11,443,192	1,380
Taxes	158,930,000	19,166
Export service	37,942,250	4,576
Bank charges	19,823,981	2,391
Processing fee (200 LAK/kg)	77,001,146	9,286
Prim AGPC 0.4%	38,485,788	4,641
Commission 0.01%	96,214,469	11,603
Total	822,617,369	99,205

Table 50: AGPC Groups Members Delivering and Receiving

	Value and Volume	Equivalent to US\$
Final Value After Expenses Deduction (LAK)	8,798,829,516	1,061,112.47
Delivered Parchment 2009-2010 (kg)	430,770.0	
Price of Parchment (LAK/kg)	20,425.82	2.46
FT premium (LAK/kg) (50% to groups 50% to AGPC)	1,428.63	0.17

Source: Modified from AGPC 2010

The 20,425 LAK/kg (2.46 US\$/kg) price included the bio (organic) premium, but excluded the FT premium because FT is not received individually but distributed as a premium to each Group. The received price was 77% of the certifying body Fair Trade minimum price (2.75 US\$/kg) plus organic premium (0.44 US\$/kg) of 3.19 US\$/kg.

For the Fair Trade premium the total received value was about 0.17 US\$/kg and also represents about 77% of the Fair Trade standard premium of 0.22 US\$/kg. However, only half of this value actually goes to the producer groups. Each producers group will vote and decide how this premium will be used. Recently, the available Fair Trade

premium has been allocated for capacity building and operation of the processing center. At the AGPC level, the premium has also been voted to be used for capacity building training and invested in part of the coffee factory construction (hulling, grading, warehouse, and etc...).

Table 51 below provides information on the price received by AGPC from the sale of Arabica coffee excluding the Fair Trade premium. Prices for all 7 sales were all well above minimum Fair Trade price. Even the lowest price obtained for the sale of non certified organic (sale 5) achieved a price well above the Fair Trade minimum (2.75 US\$/kg).

Have AGPC meet the International Standard Price and Premium:

Operating under the small farm cooperation, individual farmer will never receive 100% of what has been provided and set by the international standard, there must always be service fees and related expenses that have to be deducted. However, the question is has the Cooperative been able to receive at least 100% of the prices what have been set by the standards. Based on 2009-10 export volume and returns from sales from FT-Bio and Fair Trade markets, on average the cooperation has received higher than the FLO Fair Trade and organic premium standard price from the markets (3.19 US\$/kg) by about 9%. An observation at individual market level is shown in Table 51, all sales except for sale No. 5 has provided a higher price for AGPC.

Table 51: AGPC received Price versa the Organic and Fair Trade Standard prices

Payments on Sales	Remaining Value after bank fees deduction and excluding Fair Trade Premium		Green bean	Price per kg of Green bean		Note
	US\$	LAK		Kg	US\$	
No.1	138,816	1,151,075,523	38,400	3.62	29,976	FT-BIO
No.2	375,176	3,110,989,929	115,200	3.26	27,005	FT-BIO
No. 3	48,122	399,035,134	13,200	3.65	30,230	FT-BIO
No. 4	174,507	1,447,023,046	54,000	3.23	26,797	FT-BIO
No.5	116,755	968,140,460	38,400	3.04	25,212	FT
No.6	279,501	2,317,641,179	76,800	3.64	30,178	FT-BIO
No.7	1,178	9,766,942	300	3.93	32,556	FT-BIO
Grand Total	1,134,055	9,403,672,213	336,300			
Average price per kg of green bean of 6 payments				3.48	28,851	
FLO Fair Trade Minimum Price+ Organic Premium				3.19		

Source: Modified from AGPC 2011c

In terms of the Fair Trade premium, from 2009-10 exported volume and received premium from 7 export sales, AGPC received the rate set by FLO of 0.22 US\$/kg of green bean (Table 52). This premium is shared amongst the AGPC member groups based on the total kg of parchments supplied by each group.

Table 52: AGPC received Fair Trade Premium and the FLO Fair Trade Premium

Payments on Sales No.	Green bean	Fair trade premium			Note
		Kg	Total	US\$/kg	
No.1	38,400	70,857,608	0.22	1,845	FT-BIO
No.2	115,200	211,937,898	0.22	1,840	FT-BIO
No.3	13,200	24,304,216	0.22	1,841	FT-BIO
No.4	54,000	97,905,404	0.22	1,813	FT-BIO
No.5	38,400	70,078,767	0.22	1,825	FT
No.6	76,800	139,785,044	0.22	1,820	FT-BIO
No.7	300	543,324	0.22	1,811	FT-BIO
Grand Total	336,300	615,412,260	0.22	1,828	
FLO Fair Trade Premium			0.22		

Source: Modified from AGPC 2011c

5.4.6 The Financial Return to AGPC Producer Group Members

Table 53 provides information on the total return for the 9 villages in the study area in 2009-10. This represents more than 33% of the total AGPC returns.

Maysaisomboune is the leading group with the highest return and total Fair Trade premium, representing almost 50% of the total value for the 9 villages, and more than 16% of the total for the 40 groups. However, the return for the Katouat group is nil as the group did not supply coffee to AGPC in 2009-10 as well as the previous financial year. A total of 2 groups include Katouat did not supply coffee to AGPC.

Table 53: 2009-10 FY Return and Fair Trade Premium to AGPC Members

Group Name	Total Return to the Groups (20,425 LAK/kg)	Total Fair Trade Premium (LAK)
Katouat	-	-
Phou Oy	572,658,290	20,027,000
Phoudamkhouane	435,927,850	15,245,000
Maysaisomboune	1,449,743,000	50,700,000
Kapheu	158,197,976	5,532,000
Lak 43	106,541,077	3,726,000
Nonglouang	136,383,200	4,770,000
Phoumakô	33,661,751	1,177,000
Xétapoung	49,573,465	1,734,000
Total 8 Groups	2,942,686,610	102,911,000
Total 40 AGPC Groups	8,798,830,481	307,711,000

Source: Modified from AGPC 2011c

Additionally, not all members within the groups supplied coffee during the financial year (see Table 54). Within the 8 groups that supplied parchments to AGPC only about 57% of members supplied coffee. The maximum and minimum parchments supplied from these villages vary. From the 8 groups, 5 were able to supply more than 1,000 ton in 2009-10, with more than 6,000 ton supplied by the Masaisomboune group.

The minimum supply volume can be as low as 4 ton, but on average was around 13 ton as shown in Table 54.

Table 54: Actual member Supply, Maximum and Minimum Supply Parchments in the Sample Villages

Group Name	Total members (2011)	Actual members supply	%	Maximum supply parchments by individual member (kg)	Minimum supply parchments by individual member (kg)
2009-2010 CY					
Katouat	76	-	-	-	-
Phou Oy	43	39	91%	3,944	21
Phoudamkhouane	43	37	86%	2,945	25
Maysaisomboune	72	66	92%	6,191	11
Kapheu	113	48	42%	1,033	8
Lak 43	89	21	24%	1,820	14
Nonglouang	78	62	79%	922	4
Phoumakô	39	22	56%	616	5
Xétapoung	73	20	27%	368	18
Total 8 Groups	626	315	57%		

Source: Modified from AGPC 2011d

Based on the actual number of supplying members, the different maximum and minimum level supplied from each individual member, and the given price of 20,425 LAK/kg of parchment, the average, maximum, and minimum return can be determined as shown in Table 55. The highest average return of the 8 groups is more than 21 million LAK from Maysaisomboune group, followed by PhouOy and Phoudamkhouane. The maximum return was also the highest for Maysaisomboune, which was more than 120 million LAK followed by PhouOy and Phoudamkhouane at 80 and 60 million LAK respectively. The average maximum return for an individual member of these 8 groups was greater than the country per capita GDP (82 million LAK) in 2009 and in the current year.

Table 55: Average, Maximum and Minimum Returns of AGPC members, 2009/10

Group Name	Total Return to the Groups (LAK)	Average Return by actual members supply (LAK)	Maximum Return by individual member (20,425 LAK/kg)	Minimum Return by individual member (20,425 LAK/kg)
Katouat	-			
Phou Oy	572,658,290	14,683,546	80,558,427	425,604
Phoudamkhouane	435,927,850	11,781,834	60,157,293	501,178
Maysaisomboune	1,449,743,000	21,965,803	126,459,985	222,746
Kapheu	158,197,976	3,295,791	21,101,193	155,127
Lak 43	106,541,077	5,073,385	37,182,648	286,388
Nonglouang	136,383,200	2,199,729	18,824,014	91,485
Phoumakô	33,661,751	1,530,080	12,573,208	107,395
Xétapoung	49,573,465	2,478,673	7,509,718	369,917
Total 8 Groups	2,942,686,610			
Average 8 Groups		7,876,105	45,545,811	269,980

Source: Modified from AGPC 2011c

5.4.7 Issues and Restrictions under AGPC Operation

During focus group and household level interviews the issues of restrictions on operating within the AGPC cooperative were discussed with AGPC group members.

