Groupe de Travail Café (GTC)

Participative analysis of coffee supply chain in Lao PDR

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Acronyms and abbreviations

AFD: Agence Française de Développement (French Development Agency)

AGPC: Association de Groupements de Producteurs de Café du Plateau des Boloven (Boloven Plateau Coffee Producers' Groups Association)

CIRAD: Centre de Coopération Internationale Agronomique pour le Développement

CNCL: Conseil National du Café Lao (Lao Coffee National Council)

CREC: Centre de Recherche et d'Expérimentations sur le Café (Coffee Research and Experimentation Centre)

FAQ: Fare Average Quality

GTC: Groupe de Travail Café (Coffee Working Group)

ICO: International Coffee Organization

INSFA: Institut National Supérieur des Sciences de l'Agro-alimentaire, National Superior Institute of Agri-business Sciences

JICA: Japanese International Cooperation Agency

JCFC: Jhai Coffee Farmer Cooperative

LCA: Lao Coffee Association

LMC: Lao Mountain Coffee

LUADP: Lao Upland Agricultural Development Project

MAF: Ministry of Agriculture and Forestry

MIC: Ministry of Industry and Commerce

PAB: Point d'Application des Boloven du PCADR (PCADR implementation point in the Boloven)

PCADR: Programme de Capitalisation pour l'Appui à la politique de Développement Rural (Program of capitalization in support to rural development strategies and policies)

PDRPB: Projet de Développement Rural du Plateau des Boloven (Boloven Plateau Rural Development Project)

PEIG: Projet d'Etablissement des Indications Géographiques au Laos (Support program on the establishment of Geographical Indications in Laos)

UC-PCADR: Unité Centrale du PCADR (PCADR's Central Unit)

Executive summary

Quick overview of Lao coffee sector today

History

The first coffee plantations in Laos were set around 1920 by French settlers in the Boloven Plateau. They introduced arabica trees from Bourbon and Typica varieties. From 1950 onwards, different external factors: war, frost episodes and leaf rust attacks provoked a disorganization of coffee sector in Laos and the progressive replacement of arabica plantations with newly introduced resistant species, mainly *Coffea canephora* (robusta).

The period going from 1975 to 1990 was characterized by the setting up of a State-controlled coffee sector. Collection; trading, exporting as well as prices' policies were government-controlled. This production-directed policy triggered a drop in coffee quality as farmers took less care of their plantations and simplified harvest and post-harvest practices (farmers focused on volumes to the detriment of quality).

In the 90's, the convergence of different factors such as a new economic conjuncture, the rise of coffee prices in 1994 and the devaluation of national currency triggered a strong development of coffee export sector. Concurrently, national authorities through the support of development projects started to promote arabica production by introducing the high-productive dwarf variety Catimor. Until then, *C. canephora* represented more than 95% of total coffee surfaces. Since 1995, the share of arabica has been steadily increasing to such extent it now stands for 13 % of total coffee surfaces.

Evolution of coffee surfaces and species share in the Boloven 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 %

Production area

Today, more than 99% of Lao coffee is produced in Southern Laos, and more specifically in the Boloven Plateau. Located at a latitude of 15° N, with altitudes ranging from 400 to 1400 m which attenuates the great variability of monsoons and ensures regular dry-season rainfalls (important for coffee flowering and first stages of cherries development), the Boloven Plateau is a very suitable place for *Coffea arabica* growing. Besides, the relatively cool climate (between November and February) allows an adequate vegetative development in the same time it confers organoleptic qualities to final product.

Surprisingly, the Boloven is not the most suitable place for the growing of *Coffea canephora* (native of Wets-African lowland rain-forests). In high altitudes, low temperatures lead to flower abortions; in low altitudes robusta trees suffer from the lack of water (leading to defoliations). However, thanks to its resistance and strong adaptation capacity, *C. canephora* managed to adapt to the local environment.

Today, coffee is the main crop for a large majority of families in the Boloven Plateau. Below 800-900 m farmers mostly grow robusta; above 800-900 m farmers have started to plant dwarf arabica trees in new areas or inside old robusta plantations. Besides coffee, farmers develop other activities mainly linked to agriculture (rain fed rice, vegetables, fruit trees, etc.) and livestock breeding.