Issues Raised by AGPC group's members:

The most common issues raised by AGPC group members included:

- **Slow cash/payment:** Comparison between AGPC operation and local coffee buyers were made. Members reported that payment by AGPC has been very slow. Group members highlighted that poorer households required payment as soon as possible, particularly before and during the first harvesting period from late September to the end of the year, when stored/saved rice from previous year/season starts to become depleted. Also, for those who have children, it is the

commencement of the new school year, when books, new uniform and other related education expenses must be purchased. Supply of Arabica parchments to AGPC often started in late December to early January. After that the hulling, sorting and grading takes place. Depending on the order and the agreement, the first export amount commences sometime in late February until all available coffee have been exported (sometime in May). Depending on the markets, some of them will make partial advance payment before the coffee beans are delivered or after signing the contract. Payment by AGPC after related fee deduction and reviewing takes place about 2 to 3 months after the parchments had been delivered. During the field visit at the end of March to April 2011, transferring of money was made from AGPC to its members just before the Laos New Year.

- Limit advance payment: Agreements with members to supply a certain amount of beans to AGPC does not include an advance payment that is often expected. This amount is used to guarantee that members will supply the agreed volume to the organization and more importantly to provide cash to cover household expenses and pay for the related expense in coffee production. However, the advance payment is not made to every group member that is in need of money. For some groups such as the Katout group that had already established a good relation with markets in Japan prior becoming a member of AGPC, group members reported that when agreements had been done (in terms of supply volume, and price), the Japanese would deposit about 50% advance payment for them directly.
- Estimated prices to be given to members cannot be determined in advance each crop year. Despite member groups being involved in the AGPC for a number of

years, one of the most frequently asked questions is about the price that farmer will receive. The uncertainty about what the price will be compared to the current Laos market price plays heavily on the minds of the farmers. The AGPC provides explanations about how their prices are determined to group committee members and indirectly to group member but there is still a high level of concern about this issue.

- Why can't the Fair Trade premium to producer groups be shared among individual members? This question was raised by members in one of the sample groups. AGPC provided an explanation based on the principles of the Fair Trade movement and how the money should be used. Again, not every member will fully understand the Fair Trade premium and its principles. This question also raises the point that more information and explanation needs to be provided to the members and persons who do not fully understand the Fair Trade movement. At the same time, more community tangible outputs such as supporting village schools, water supply and other infrastructure needs to be made – instead of using money for training purposes only .

Issues observed by the author:

- Unless, AGPC can overcome the issue of slow and low advance payments to it members, it might lose some group members such as Katout. According to the agreement between AGPC and it group members, if the member group does not supply coffee to the organization for three years in a row, the group has to repay what has been invested and return all the supplied tools and equipment to AGPC.

- In 2009-10, only 6 out of 40 groups that supply Arabica can meet their agreed target volume to AGPC. Also, only about 57% of the total members from 8 sample groups supplied coffee to AGPC. Moreover, not many of them can produce and supply more than a ton. This raises the question - how can AGPC further help to improve the yield of its members? Does this also mean that AGPC should be putting more pressure on some of its members who can supply more? Also, could this be viewed as a free-ride situation?
- Organic fertilizer is not cheap and may become more limited in supply as the demand increases from both organic and non-organic coffee producers who also apply this fertilizer to their plantation. Also, more competition will be made for the organic fertilizer between small-medium scale producers, and large scale producers (who have also been applied for organic certification from the Lao Certifying Body).
- The expansion of more organic coffee plantation that offer little increase in ecosystem diversity. The production system practiced by AGPC members uses only one tree species growing as a shade for the new coffee variety Arabica-Catimor.
- Level of understanding varies among producers groups and members of each group. Out of 9 sample groups, Maysiasomboune group was observed to be in the strongest position in terms of understanding and supporting the operation of AGPC. This is demonstrated by the increasing amount coffee supply that the group has made to AGPC and its large Group Development fund. At the same time, it is the group that has exhibited the highest level of understanding how

AGPC operates as their member's main concern is not only about getting earliest/advance payment and knowing the coffee prices that they will be receiving since forming the group. The group which has exhibited the lowest level of cooperating with AGPC is Katuat. This is because, the group has not supplied coffee to the group center or AGPC for 2 years already (members reported to have their own specific market from Japan).

- The coffee producer groups and their members do not currently record their expenses or time work done on their coffee plantation. Thus, at each household level, it is difficult to estimate how much actual profit the household has made. Recording number of working days during the cultivation and harvesting periods has been provided by some of the group members, but not other input expenses. However, most of the interviewed farmers claimed to spend more during harvesting season on non-household/family member's labors. During the interview, none of the farmers could present a record book on their coffee farm management, but reported verbally. Also, during the coffee cultivation and harvesting, their focus is mainly on how to ensure they can obtain better output, thus, some of them do not record any data. Moreover, less or no incentive or suggestion has been made why this data should be recorded by farmers. This presents a limitation to analyzing the economics of their activities. Thus, to overcome this issue, examples must be provided to farmers to illustrate the value in recording this information. Seeing the results, might encourage them to record data on paper, which will help in teaching them about the factors that affect their profitability.

5.4.8 AGPC's Development Plan

Overcoming some of AGPC Members Issues

To address the issue raised by members that advance payments are limit. AGPC plans to obtain financing from several organizations. The plan required a total loan of around US\$ 1.064 million and is summarized in Table 56.

Table 56: Proposed Loans and Income Sources to Pay Advance for AGPC group members in 2010-11

Sources	Values (US\$)	Status
ALTERFIN Bank	400,000	Approved
RABO Bank	300,000	Approved
Support Capital from PRCC II	64,000	
Might be able to negotiate with markets for 60% payment	300,000	
Total	1,064,000	

Source: AGPC (2010)

The main expenditure of the Fair Trade premium are planned to be spent on improving and constructing the main AGPC coffee factory.

Marketing and Promoting of AGPC products

Domestically, AGPC will initially focus on marketing in the two main cities of Pakse and Vientiane, before expanding to other regions and cities around the country. The main activity is to display and sell roasted coffee at target locations including hotels, restaurants, souvenir shops and any tourist attraction points. Type II Logo of AGPC roasted coffee has already been prepared and will be used in the near future. Currently, some of AGPC roasted coffee has been distributed in the local markets.

Internationally, AGPC continues to search for new markets both for Arabica and Robusta. The 16 steps in exporting coffee have been developed to ensure continued good relationship with future markets. These steps include sending coffee samples to the

markets twice. Once before the first contract is made, and another is before the second contract (which will be the actual order for exporting to the market) made. Moreover, a website is said to have been developed and will be displayed soon.

AGPC Association Production and Return Target

At the current numbers of produce group's members, to ensure the Association becomes sustainable, at least a total of 1,000 tones green coffee have to be produced. This is equivalent to exporting of 55 shipping containers annually. Also, at least 50 tones of roasted coffee have to be produced and sold in the local markets. A minimum of US\$130,000 per year return has to be generated to ensure a sustainable operation and provision of services to producers groups of the Association. At the moment, the Association has meet about 50% of its target as more than 500 tons of green coffee has been produced and exported and the year to date balance for the AGPC Association (August 2010) was at about 704 million LAK (excluding Fair Trade premium). This is equivalent to about US\$ 85,000 or 65% of the target value.

AGPC Association Specific Objectives Four Years (2010-13)

These specific objectives of AGPC are under the development objectives of PRCCII new project. The objectives include:

Strengthening the AGPC producers groups by:

- Ensuring that continuous production of high quality coffee is being practiced, and can be sold and exported to local and international markets;
- Providing technical support to group members (production technique, credits, and others) and searching for new markets (consumers and build good name/reputation for Laos coffee products); and

- Establishing the specific reputation and characteristics of Laos coffee under the criteria that will enhance local sustainable economic development

Support project for AGPC in:

- Capacity building for AGPC managing committee, staffs and technicians;
- Continuously promoting and marketing AGPC products at both local and international markets; and
- Transition of AGPC organization to become more financial secure and self sufficient as support fund will be reduced to zero in four years time. The transition will be through searching for sources and options that will ensure the AGPC account is balancing.

More specific support project objectives for AGPC include:

- Training in business management, accounting and foreign languages;
- Training on marketing and determine the market strategies;
- Ensuring maintenance of certifications by effectively managing the Fair Trade and organic agriculture production system;
- Continuing to support and monitor the coffee quality;
- Training in operating and processing of coffee in the coffee processing center at village level;
- Promoting coffee at both local and international level;
- Supporting on capital for AGPC to become self financial secure eventually;
- Providing capital for the operation of AGPC; and
- Providing services to producers groups of AGPC Association.

The expected outcomes of this new PRCC II new project are:

- AGPC become self financial secure enterprise and can become sustain through the continuously inputs from producers groups;
- AGPC continues to play important role in representing and selling the groups coffee and ensure to generate as much profit to the producers groups members through target sustainable markets; and
- Producers groups members of AGPC must continuous comply in producing and processing good quality coffee to ensure the Fair Trade and Organic Agriculture certifications are being maintained with the Association.

The Capital Contribution Framework and Allocation Plan

The objectives are to be achieved under the following capital contribution framework and plan between PRCCII and AGPC association. With this framework, AGPC has to be 100% financially secure and independent in 2014. Currently, the total value of capital plan is at 635,000 Euro or about US\$ 903,000 of which 69% is the contribution from PRCII project and 31% is from AGPC Association.

Table 57: Capital Contribution Framework and Plan under PRCC II new Project for AGPC (2010-2013)

	Years	2010	2011	2012	2013	2014-...
Percentage of Capital Contribution Framework						
AGPC		10%	30%	55%	75%	100%
PRC II		90%	70%	45%	25%	0%
Total		100%	100%	100%	100%	100%
Value of Capital Contribution Plan in Euro						
AGPC	200,000	15,875	47,625	87,313	119,063	
PRC II	435,000	142,875	111,125	71,438	39,688	
Total 4 years	635,000	158,750	158,750	158,750	158,750	

Source: AGPC (2010)

5.5 Environment Impacts

Soil and waterway conditions

According Champlasack Provincial Agriculture and Forestry Office (CPAFO), the production inputs of organic and compost fertilizers account to more than 74% (about 65,000 tons) of the total fertilizers input available in the province (CPAFO 2010). In many areas of Paksong district, it is likely that very few synthetic inputs have been applied to the cultivated soil where coffee production is taking place. The application of organic fertilizers has lower impact on soil and waterway near the coffee farms. However, there is no clear report how much synthetic and organic fertilizers have been used for coffee production. Thus, the impacts from both types of fertilizers cannot be determined. Moreover, recently, some traditional small scale farmers report to have more access to synthetic fertilizers and use in their farm. Also, a number of medium and large conventional (non organic) coffee farms have reported to use large quantity of synthetic fertilizers.

Biodiversity and related ecosystem services

Famers reported changes of the temperatures, and lower rainfall in recent years. One reason for this may be resulted from decreasing of forest cover area in Paksong area. Also, many coffee farmers have shifted from traditional Robusta, Arbaica and Typica / secondary forest shaded systems to more controlled Catimor cropping systems. Thus, the level of agro biodiversity in the coffee systems is decreasing. In addition to potential micro-climatic impacts, for organic coffee producers, this practice has resulted a lost of opportunity to gain more benefit from other certifications such as, the Rainforest Alliance Certification. The Certification requires a more balanced relationship between coffee plantation and natural environment that means less destruction to the existing environment.

The trend in the adoption of more controlled Catimor system may also act as a threat to the extinction of the Typica variety and other coffee unique varieties that have been grown in Laos, if clear measures are not implemented to promote their protection.

5.6 Community Wide Impacts of the Laos Coffee Sector

The social-economic impacts are highly for the people at the regions where coffee production has been taken places, mainly at the Bolaven Plateau. The majority of these people livelihood depends and has been involved in this coffee production activity both directly and indirectly.

Directly, they are the coffee farmers, which what they know most is “coffee” and most of them have more than 80% of their income from coffee production. Recently, where producers groups have been formed many coffee farmers have received better coffee prices from the local markets and middle buyers. Besides, they have learned and adopted new production and processing techniques and knowledge that will enhance their coffee productivity. These new techniques and knowledge are not only limited to those who formed as a group, but have been shared among farmers in every scale, and those who adopt non-organic production methods. However, the distribution of this information has yet to reach the majority of coffee farmer, particularly in the Attapeau province.

Indirectly, one of the well known features at this area is coffee, which has drawn many tourists to this area to freshly taste the coffee from its original location, and explore the region that has a very stunning and distinction natural scenery features. This has also created jobs for many people in the tourism and brewing sectors and developing of the region infrastructure, such as more guest houses and hotel had been constructed and available in the region. The combination of coffee production and tourism activities

known as “Agro tourism” has been practiced by Sinouk Company. Besides, promoting the coffee sector, the tourism industry has also been promoted in the friendly environmental by the company.

Of course, the distinction feature of the Plateau is not only the beautiful scenery, but the available of other natural resources such as Aluminum, which has drawn foreign mining investors to the area for exploration of the feasibility. It is highly that these mining activities will be taken place in a very near future. If this mining is being approved by the Laos government to be operated, certainly, it will bring significant social-economic changes to the region, and increase the country overall GDP. However, for coffee farmers and producers, the first possibly scenario that will occur is the competition for labor with the mining sector. Lower level of labor forces in the coffee sector has occurred and been reported already. Secondly, the coffee production area will be decreased as it is highly that where the mining area will be taken place will cover the existing coffee area. Thirdly, the possible existing of the mining could give the negative reputation to the Laos coffee sector mainly in the environment aspect. Although some of these mining facilities might be located at certain distance away, some of them is less than 50 km from Paksong central district, thus, the beautiful feature of where Laos coffee uses to be grown is being distracted and replaced by the construction and operation of the mines. Also, measurements have not yet been done what could be the possibility soil, water and air quality impacts from mining that will affect the coffee sector. Moreover, there will be an inflow of the labor migration from other regions and other countries, which can interfere with the local culture and livelihood if no clear mitigation is being planned, implemented, and enforced by related organizations.

Outside the coffee production regions, in the big cities such as Vientiane, Pakse and Champasack, more jobs and businesses have been created from the coffee sector. This is clearly through the new establishment of new coffee and bakery shops, which can be noticed clearly in Vientiane Capital city. However, with the exception of the shops that has been mentioned earlier, it is not known where other shops purchase their coffee beans or roasted beans from. Also, how much in total of coffee beans have been sold or consumed annually at national level. From consumers perspective for medium-high income level, drinking coffee has become part of the social gathering activity for them at many coffee shops. However, it will be interesting to conduct the study how much do local consumers are aware and concern the origin of how and where the coffee that they are drinking comes from.

5.7 Empirical Finding

5.7.1 Assumptions and Selected variables

The following empirical findings of 1 ha of coffee Arabica product are based on the following assumptions and selected variables for the calculation of Gross Margin (GM), Net Present Value (NPV) and Internal Rate of Return (IRR).

Price

As the Laos coffee prices are driven by the world market prices, the prices used are from the New York Stock exchange. The mild Arabica price was the selected price for the Laos Arabica coffee price instead of Colombia Arabica as Laos has not yet developed the capability to produce this high quality coffee. From the author data summary as presented in Table 58, the determine of coffee price was based on the monthly price from May 1989 to May 2011 from New York Stock exchange market prior

to including the Fair Trade minimum and organic premium value. The average monthly price for the mentioned period has been used because the actual agreed price between the coffee suppliers and markets depends on the monthly basis price at the point in time.

However, this agreed price is based on the future coffee prices from the market. Also, the data is consistent as there is less variance of the coefficient of variation.

Table 58: Others Mild Arabica Minimum, Maximum and Average Price from May 1986 - May 2011 for Fair Trade and New York market

Months	Minimum Basis	Maximum Basis	Average Basis	Basis Standard Deviations	Coefficient of Variation
Fair Trade minimum + Organic Premium Price in US\$/kg					
Jan	3.11	6.24	3.42	0.68	0.20
Feb	3.11	6.79	3.49	0.79	0.23
Mar	3.11	6.93	3.51	0.84	0.24
Apr	3.11	7.33	3.53	0.92	0.26
May	3.11	7.12	3.63	1.02	0.28
Jun	3.11	5.13	3.41	0.55	0.16
Jul	3.11	5.24	3.44	0.62	0.18
Aug	3.11	5.13	3.44	0.60	0.17
Sep	3.11	5.34	3.48	0.70	0.20
Oct	3.11	5.20	3.40	0.58	0.17
Nov	3.11	5.47	3.37	0.55	0.16
Dec	3.11	5.67	3.39	0.58	0.17
Average	3.11	5.97	3.46		
Min		5.13	3.37		
Max		7.33	3.63		
Current FT Minimum + Organic Premium Price: 3.19 US\$/kg					
New York Price in US\$/kg					
Average	1.25	5.49	2.56		
Min		4.69	2.46		
Max		6.67	2.79		

Source: Calculation data from Index Mundi (2011)

The estimated average, minimum and maximum coffee Arabica price received by the Laos coffee farmers can be determined as shown in Table 59. The price received by

OFM farmers was estimated to be 77% of the total value after all related costs are deducted based on 2009-10 AGPC liquidation (Table 49). For NOM farmer's price received was estimated to be 57% of the total average price will received. This percentage was determined by divided the average known price from 2007-2009 (14,500 LAK/kg) that coffee farmers received from middle buyers (Table 17) with average New York prices for Arabica from year 2007-2009 (25,434 LAK/kg). The prices used in determining the GM, NPV, and IRR for OFM and NOM farmers from Table 59 are the average prices. For all future costs and benefits economic analysis, the price will remain constant. Thus, the effect of price inflation has been excluded (ADB 2011).