Boloven Plateau coffee productive situation in 2007

Robusta area (ha)	Estimated production (MT of green coffee)	Arabica area (ha)	Estimated production (MT of green coffee)	Young unproductive arabica surfaces (ha)	Nurseries (number of plants)	Potential new arabica area (ha)
39,000	15,500	6,000	3,000	6,000	15'000,000	3,300

Sources: Extrapolation from PAB figures and 2007 producers' survey considering a total number of coffee producing villages in the Boloven Plateau of 125 for a total number of 15,300 households.

Relations with international economy (coffee export sector)

With an annual output of 10,000 to 20,000 MT of green coffee (80% of which is robusta), Laos is a very small producer on the world scale (less than 0.2% of world coffee production). In comparison, Vietnam exports around 800,000 MT/year[7], Indonesia 300,000 MT, Uganda 130,000 MT, Cameroon 45,000 MT and Thailand 30,000 MT.

Lao coffee exports (MT) (2000 – 2007)

	2000	2001	2002	2003	2004	2005	2006	June-07
Robusta	13,800	13,695	12,340	12,401	20,752	6,077	5,487	14,482
Arabica	200	350	603	294	2,505	2,255	1,277	1,885
Total	**14,000**	**14,045**	**13,330**	**12,821**	**23,656**	**8,578**	**6,877**	**16,367**

Source: Lao Coffee Association

Unlike many traditional robusta exporting countries (especially in Africa) which exports have decreased, Lao exports have remained steady in the past ten years (except for seasonal drops due to climate events like in 2005 and 2006). The main reasons are an advantageous currency rate policy (devaluation of Lao Kip) as well as an increasing demand for low-price coffee with low quality standards for the needs of an expanding down-market coffee segment (that generally uses robusta coffee).

Lao robusta turns out to be very attractive for international coffee buyers as they can buy it at a quite low price (there are not quality standards and there is a price penalty for Lao origin) and it has certain organoleptic qualities (Lao robusta is soft and balanced which makes it interesting in roasted coffee blends).

The prices of Lao coffee depend entirely on the international coffee prices (small production, absence from all international coffee bodies, little power of negotiation, etc.). In practice, the price of Lao robusta is fixed according to the international price fixed in London. In the past three years this price was around 1,600 USD/MT. On the other hand, the price of Lao arabica is decided according to the price of "other arabica milds" in the New York market. Currently this price is around 2,600 USD/MT.

Lao coffee is mainly exported to European countries like Poland, Germany, Belgium and Switzerland. Exports to Vietnam have also considerably increased but there is very few information about this issue (re-export? local consumption?). Main buyers of Lao coffee are international coffee traders represented by their local agents. In importing countries, Lao coffee is mainly used for coffee blends or instant coffee making without any origin recognition.

Another remarkable fact is that in spite of the alleged uniqueness (in terms of taste) and the great demand of Lao robusta, coffee exports still suffer from a price penalty of around 100-150 USD/MT according to the international price (London). It seems that Lao coffee has not managed to get rid of a certain bad reputation in terms of international quality standards and the reliability of its operators.

As Laos is a landlocked country, coffee must be exported through a neighbor country which is generally Thailand (through Vangtao/Chong Mek check point). The transport from Chong Mek to the port (Bangkok) is generally carried out by a Thai shipping company which engenders high transportation costs.

Relations with national economy

Coffee is a major agricultural export commodity (it represented 16% of total agricultural exports in 2004/2005). At regional level (Boloven Plateau), coffee is a first-order crop for around 15,000 households. According to our estimations, it represents 30 to 40% of total surface and remains by far the main crop in zones above 900 m of altitude. Besides, it is by far the main source of income for more than 80% of the households in this area.

[7] All figures quoted include robusta and arabica. However, all countries named are mainly robusta producers.