Table 59: Estimate Average, Minimum and Maximum Arabica Price Actual Received by Laos Coffee Farmers

Type of Farmer	Average % Received/ Given	International Prices May 1986- May 2011					
		Average		Minimum		Maximum	
		US\$/kg	LAK/kg ²⁵	US\$/kg	LAK/kg ²⁵	US\$/kg	LAK/kg ²⁵
OFM farmers	100% Price	3.46	29,724.46	3.11	26,699.10	5.97	51,244.60
	77%	2.67	22,932.61	2.40	20,598.53	4.60	39,535.54
NOM farmers	100% Price	2.56	21,979.01	1.25	10,712.94	5.49	47,141.90
	57%	1.46	12,513.99	0.71	6,099.53	3.13	26,840.76

Source: Calculation based from Table 17 and Table 58

Interest and Discount Rates

- The Interest rate reported by farmers from local banks ranged from 13 to 19%.
The used rate was the average rate of 15.41% per annum.
- Base on the Laos Central Bank's Discount rate in 2010, the used rate was 7.67% annum (Index Mundi 2011).

²⁵) Exchange rate used was at 8,589.01 LAK/US\$ (Average from year 2007-09)

Gross Return

- The total numbers of trees was determined from the recommendation by the FAO Arabica production guideline in Laos, following a 2 x 1.5m tree space. However, the actual trees grown in 1 ha range from 3,300 up to 6,000 trees/ha.
- Yields (cherries and parchments) were double for NOM low capital farmers than OFM farmers as both organic and synthetic fertilizers and foliar protection are being applied for NOM farms. The yields were highest for NOM high capital as he could apply these inputs more than 2 times per year to the farm. Also, the first harvesting for coffee Arabica in Laos for the Catimor variety starts in the 3rd year with about 10% of the possible harvested yield or maximum yield. The 4th year of harvest is about 40% of the maximum yield. The full maximum yield started in the 5th year.

Summary of the variable and assumptions are shown in following:

Table 60: Summary of the assumptions for Gross Return

Variables	Unit	OFM	NOM low capital	NOM high capital
Total numbers of coffee trees	trees/ha	3,300	3,300	3,300
Maximum Yield (Cherries)	kg/tree	3.3	6.6	8
Maximum Yield (Parchments)	kg/ha	2,178	4,356	5,280
Price	LAK/kg	As shown in Table 59		

Investment Costs and Labor days

- The labor man-days (total number of required laborers multiplied by the total number of required days for the activity). Under the investment year, the total man-days is highest for NOM high capital farmers as this includes the very detail land clearance and preparation of labor man-days and machine man-days.

- Only NOM high capital famers have to pay for labor man-days during the first year of investment, as the other two types of farmers mainly use family labor.
- Established material and other material costs are highest for NOM high capital farmers as irrigation and electricity installation, pulping machine and planting material (coffee plants) are included. For other two types of famers costs are mainly for plants material and compost fertilizer. Material costs for NOM low capital famer is slightly higher as it has to purchase the pulping machine, while OFM use the service at the group processing center.

Table 61: Summary of the variable and assumptions for Investment Cost and Labor days

Variables	Unit	OFM	NOM low capital	NOM high capital
Labor	man-days	178	131	262
Labor Costs	LAK/ha	-	-	7,000,000
Material Costs	LAK/ha	4,151,563	6,110,000	52,810,000
Other Costs	LAK/ha	1,980,000	6,110,000	10,196,205

Operation Costs and Labor days

- Cultivating man-days are significant higher for OFM farms as mainly manual weed method is used in controlling weeds, unlike NOM farmers where herbicide has also been used.
- Only NOM high capital famer has to pay for labor man-days during the first year of investment, while other two types of farmers mainly use their family labor.
- Harvesting man-days are highest for OFM farms, to ensure meeting quality cherries are being picked and under correct method. However, the amount of

man-days under NOM farms is not that significant different as these famers group have ensure good quality cherries are also being picked.

Table 62: Summary of the variable and assumptions for Operation Cost and Labor days

Variables	Unit	OFM	NOM low capital	NOM high capital
Cultivating	man-days	198	49	49
Cultivating costs	LAK/ha	0	0	5,000,000
Harvesting	man-days	229	210	191
Harvesting costs	LAK/ha	9,256,500	15,845,000	24,000,000
Material Costs	LAK/ha	5,117,000	6,173,000	21,500,000
Other Costs	LAK/ha	4,196,000	2,233,000	2,733,000

5.7.2 Costs, Yields and Profit Situation of Organic and Non-Organic Coffee

From the above assumptions and selected variables, Cost, Return, Gross Margin (Profit) and Yield (in kg of parchments) can be identify for both OFM and NOM famers (both low and high capital under different prices and prices driven conditions under discount rate of 7.67% as presented in Table 63.

Table 63: Cost, Return, Gross Margin (in Million LAK), and Yield (in kg of Parchments) of OFM and NOM Farms in 1 ha of Coffee Production

Years	0	1	2	3	4	5	6	7-19	20
a. OFM farms yield 3.3 kg/tree of coffee cherries									
Cost	9.44	3.82	7.91	11.86	19.50	19.50	19.50	19.50	19.50
Yield	-	-	-	218	784	2,178	2,178	2,178	2,178
Return	-	-	-	4.99	17.98	49.95	49.95	49.95	69.44
Profit	(9.44)	(3.82)	(7.91)	(6.86)	(1.52)	30.45	30.45	30.45	49.95
b. NOM low capital farms yield 6.6 kg/tree of coffee cherries and normal price									
Cost	24.00	8.68	10.17	14.70	25.86	25.86	25.86	25.86	25.86
Yield	-	-	-	436	1,568	4,356	4,356	4,356	4,356
Return	-	-	-	5.45	19.62	54.51	54.51	54.51	80.37
Profit	(24.00)	(8.68)	(10.17)	(9.25)	(6.23)	28.66	28.66	28.66	54.51
c. NOM low capital farms yield 6.6 kg/tree of coffee cherries and driven price organic producer groups and closer monitor by the government²⁶									
Cost	24.00	8.68	10.17	14.70	25.86	25.86	25.86	25.86	25.86
Yield	-	-	-	436	1,568	4,356	4,356	4,356	4,356
Return	-	-	-	8.18	29.44	81.77	81.77	81.77	107.62
Profit	(24.00)	(8.68)	(10.17)	(6.53)	3.58	55.91	55.91	55.91	81.77
d. NOM high capital farms yield 8 kg/tree of coffee cherries and driven price by organic producer groups, closer monitor by the government and its special markets									
Cost	99.47	29.46	29.46	33.72	50.61	50.61	50.61	50.61	50.61
Yield	-	-	-	528	1,901	5,280	5,280	5,280	5,280
Return	-	-	-	13.20	47.52	132.00	132.00	132.00	185.22
Profit	(99.47)	(29.46)	(29.46)	(20.52)	(3.09)	81.39	81.39	81.39	134.61

Note that the costs both for investment year (zero “0” year) and operation years for OFM farmers are the smallest. Also, the return is among the smallest. In terms of profit, from the first full harvested year (in the 5th years), when only condition a. and b. are compared (Table 63), the profit for OFM farmers is greater, but not significant than NOM farmers for the entire production period, except for year 20 where incremental

26). Local market price increase by 50%

return value (from incremental working capital) is included. Thus, confirm and agree with our first hypothesis, and under the decision framework, OFM is preferable. Moreover, the findings show that the payback period for OFM farmers is in the 5th year, one year earlier than NOM farmers. However, when comparing a. to c. and d. condition, the payback period is the same with the profit that is much smaller for a.. This results from the lower yield of OFM farms than in NOM farms. Thus, case will be different if productivity from OFM farms increases to at least about 6 kg/tree of cherries.

5.7.3 Cash-flow Statement of Organic and Non-Organic Coffee Farming

From the above assumptions and selected variables NPV and IRR after financing can be determined for both OFM and NOM famers (both low and high capital) under different prices and prices driven conditions as shown in Table 64 under different discount rates. Different discount rates were used to observe the variability of the NPV values among the 4 conditions.

Table 64: The Costs and Returns, NPV, and IRR of OFM and NOM Farms in 1 ha of Coffee Production

Conditions	a. OFM farms	b. NOM low capital farms normal price	c. NOM low capital farms driven price	d. NOM high capital farms driven price
Discount Rates	NPV (million LAK)			
7.67%	122	108	283	272
4%	200	180	444	464
10%	90	79	217	195
14%	55	47	141	111
	IRR (%)			
	43.87%	40.35%	74.06%	32.21%

The identified NPV and IRR in Table 64 are after the financing under every condition. When comparison is made between condition a. and b., the NPV and IRR

values of OFM farmers are greater than NOM. This confirms and agrees with the second hypothesis that NPV and IRR of OFM will be greater than NOM. Thus, with the decision framework, OFM is preferable. However, when compare a. condition with c. and d. conditions, NPV for a. is smaller. Still IRR is greater for a. condition than d. condition. With the comparison between a. and c., both NPV and IRR for OFM farms are smaller than NOM. This finding support what Valkila (2009) identified that whether organic farmers will better off than conventional farmers depend on market prices and premium level. In this case, the market price is almost the same as organic and Fair Trade price.

The analysis was made with different discount rates. The lower the discount rate the better NPV will be received by both OFM and NOM coffee famers.

5.7.4 Sensitivity Analysis

The following sensitivity analysis is based on what have been conducted by Poudel et al. (2010), by which the costs increase by 10% and price reduction at 30, 40 and 50%. In addition to price and costs changing, the author also investigates at different lower yield level for both OFM and NOM (low capital farmers with receive normal price) farmers under discount rate of 7.67% and interest rate of 15.41% per year.

Table 65: Summary of Financial Indicators under Sensitivity Analysis of OFM Farming

Conditions	Expected Results		Interpretation
	NPV (million LAK)	IRR	
1 Yields: kg/tree of cherries production			
<i>Value of Production, Investment, and Operating Expenditure</i>			
1.5 kg/tree	42.40	26.21%	Economically Profitable
2.3 kg/tree	101.00	41.49%	Economically Profitable
<i>Incremental Net Benefit. Before Financing (Farmer Cash Flow)</i>			
1.5 kg/tree	35.01	18.76%	Economically Profitable
2.3 kg/tree	92.20	30.47%	Economically Profitable
<i>Incremental Net Benefit. After Financing (Farmer Cash Flow)</i>			
1.5 kg/tree	23.69	23.91%	Economically Profitable
2.3 kg/tree	81.25	54.59%	Economically Profitable
2 Prices and Cost reduction and using Family Labor under 2.3 kg/tree of cherries production			
<i>Value of Production, Investment, and Operating Expenditure</i>			
10% cost increment 30% price reduction	23.28	18.48%	Economically and Profitable
10% cost increment 40% price reduction	1.38	8.48%	Economically Profitable but not after financing
10% cost increment 50% price reduction	(20.51)	N/A	Economically Non-viable
3 Prices and Cost reduction and using Family Labor under 1.5 kg/tree of cherries production			
10% cost increment 30% price reduction	(10.64)	-0.19%	Economically Non-viable

From results shown in Table 65, assuming price received and costs are constant but yields does, it is considered economically profitable before and after financing if OFM farmers can produce no less than 1.1 kg/tree of cherries. Note that with price and cost variation, from productivity of 1.5 kg/tree of coffee cherries and above, before and after the financing, it is still consider economically profitable for OFM famers to continue farming. Thus, for OFM farmers, the higher yield they can achieve the better. However,

the case is different with price and cost changing, particularly. It is not preferable and consider economically non-viable if price decreases to 50% mainly under the productivity level of 2.3kg/tree of coffee cherries. Also, under cherries yield level of 1.5kg/tree, it is economically non-viable with reduction price and increasing costs.

Table 66: Summary of Financial Indicators under Sensitivity Analysis of NOM Farming

Conditions	Expected Results		Interpretation
	NPV (million LAK)	IRR	
1	Yields: kg/tree of cherries production		
	<i>Value of Production, Investment, and Operating Expenditure</i>		
3.0 kg/tree	24.14	14.73%	Economically Profitable
4.6kg/tree	81.31	26.00%	Economically Profitable
	<i>Incremental Net Benefit. Before Financing (Farmer Cash Flow)</i>		
3.0 kg/tree	14.96	3.23%	Economically Profitable
4.6kg/tree	70.07	19.92%	Economically Profitable
	<i>Incremental Net Benefit. After Financing (Farmer Cash Flow)</i>		
3.0 kg/tree	(4.49)	5.88%	Economically Non-viable
4.6kg/tree	50.63	26.55%	Economically Profitable
2	Prices and Cost reduction and using Family Labor under 4.6 kg/tree of cherries production		
	<i>Value of Production, Investment, and Operating Expenditure</i>		
10% cost increment 30% price reduction	(7.20)	5.19%	Economically Non-viable

This sensitive analysis finding is not much different for NOM farmers. It is considerably not preferable and economically non-viable with yield reduction to 3 kg/tree of cherries and price reduction from 30% and higher. This is because received price by NOM farmers is already lower than OFM farmers. However, if NOM farmers received 50% increased price driven by the OFM farmers and closely monitor by the government, the situation is much more in favor to the NOM farmers.

5.8 The SWOT Identification of the Laos Organic and Fair Trade Coffee Sector

The following SWOT summary has been drawn from several documents (Panyakul (2009), Salleé (2007), and Marsh et al. (2006)) and from the author observations. The purpose of this SWOT summary is to present and integrate finding points to ensure meeting the Laos government vision and facilitate in the development and improvement of the Laos organic and Fair Trade coffee sector, and the Laos coffee sector.

5.8.1 Strengths

The coffee producers, products and production management:

- The bargaining power of coffee prices by farmers groups have increased;
- Coffee is a leading, outstanding, and example sector in adopting sustainable agriculture production system from both Fair Trade and Organic movements;
- Robusta production growing in Laos is unique in the world;
- Coffee production with organic management;
- Traditional farming practices are close to organic farming (low use of agrochemicals);
- Good control by producers of coffee wet process is being practiced; and
- Low intensive labor cost

Geographical and Environmental Indications

- Focused geographical area for industry development (Bolaven Plateau);
- Ideal climate to produce quality Arabica and Robusta;
- Land is available for further planting;

- Relatively good road infrastructure linking production area to ports and other countries; and
- Less polluted environment.

The Supporting:

- The Laos Coffee National Committee has been established which will ensure every aspect of the Laos coffee is being managed;
- Strong reputation of coffees at national and international levels;
- Very good image of Laos. Emotional and exotic touch in consumers countries;
- Existence of coffee quality chains through Fair Trade and Organic markets;
- International coffee markets have shown interested by “origins” coffees;
- Emerging and rising of domestic consumers under medium-higher income groups;
- Strong support from Government for the development of quality coffee chain;
- Having local certification body with collaborative relationship with foreign certification bodies (under the Certification Alliance platform);
- Clear government policy supporting organic agriculture; and
- Cost competitive compared to other countries (labor).

5.8.2 Weaknesses

The coffee products and production management:

- Many small farmers still have limited access to relevant information to improve their knowledge and skills, thus slow to adapt to new innovation;

- The knowledge and understanding of Fair Trade and organic certification in coffee and Laos in general is still new and limited;
- Limited of knowledge and technology by farmers and processors to produce consistent, high quality coffee;
- Less attention has been given to the Robusta production growing in Laos after the introduction of new variety; and
- Credit/usurer system based on volume and not on quality.

Geographical and Environmental Indications

- Poor road condition still exists from many producing villages to central processing center and markets;
- Land is available for further expansion, but suitable land at the high and right altitudes may be limited, and competing with other economy development activities; and
- The organic cropping system of Catimor has resulted in lower level of agro diversity coffee ecosystem as mainly only one tree species has been planted as shaded tree.

The Supporting:

- Not strong exportation standards;
- Limit available of the standard of official quality control lab;
- Limit experience in coffee industry in quality and consistency control of product standards;
- Public extension system to organic and Fair Trade farmers is weak;

- Lack of entrepreneurship among the business sector to work on high-quality business like organic products;
- Basic organization among small scale farmers is still restricted;
- Lack of clarity regarding leadership and coordination (within the public / private / donors) within the organic sector;
- Low level of human resource and coherent human development program;
- Limited of Research and Development system and staffs to generate technical production knowledge appropriate to local Laos's conditions;
- The Laos Coffee National Committee has just established, thus, there still minimal policy and regulation developed for the coffee industry; and
- Limited farm extension capability by the key Laos government agencies.

5.8.3 Opportunities

The coffee producers, products and production management:

- There is a rapidly increasing demand in the world market for consistent Premium and Specialty high quality coffee mainly from EU countries, USA, Japan, ASEAN and Other markets;
- Marketing has a key role in price and desirability of coffee. Laos has good potential to develop niche markets for high quality, washed Arabica and Robusta;
- Organic and Fair Trade coffee carry price premium, helping to improve farmers' income and reduce poverty; and
- Increasing of organic coffee production in Laos in every farm scale level as there has been a request for organic agriculture practice through the Laos Certifying Body from Department of Agriculture, MAF.

Geographical and Environmental Indications

- More development of agro-and eco-tourism at coffee production area, the Bolaven Plateau.