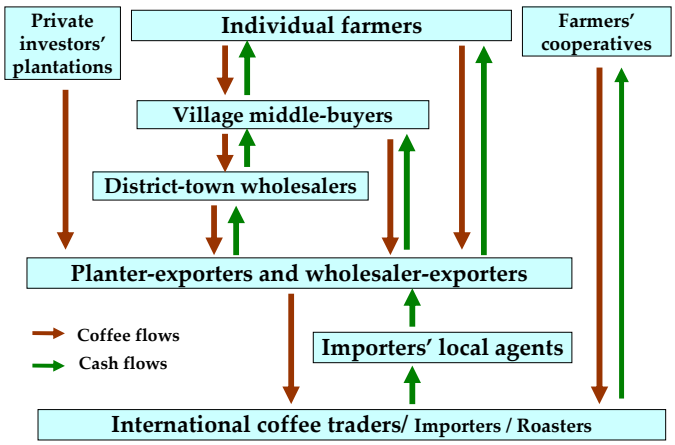
It also generates employment and economic activities internally through the domestic market of roasted coffee. In the past years, this market has spectacularly developed boosted by a bunch of very dynamic companies that have managed to develop a wide range of products and to promote new consumption behaviors.

In spite of its economic importance, there is a quite weak implication of national authorities and a very low level of organization among main coffee actors (except for exporters).

Main actors and activities of Lao coffee supply chain

Main actors of coffee supply chain are (i) individual producers, farmers' groups and private investors (production level), (ii) village buyers and wholesalers (trading), (iii) exporters and local importer agents (export), (iv) roasting companies and retailers (domestic market) and (v) consumers. Some important secondary actors are government and government-linked bodies, development projects, banks and other informal credit services providers.

General scheme of Lao coffee supply chain in 2007 (for export coffee)



Coffee production

Cropping and processing systems

Main factors having affected coffee production in the past 10 years are: in the one hand the introduction and extension of dwarf-variety arabica cropping system by individual farmers and private investors with the progressive adoption of the wet-method process and on the other hand the entry of small amounts of Lao coffee (arabica) produced by farmers' groups into high quality niche markets.

There are three main coffee cropping systems in the Boloven Plateau:

- The *C.canephora* cropping system, which is the most widespread. It is a low intensive system, without chemical input, adapted to divagation system of cattle. It is also an economically non risky system (very low level of inputs of workforce and capital).

- The former arabica Typica cropping system, technically similar to the canephora cropping system and that is progressively being abandoned (except for farmer groups that exports arabica Typica to niche markets).

- The arabica dwarf-variety (Catimor) cropping system that has been well adopted by producers and is rapidly spreading. Most plantations are still young. It is an intensive system very high-demanding of labor and fertilization.

Regarding post-harvest techniques, there are two main ways of processing coffee

- Almost all robusta coffee is processed with the dry-method, that is to say that cherries are directly sun-dried and green coffee is obtained by shelling dried-cherries. With this system very little care is paid

during harvest and port-harvest stages: farmers carry out the drip-picking of cherries, many of them dry cherries on the bare ground, etc. The quality control system set by buyers is light, subjective and engenders penalties to producers. Producers sell both dried-cherries and unsorted green coffee.

- Arabica post-harvest process is the wet-method; cherries are pulped, fermented, washed and dried (they obtain dried parchment coffee). This system requires different machines and infrastructures (called "wet-mills") including pulping machines, fermentation tanks, washing canals, etc. Moreover, it demands a good care of coffee beans during harvest and post-harvest stages. This system has been recently adopted by producers without any problems of adaptation. Today, its main limiting factor is farmers' processing capacity (financial capability to build either individual or collective wet-mills).

Coffee production actors

Individual farmers are the main actors of coffee primary production (they cultivate more than 40,000 ha) and we can estimate that coffee provides livelihood to around 15,000 households in the Boloven Plateau. Based on a comprehensive farmers' survey the following coffee producers' typology could be set up:

Type 1	Type 2	Type 3	Type 4
Large-scale wealthy diversified farmers with more than 5 ha of coffee (robusta and arabica), rain fed rice, other crops (vegetables, fruit trees, etc.), cattle, pigs and poultry. Many have other sources of income.	Mid-scale diversified coffee producers growing robusta and arabica besides other crops (vegetables, rain fed rice, fruit trees, etc.). They may own little livestock (few cattle and small livestock), those who have a tok-tok can sell processed coffee in Pakse.	Small-scale diversified coffee producers growing robusta and some arabica besides other crops (associated or not to coffee plantations) and some small cattle. Economically, they are heavily dependant on coffee. They sell a large percentage of unprocessed coffee (especially arabica) and a significant percentage makes pre-harvest loans.	Small-scale non diversified farmers heavily coffee-dependant with little livestock and little access to other sources of income. A significant percentage sells unprocessed coffee (especially arabica cherries) and makes pre-harvest loans.