The Supporting:

- Synergy among international aid agencies to assist development of rural private sector ;
- More foreign investors have shown interested in investing more in Laos coffee sector and adopt organic production method; and
- There are more research topics and opportunities to be conducted and explored for the organic and Fair Trade coffee in Laos as these movements are still new.

5.8.4 Threats

The coffee producers, products and production management:

- Use of the name by other national and/or regional coffees (Vietnam?);
- Shortage of labor force for coffee cultivation and harvest;
- Competing for labor with industrial crops and mining sector; and
- Unscrupulous farmers and traders taking advantage of the growing Organic and Fair Trade markets.

Geographical and Environmental Indications

- Climate changes, notably the lengthening of dry season, with higher temperature and lower rainfall; and
- Promotion of industrial crops (e.g. rubber, palm oil) and mining reduce land for organic coffee production.

The Supporting:

- Dominant position of some protagonists of the coffee chain;
- It will take up to five years for large Specialty coffee buyers to fully commit to buying Laos coffee on a consistent basis above the standard market prices.
Reliability as a partner must be proven;
- Buyers will look at the whole market chain from producer to export to see where the system might fail; and
- Buyers will not pay above standard prices until the whole chain is reliable and can guarantee quality in each shipment.

CHAPTER 6

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 Social-Economic and Community Impacts

Major social-economic and community impacts from coffee sector from farmers who adopt Organic and Fair Trade, and those who are not are summarized as following:

- At national level, coffee is important cash crop that will still contribute for Laos in meeting the country NGPES's goals, although the crop contribute to a very small proportion of the total export and GDP value.
- The milestones of the Laos coffee sector in the establishment of the Laos Coffee National Committee will bring and guide all related stakeholders of the Laos coffee sector under one umbrella.
- At local level, the group process has helped in growing and building of the experience / knowledge and capacity of Laos farming communities, and as a result coffee quality and quantity has increased both for organic/Fair Trade and non-organic/Fair Trade.
- Shaded trees technique to improve the coffee production has been spread and used among the coffee famers.

- Majority of the people at the Bolaven Plateau livelihood are strongly connected to the coffee production and mostly has more than 50-80% of their income source from this production.
- Forming and working as coffee producer groups has resulted in stronger bargaining power for producers with local buyers, and indirectly driven the increase of local coffee price, which also benefits those who are not part of the group.
- Certifying as Organic and Fair Trade production provides a minimum and premium prices for coffee farmers, thus, improve livelihood and community of these farmers.
- Fair Trade premium that has been received by Organic and Fair Trade coffee producer groups has been used to reinvest in the operation of their groups/villages.
- Organic and Fair Trade coffee farms have shown to be profitable ($GM > 0$, $NPV > 0$; $IRR > \text{Interest Rate}$) practices under the correct management, and at the appropriate minimum and premium prices, and certain level given and produced yield compared to non-organic and Fair Trade farms.

There have been a considerably range of benefits of Laos coffee sector from both OFM and NOM movements to the Laos local community level, particularly for those who are directly involved in the production. However, the following points present key observations and limitations that need to be considered in the further growth of organic and Fair Trade coffee sector and more sustainable coffee practices.

6.1.1 Costs

- Labor

- High amount of labor are required for field preparation and harvesting mainly under OFM approach.
- Value of education reducing family workforce and leading to higher external labor costs.
- Increasing competition for labor from other growth sectors (e.g. Mining and commercial plantations) also lead to higher external labor costs.
- Fertilizer
 - Rising demand and costs for organic fertilizer as both organic and non organic farmers now uses organic fertilizer in their coffee farms.
- Transportation
 - Rising cost of fuel which will further reduce the final economic benefits.
- Processing
 - Processing techniques have led to better quality however group processing is more expensive in long term with the continue paying service fees.

6.1.2 Price

- Minimum Fair Trade price and premiums for organic
 - Prices above Laos market price.
 - Prices have had a positive effect on Laos market prices.

The prices received must ensure that the coffee farmer's costs are being covered and provide positive profit. Thus, farmers should have eventually more than sufficient to sustain their family and improve their coffee production.

- Payment system

- Poor farmers do not have financial security and require more certainty and upfront payment.
- Local markets (and some international markets) offer more security (payment upfront) however often at a lower price.
- Use of Fair Trade premiums
 - Understanding of the principles of Fair Trade and the contribution to local economies is still unclear.
 - Perception that Fair Trade premiums should not be used for just training / capacity building but also for tangible and much needed local infrastructure improvements.

6.1.3 Cooperative

- Cooperatives have strengthened the position of Laos coffee farmers:
 - Access / knowledge of markets
 - Capacity building in use of different varieties / production methods.
 - Capacity building in processing methods.

Cooperative must ensure the extension of this knowledge to be contributed to all members and further for those who are not, in order to have new members and gain more positive feedback and support from them.

- Coffee yield from some members are significantly high, while some are still low.
- Early adopters are being disadvantaged by late adopters (those that are standing back and waiting to see what happens).
- Some villages are 'keeping their options open' and not fully supporting the development of the cooperative.

6.1.4 Indirect economic impacts

- Flow on effects of strong, robust local farming economies both from national and international investors.
- Rising of agro-ecotourism sector, thus, further support the tourism industry and create more jobs.
- Increase numbers of coffee and bakery retail shops, thus, create more jobs.

6.1.5 Social development

- Increased income from premium coffee.
- Fair Trade investment in education and sanitation.
- Food security (organic promotes intercropping).
- Local / small farmer ownership of land.

6.2 Environment

6.2.1 Protection of soils and waterways

Shade tree systems and use of inputs from OFM:

- Reduce soil erosion.
- Use of fertilizers enhance soil fertility.

6.2.2 Reduction of agro biodiversity

- Micro-climatic impacts from changing climate which will affect the coffee production.
- Lower level of ecosystem biodiversity has been noticed in the new cropping system of Catimor variety both from OFM and NOM.
- Threat to the extinction of the Typica and Robusta variety (Robusta at altitudes greater than 1,000 m a.s.l) with the increase of growing area for Catimor variety.

- Opportunity to gain more benefit from other certifications such as the Rainforest Alliance Certification from reduction of ecosystem biodiversity.

6.3 Confirming the Hypotheses and Research Question

- The finding results confirm the author first hypothesis that “the small coffee producers who adopt OFM will have positive Gross Margin, but not significant greater than producers who NOM”, and second hypothesis that “the NPV and IRR for producers who adopt OFM will be higher than those who adopt NOM” are truth.
- The author final hypothesis that “OFM will provide greater community and environmental benefits than NOM” cannot be confirmed. More detail empirical study need to be taken with certain longer period of observation particularly with farmers who also practice intercropping in their coffee farm. However, OFM farms with no use of synthetics input have lower negative impacts environment than NOM particularly on soil and waterway. Still, the current practicing of OFM method with fewer shaded tree species has resulted in lower diversity level ecosystem. Also, OFM farms have driven the local market prices to increase, which benefit for those who have been and not been certified as Organic and Fair Trade.
- Some coffee farmers are become more social-economic secure than others when take into account the following findings:
 - 73% of households from sample villages are “sufficiency well off”.
 - 78% of households from sample villages have sufficiency rice all year.
 - All households from sample villages have their own production land.

- When farmers can meet the minimum production requirements that have resulted $GM > 0$, $NPV > 0$, and $IRR > \text{Interest Rate}$.

6.4 Recommendations

With some issues that need to be further considered in detail, existing drawbacks, weaknesses and threads toward the Laos coffee sector, following are some recommendations:

6.4.1 General Recommendations

- CNCL:
 - Must ensure the development of National Coffee Policy in Laos is achieved and ensure involving all related coffee stakeholders
 - Must improve the statistic and data recording on Laos coffee sector
- Labors:
 - Closer investigation and planned by the related organizations (government and investors) is required in trying to minimize the impacts of labor inflow and competing with other economy sectors.
 - Ensure that the coffee sector is proof to continue provide economic profitable for the coffee producing families, to ensure the continuously labor support from their new generation family's members.
- Fertilizers and Field Management:
 - Promote of intercropping with not only with vegetables or grain variety but another cash crop such as fruit trees that can enhance soil fertility and minimize food and income insecurity issues.

- Search for updated techniques or methods of fertilizer application to enhance effectively fertilizer uptake by coffee plants such as from following link: <http://www.ineedcoffee.com/04/composting/>
- Environment:
 - Closer investigation and planned by the related organization is required in trying to minimize the environment impacts of growth from non-organic/ Fair Trade agriculture production to Laos organic and Fair Trade coffee sector
 - Planted other shaded tree such as fruit trees (which are suitable for the region) as a fence to increase more diversity to the plantations and possible more income source for farmers
 - Promote the practice of intercropping to increase level of diversity and as other income sources
 - Promote the organic production practice to non-organic farms, thus, it can integrate to it farms, to alleviate the environment impacts.
- Food Security:
 - More support and promote of intercropping program to coffee production
- Others:
 - Promote local coffee consumption of local coffee products to further build and increase the good reputation of the Laos's coffee sector.