Besides, some farmers gathered in exporting groups in order to produce high-quality arabica sold in niche markets. They have benefited from international organizations support (Oxfam Australia, Jhai foundation, PAB, etc.).

Finally, a certain number of private investors (generally foreign investors from Vietnam, China, Thailand, etc.) have set up arabica commercial plantations with very intensive cropping systems in land concessions granted by local authorities. It was difficult to obtain information on this issue as there is a lack of transparency. However, we can estimate the current coffee surfaces to around 1,200 ha. In the near future, this scheme is likely to develop more and more as provincial authorities have signed an agreement with a Vietnamese company for the grant of further 1,000 to 5,000 ha.

Limiting factors

There are some intrinsic limiting factors to coffee production. Some have to do with coffee primary production such as pest control (especially Coffee Berry Borer), fertility and plantations' management. On the other hand, there are issues regarding coffee post-harvest techniques and more particularly the drying.

There is also the specific issue of harvest labor as it stands for more than 60% of total production costs. Therefore, any variation of labor price or availability might have real impact on coffee production. This issue cropped up quite recently with the introduction of dwarf-variety arabica. Indeed, arabica harvest is more workforce-demanding than robusta (as it uses the selective picking) so when all newly set arabica plantations will be mature, there will be a significant increase of external labor demand, at a period of the year where labor is globally less available (competition with rice harvest in the lowlands).

Coffee producers have already started to meet difficulties finding external waged labor for arabica harvest. Today, most harvest work is carried out by family workforce with a greater care of the quality. We have estimated that in 2012, global workforce demand for arabica harvest will be four times higher

than today; farmers will have to use more and more external waged labor with a problem of global labor availability and harvest quality control. This evolution is very likely to be prejudicial to coffee producers as it will surely increase their production costs and could have a negative impact on final product's quality.

Coffee commercialization

Main actors

Farmers can sell coffee either to small-village buyers, wholesalers in district towns or directly to exporters. Many farmers still sell unprocessed products (arabica cherries and robusta dried-cherries) so the further processing is carried out by other actors who have wet-mills, robusta coffee-mills, drying areas, etc.

Small buyers purchase quite small amounts (from 1 up to 100 tons) in their own village and in surrounding villages. They may work on their own or for an exporter. Besides coffee purchasing, village buyers are generally involved in informal credit through usury credit and pre-harvest loans.

There are less than 10 wholesalers (they live in district towns of Paksong and Laongam). Their range of action includes 30 to 50 villages within the limits of the district. Interviewed wholesalers purchased between 200 and 500 MT of robusta and 100 to 200 MT of arabica during 2006/2007 campaign. Besides coffee buying, most wholesalers also provide credit services to farmers through cash or rice loans, either following a traditional loan scheme or through pre-harvest loans.

In Laos, there is a monopole on coffee exports by the companies registered in the Lao Coffee Association. Coffee export is largely dominated by one big company that commercializes around 70% of coffee production. The rest is exported by less than five import-export companies closely linked to a small number of importers' local agents. Exporters have different strategies: some are import-export companies, others are coffee planters (on land concessions) and coffee roasters at the same time and some exporters are registered in the exporters' association but never really deal physically with coffee. They provide "export services" to other companies that don't have an exporter license (like farmer groups).

As regards coffee buyers, a significant part of Lao coffee is purchased by international coffee traders who have local agents in Pakse. In the past few years, the market for Lao export coffee has been largely dominated by two main coffee traders whose agents in Pakse are very active.

Export standards

In Laos, most exporters have specialized in the selling of coffee (robusta and arabica) without any quality standards (called FAQ coffee). As a consequence, most exporters haven't set up the means to process coffee according to international quality standards. In most cases they merely proceed to a rough grading and a manual sorting of coffee beans. So far, only one company has set up the required infrastructure for a fine treatment of coffee beans.