6.4.2 Specific Recommendations for the Cooperative - AGPC

- Increase yields, thus, higher profit:

- Support is required to ensure that members increase their coffee yield and at least meet the minimum productivity level is crucial to ensure the sustainability and growth of AGPC.
- Lesson learns and exchange among farmers, who have achieved high yield to those who have not. Identify their techniques use, and different aspects which they have in their farms but not others.
- Payments:
 - Ensure that members overcome the slow and limit advance payment issue to ensure and continuously gain support from members.
- More support and closer monitor at group's members to ensure meeting the production target and, encourage more supply from group's members.
- Use of Fair Trade premium
 - Ensure it is use as the guideline and under the agreement with producer group's members and Cooperative's development plan.
- Marketing
 - Search for more Robusta markets to increase more income sources for the Cooperative.
 - Completion and display of the AGPC website, as it is one important marketing that could increase more buyers/markets for AGPC.
 - More promotion at local market to gain more support by approaching big organizations and offices such as FAO, UNDP, the World Bank, etc...
 - Approach the existing coffee shops at local market to sell green or roasted beans.

- Others:
 - Give every member opportunity to have a chance to taste their own products produced, thus, they can see the different of quality and value their hard work that they have made and paid for.

6.4.3 Recommendations for Future Studies

- The impacts of coffee production on food security
- The impacts of Catimor species on Robusta and Typica species
- The environment impacts of Catimor species on diversity level of the Bolaven Plateau ecosystem
- The impacts of intercropping on Laos coffee plantations
- The local coffee consumers on Laos coffee products
- More detail study with higher numbers of samples to determine the NPV, IRR and Gross Margins between coffee production using OFM and NOM
- The socio-economic and environment impacts of AGPC after year 2014.

6.5 Conclusion

In brief, there are numbers of positive contributions which the Laos coffee sector both from farmers who adopt organic and Fair Trade methods, and those who do not has provided to the local economies. These contributions are significant to where the majority of the people livelihoods depend on coffee production. Although, the contribution from Laos coffee sector is very small to the overall country economy development, it is one of the important crops that will assist Laos in meeting the goal in, “Promote commodity production, especially for export” of the country’s *National Growth and Poverty Eradication Strategy*. Meeting this goal will further facilitate the country in moving out

from the United Nations's least developed country list by 2020. This can also mean that basic needs of all people in Laos are met. Ensuring these people livelihoods are not fall into the poverty gap again is crucial. Thus, "more than sufficient" and "sustainable" production and development approach and strategies are required to be further developed and implemented in the Laos coffee and every country economy development sectors.

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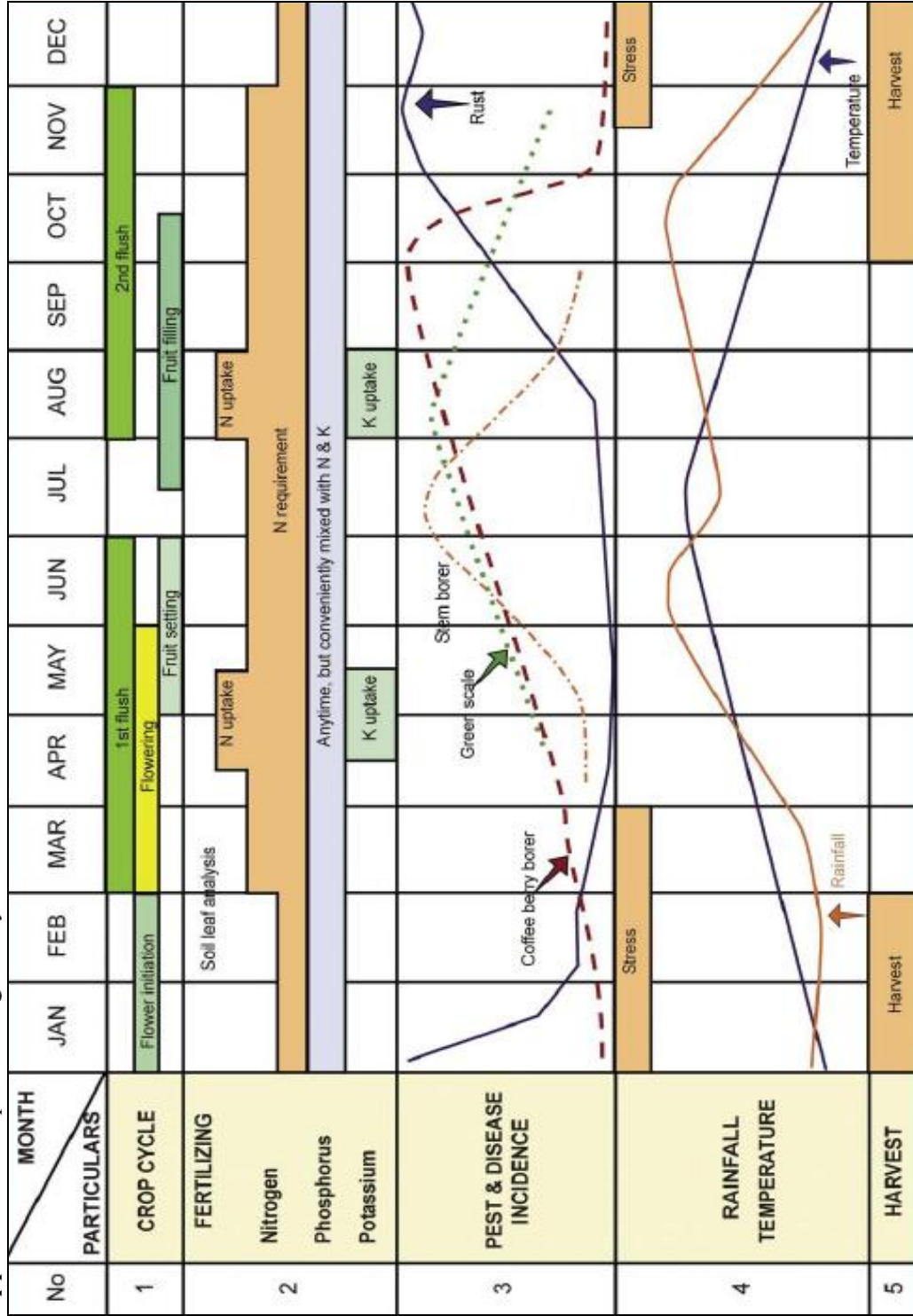
APPENDICES

Appendix A: Maps of Laos and Study Area, Paksong district - Bolaven Plateau



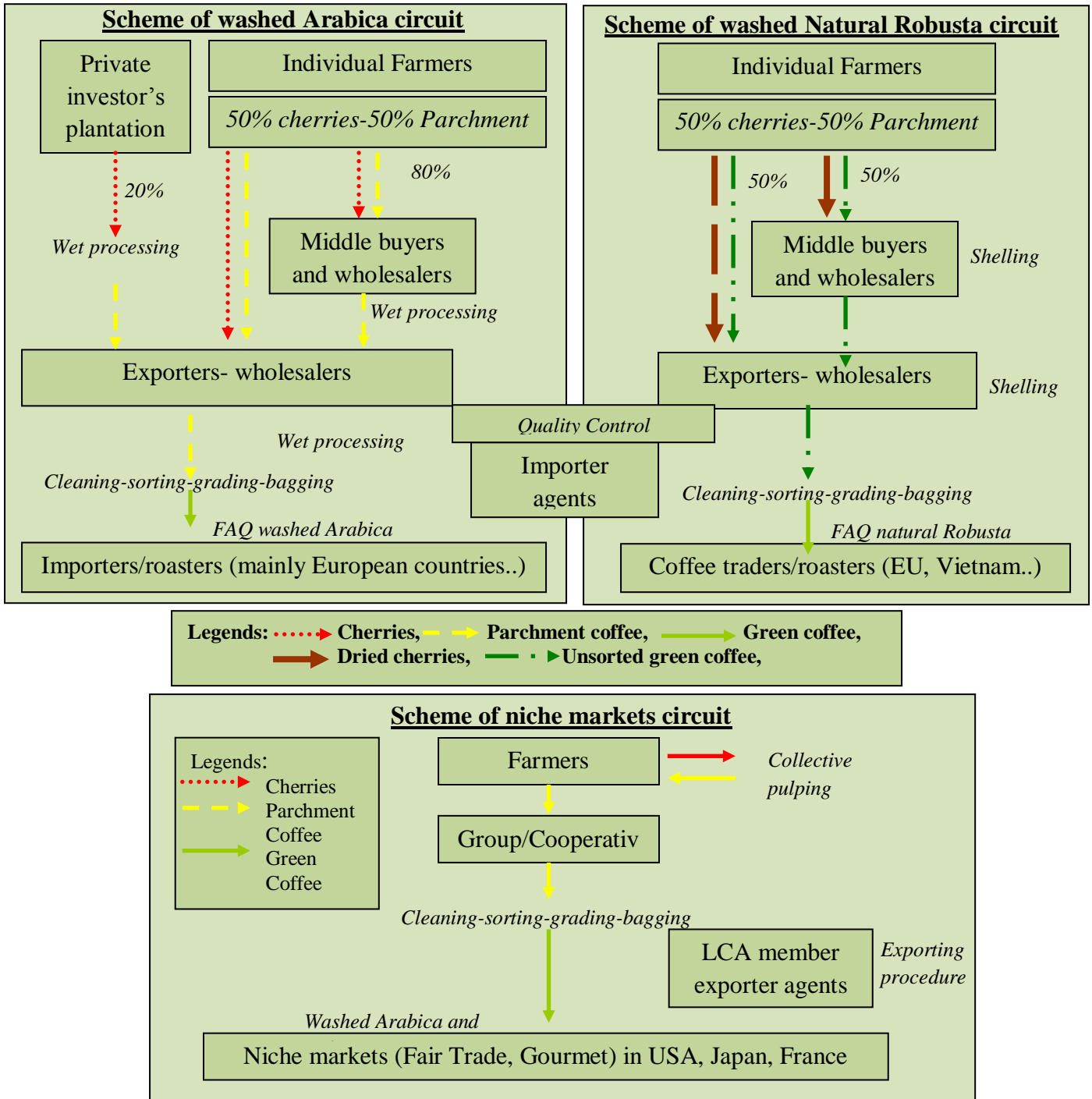
Sources:
 Map of Lao PDR by UN (2004); Map of Bolaven Plateau by Toro (2011)