Some farmers' groups selling to niche markets have started to process coffee following more strict quality standards (set up by each buyer). However, most of the process is still manual (sorting, cleaning, etc.).

Export procedures

We estimate the total export costs to 100 to 110 USD/MT (which stands for 4 to 6% of total value). Main costs are related to coffee transport and more specifically the shipping through Thailand (70 USD/MT in average). Regarding procedural costs, besides all the certificates that exporters must get before shipping the product, the main expense concerns the tax on profit (around 30 USD/MT). In spite of a recent effort of clarification from the Ministry of Finances, coffee tax system remains opaque and is differently interpreted by local authorities and main coffee actors. Finally, many exporters and coffee traders complain about the increasing number of unofficial costs (during coffee transport, certificates delivery, international check points, etc.).

Secondary actors

Unlike many coffee exporting countries, the implication of secondary actors (governmental, financial, scientific, etc.) is either non-existent or very weak. Main secondary actors are:

- Several government and government-linked agents that intervene at different levels of the coffee supply chain (mainly the Ministry of Agriculture, the Ministry of Commerce and Industry, the Finance department, provincial and district authorities). Although there isn't an institutional coordination of coffee chain actors, different governmental bodies are present at all levels of the supply chain, however their role is often limited to overall supervision, certificates delivery and tax collecting. However, since the past 15 years, Ministry of Agriculture has a very important implication in the sector through its projects (former LUAPD, PDRPB, FAO and now PCADR-PAB).

- Banks and other credit suppliers: they mainly lend money to exporters for coffee purchasing and investment. Most farmers or small traders have simply no access to formal credit.

- Agricultural input suppliers: they mainly sell fertilizers and pesticides to some big-scale farmers and to commercial plantations.

- Research institutions: the only coffee-related research institution called CREC doesn't carry out any research program at the moment and depends for a great part on external projects' opportunities.

Coffee roasting (for domestic market)

Laos has a small but very dynamic domestic market that uses almost exclusively downgraded export coffee (undersized and defective beans). A bunch of industrial or semi-industrial roasters have specialized in the production of European-style coffee (with a very large dominance of 3 very dynamic companies). On the other hand, a "local-style" coffee is produced by a bunch of small and medium roasting companies characterized by the use of hand-made roasting machines and flavor additives. Every year, 400 to 500 tons are transformed in local style coffee and 200 to 300 tons become pure-roasted coffee.

In the past years, Lao roasters have managed to expand the domestic market by developing a wide range of coffee products using aggressive and effective marketing strategies. Besides the selling to traditional retailing places (mini-marts, coffee shops, restaurants, hotels, etc.), some roasters have set their own consumption places like specialized coffee-shops, coffee stands, etc. where they can sell coffee beverage and advertise their products.

The results from a recent cup tasting training showed that many Lao roasted coffees still have big organoleptic and physic defects. The global quality of Lao roasted coffee remains quite low according to international standards. So far, this hasn't had a repercussion as domestic costumers are quite new coffee consumers.

Organization of main Lao coffee market circuits

There are three main circuits for Lao coffee, listed in order of importance:

- The mainstream export circuit (that includes two types of product: natural robusta and most washed arabica)
- The circuit of washed arabica for niche markets
- The circuit of roasted-coffee for domestic market

More than 99% of Lao coffee is exported through mainstream commercial circuits including 100% of robusta and most arabica. There is a low level of involvement of coffee producers in all stages related to coffee processing (especially in the case of arabica) if compared with other exporting countries.

Another remarkable fact is the relative shortness of mainstream circuit supply chain. Indeed, not only are there few categories of agents involved (producers, village buyers, wholesalers and exporters) but almost half of the farmers (in the case of robusta) sell coffee directly to exporters.

Product quality control system is insufficient at all stages of coffee commercialization. Final product is average quality green coffee (FAQ) for which there is a great demand but that suffers from a price penalty (according to most exporters).

A very small quantity of coffee (around 100 MT/year) is marketed through niche market circuits (less than 0.5% of total coffee exports). Main actors of this circuit are Laotian producers' groups supported by NGOs. Coffee is generally sold to foreign roasting companies specialized in high-quality Fair Trade specialty coffees.

Generally farmers pulp arabica coffee in collective pulping machines and sell parchment coffee to the group or cooperative. Technical staff trained by supporting organizations and paid by farmers' groups ensures the technical follow up and check that coffee matches buyers' quality standards. Farmers obtain the Fair Trade price for South-east Asia plus a fair-trade bonus. Then, the group deduces all costs related to coffee process, salaries, material, etc. In 2006, price paid to producers ranged from 19,000 to 21,000 Kip/Kg (1.95-2.16 USD/Kg).

Relations between main actors

Relations between producers and coffee buyers

Pre-harvest loans

Farmers can sell their produce either during harvest period or in advance in exchange of pre-harvest loans (farmers say they sell "green coffee" or "café khiaw" in Lao). Among farmers' survey sample[8], 45% of the interviewed farmers borrowed money through this system last year, and more particularly poorest farmers. There are different loan modalities: farmers can either reimburse in money (actually they reimburse while selling coffee, at market's price and with monthly interest rates ranging from 15 to 25%) or in coffee, with no interest rate but with a selling price which is about half the average market price.

In both cases the scheme of coffee selling disadvantages a quality system as the priority for farmers is mainly the coffee volume (they have to reimburse their debt) and they cannot benefit from the competition between coffee buyers.

In average, farmers borrow money 7 to 10 months before the harvest and generally borrow less than 1 million Kip (around 100 USD). Beside the payment of external waged labor, these loans are mainly used to buy rice or to provide for exceptional expenses such as illness or religious ceremonies. A small percentage of the families interviewed (around 5%) have made pre-harvest loans every single year during the past 5 years.

Coffee selling during harvest period

During 2006/2007 campaign, 64% of the farmers sold unprocessed arabica (mostly cherries) and 45% sold unprocessed robusta (mostly dried-cherries). In terms of percentage of total harvest, 42% of arabica harvest was sold as unprocessed coffee versus 21% for robusta. As a comparison, in 1999 around 95% of robusta coffee was sold as dried-cherries (PDRPB, 1999). The explanation is that many farmers have to sell arabica cherries as it is a very perishable product that requires to be processed almost immediately. Robusta dried-cherries can be kept in the farm until farmers have the possibility to shell it in a village mill.

Arabica is mainly sold to village area buyers whereas 50% of interviewed farmers sold robusta directly to exporters. The main reason is that more and more farmers have had access to transportation means and especially tok-toks.

Buying prices are always decided by the buyer as farmers have very little power of negotiation.

[8] A specific survey on coffee selling was carried out in half of the households of the total sample, that is to say 200 households in 20 villages.

Relations between exporters and upstream suppliers

Most exporters buy most of their coffee from middlemen and producers (except for planter-exporters). They ensure their coffee supply through simple verbal agreements or through the setting of real contracts with some middle-buyers. In some cases they finance coffee buying in the first place by lending money to middle-buyers or producers or by giving money advances to coffee collectors. They might provide other types of credit services such as the lending of coffee trees.

Coffee prices structure

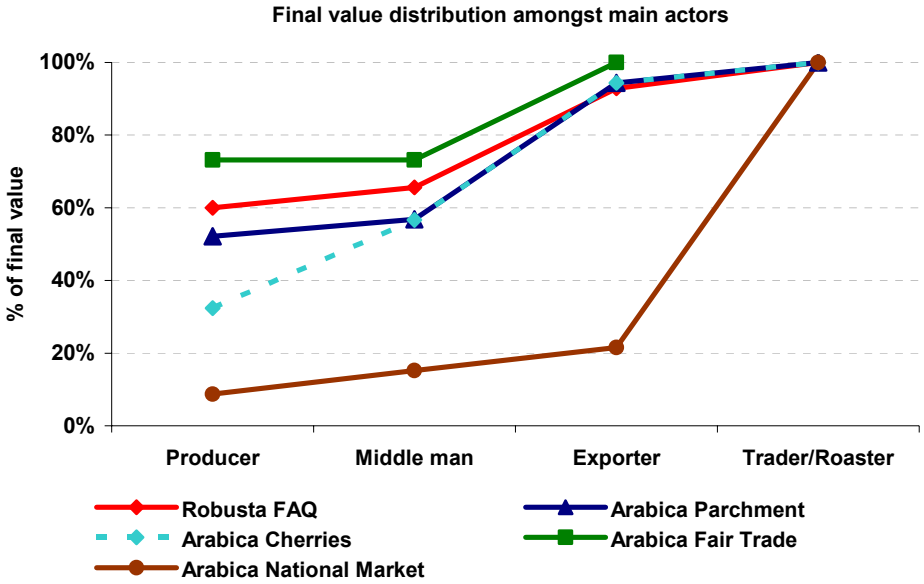
Based on information collected from main actors, it was possible to set up an estimated price structure for each coffee market circuit.