Appendix B: Crop/Phenological Cycle for Arabica coffee in Lao



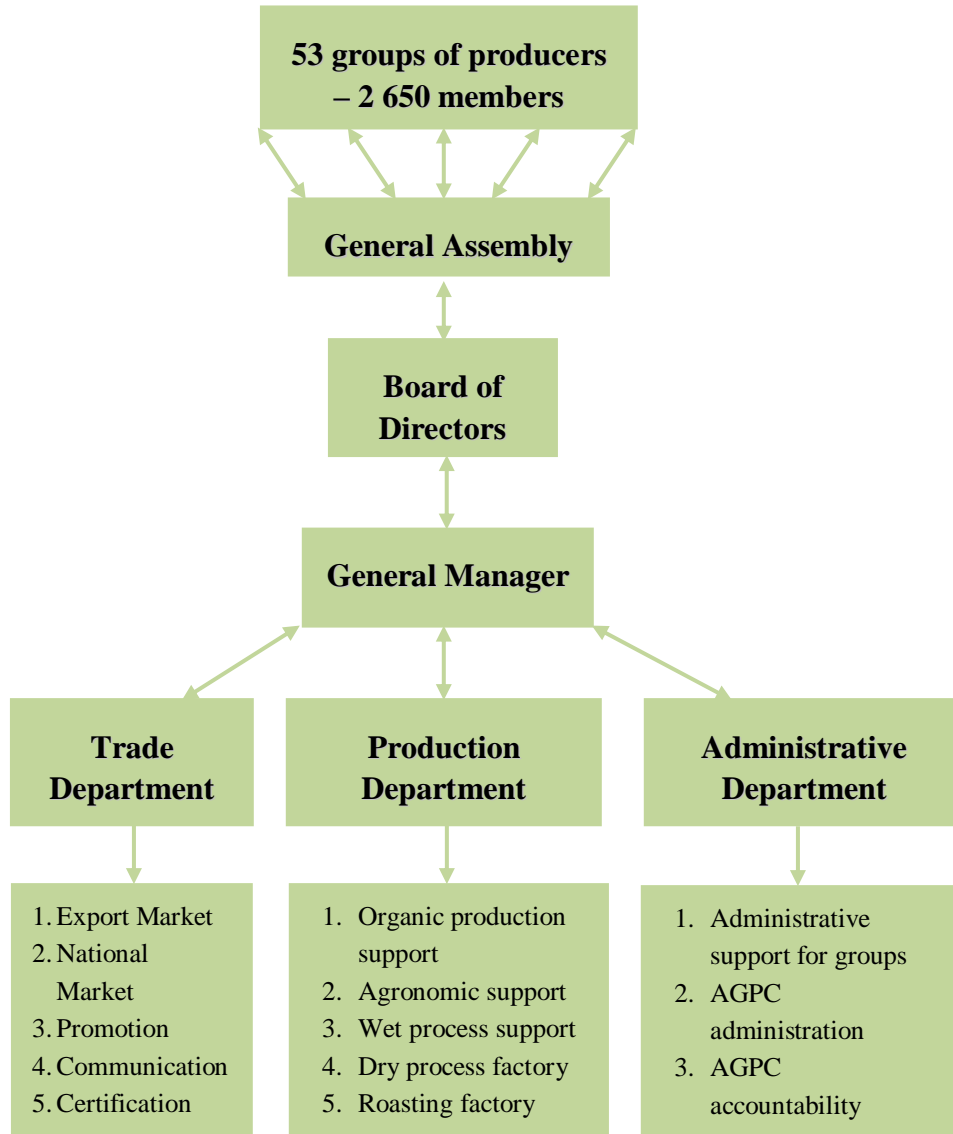
Source: Winston et al. (2005)

Appendix C: Export supply chains of Scheme of washed Arabica and natural Robusta circuits, and niche markets circuit Source: Galindo et al. (2007)

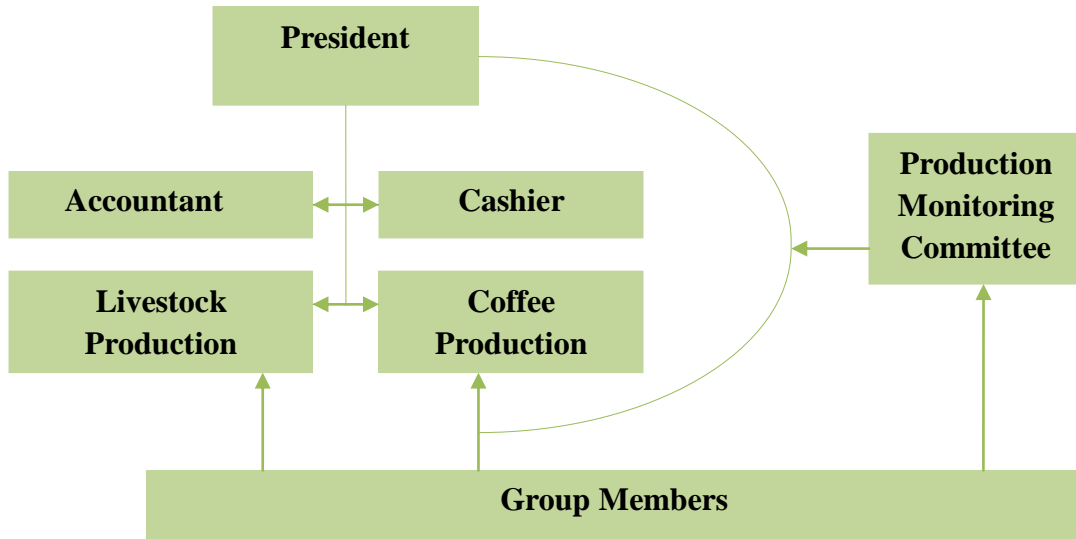


Appendix D: Flow AGPC Flow and AGPC's Producer Groups Flow Chart

AGPC Flow Chart



Producers Group Member of AGPC Flow Chart



Source: AGPC (2009)

VITA

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Scope and Method of Study: The concept of certifying coffee as organic and Fair Trade are new to Laos. The difference in economic impacts between conventional grown and coffee grown organically and marketed as Fair Trade has not been determined. The purpose of this research is to investigate the social-economic impacts of both Fair Trade and organically certified coffee and traditionally produced commercial coffee. The research focuses on measuring the financial impacts on small-medium scale producers and the contribution of organic production practices to sustainable development in Laos. The investigations of impacts were accomplished through interviews and field study of coffee producers on the Bolaven Plateau, mainly in the Paksong district.

Findings and Conclusions: Both certified and non-certified coffee production has contributed to the local economies. For those families that are directly involved in coffee production, household income has more than doubled. For those who are not farmers, the coffee sector has provided employment opportunities and increased economic activity, particularly through the promotion of the agro-ecotourism industry and the establishment coffee shops. Empirical results suggest that the financial performance of both the organic, free trade coffee and the non-organic coffee is positive. The organic and Fair Trade farmers were found to be slightly more profitable than the non-organic farmers. The results also indicate that to enhance profitability farmers need to focus on increasing yield as high as possible and improving coffee quality.

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