One of the main findings of this analysis is the lack of clearness about the price penalty for Lao origin coffee. Indeed, when we compared the average contract price given by exporters with international coffee prices, it appeared that the difference is almost twice higher than announced by most coffee agents. This could be due to a difference between the contract prices and some actors' margins and reality.

The study also showed some differences in export costs between the mainstream and niche market circuits. The main reason is a higher procedural cost for farmers' export groups as they pay higher local taxes and have to pay a commission to a LCA exporting company (for export procedures).

The next figure presents the analysis of the value chain for each coffee circuit through the distribution of the final value amongst main supply chain actors.

Lao coffee circuits value chain analysis



Producers obtain the highest percentages of the final value in the niche market circuit (73.2%) and in the mainstream FAQ robusta circuit (60%). On the contrary, they only get 32% of the final value when they sell arabica cherries. In that case, the added value is retrieved by middlemen who carry out the wet-process. In the case of roasted coffee circuit, roasters obtain almost 80% of the final product's value.

Conclusions

Main strengths of coffee sector are related to the product itself and its potential markets. The country hasn't yet exploited all the possibilities linked to the uniqueness and typicity of Lao coffee and specially robusta (except for some small-scale experiences of arabica coffee sold to niche markets). A dynamic domestic market has developed but domestic consumption remains low and roasters only use undergraded export coffee.

In order to develop high-quality coffee, Lao coffee sector must continue to promote the building of wet-processing units in producing villages as it has been done through the setting of farmers' groups (supported by external institutions such as PAB, Oxfam or Jhai). Moreover, a fair and accessible system of financing for individual farmers must be set up. Finally, at institutional level, national authorities should set up coffee quality standards as well as a control body (laboratory) in order to project a professional and clear image internationally.

This evolution should be accompanied by a global reflection about environment protection policy as well as a prospective analysis of the potential impact of land concessions in the Boloven Plateau.

Introduction

Coffee sector in Laos has spectacularly developed within the last 15 years,. This development can be characterized by the combination of: a significant increase of production; the coming of new actors; the development of a dynamic domestic market and a certain improvement of Lao coffee image in foreign markets. This recent but rapid development has brought significant changes at different levels, for instance:

- At production level, coffee surfaces have almost doubled in the past 10 years and the share of arabica have been steadily increasing with the setting of new plantations by both farmers and private investors.
- At technical level, some producers have progressively been having access to the coffee wet-method processing technique, which allows the production of high quality coffee (essentially for arabica).
- At market level, both domestic and export markets have significantly grown; indeed, domestic consumption has steadily increased and consumers are now offered a wide range of products. Regarding exports, not only the exports volumes have increased, but Lao coffee has also managed to enter some niche markets with a high quality image.

However, this dynamic has relied for a great part on an auspicious environment: international coffee prices have allowed profitability with local production costs and the international market for Lao coffee seems to be quite expandable. In fact, all these changes have taken place without any kind of sector strategy as Laos doesn't have an entity in charge of guiding and coordinating main coffee chain actors. The risk is that Lao coffee sector remains completely liable to the external context.

With the view of limiting and controlling this external influence, most coffee producing countries have set structures that gather main coffee sector stakeholders. Called either Coffee Board or Coffee Council, these entities are generally in charge of: (i) advising national authorities on the future strategy for coffee sector; (ii) be the representative organism who promotes country's product in international events and finally (iii) controlling all laws and regulations related to coffee.

Considering that and in order to fill this institutional gap, main coffee actors, Lao authorities as well as development projects working on these issues decided to gather in a reflection group called the GTC ("Groupe de Travail Café" or Coffee Working Group). Its mission is to assess the current situation of coffee sector in Laos and provide recommendations in terms of strategy. The work of the GTC should result in the creation of the Lao coffee board, which will be probably called the CNCL ("Conseil National du Café Lao" in French).

The GTC has two main objectives. The first one is to make propositions to national authorities regarding future Coffee Board's institutional frame (in terms of structure, regulation, financing, etc.). The second objective is to carry out a participative analysis of coffee supply chain that can be used as a basis to the elaboration of the future coffee sector mid-term and long-term strategy.

The coffee supply chain analysis study took place between May and November 2007. Its main results come from data collected in the field, interviews with main coffee actors, available bibliography and further discussions with GTC participants. The current report intends to summarize and analyze the main findings of this study.

The first three sections provide an overall review of coffee sector in Laos by presenting its history and recent developments; we first present the place of Lao coffee in the international coffee market before shortly presenting the role of coffee sector in national economy. In the fourth section, Lao coffee supply chain is described and analyzed through the characterization of its main actors and their activities, then, main coffee circuits and the relations between coffee actors are analyzed in section five. Finally, the

results' interpretation should lead to the identification of main issues and bottlenecks for coffee sector development and then to practical recommendations in terms of strategy, emphasizing those that might be undertaken by the future coffee board.

1. Some elements of methodology

1.1. Definitions and concepts

The "supply chain" or "value chain" ("filière" in French) is defined as the set of complementary or interdependent activities located at different steps of the production process from producer to consumer. It involves the flows of products, money and information, as well as main actors' strategies as illustrated in Fabre *et al* definition (1996): « A supply chain is the set of economic actors and their relations, which contribute to the production, processing, distribution and consumption of a product ».

Malassis and Ghersi (1996) add that the identification of the supply chain sheds light on the enterprises, institutions, operations, as well as the volumes, bargaining capacities, technologies, production relations, prices structure, etc. Different markets existing throughout a product's supply chain cannot be described through a pure and perfect competition model. In the real world, many institutions, regulations, personal and business relations interfere with the decisions and the definitions of markets and prices. This is why they must be taken into account. Besides, a product's supply chain must be analyzed as a whole complex system and not just as the result of supply and demand. Indeed:

- As a product circulates from production to distribution-retail, it is exchanged on not just one, but several markets: production or rural markets; wholesale markets at exportation level; retailing markets, etc.
- The nature and type of the product also changes all along the chain. Producers sell red cherries, dried cherries, parchment or green coffee. Traders sell sorted-dried-commercial coffee. Retailers sell roasted coffee, instant coffees, 3 in 1 instant coffees, etc.
- For each of these steps, there are distinct categories of actors and stakeholders: large and small-scale, oriented towards national or export markets, specialized in coffee or diversified, etc. They do not have the same goals/strategy, nor do they have the same constraints.

The methodology that will be finally chosen must take into account all these aspects and must allow a global understanding of coffee sector, actors, relations, etc.

1.2. Methodological framework

There are several methods to describe and analyze the path of an agricultural product among the different stages from production to consumption. In the scope of this study, it has been decided to choose the approach of the participative supply chain analysis proposed by Bourgeois and Herrera (1998) also known as the Cadiac method. This method analyses a product supply chain following five main stages:

Table 1: Main supply chain's analysis steps

Analysis stages	Main issues
General context analysis	Relations of coffee sector with international economy., markets, trade agreements, etc.
Relations with national economy	Economic and social relevance of the supply chain in national economy, domestic consumption, policies and institutions.
Supply chain structure	Identification and characterization of main stakeholders and activities (typology, upstream and downstream supply, etc.)
Supply chain functioning	Identification and characterization of main circuits, dynamics and regulation
Results' interpretation	Strengths and limiting factors of the sector. Indicators, perspectives and different scenarios of evolution.

In this study, we tried to collect as much first-hand information as possible; most information was collected either through surveys or through interviews with main stakeholders and finally validated by coffee sector actors in the scope of the GTC. However, some relevant information such as macro-economic indicators can only be collected through indirect methods or through available bibliography. In that case special attention is given to data reliability (verification, crosschecking, etc.).

The following table summarizes the main sources of information used in this study and the main data collection tools that were used:

Table 2: Main study's data collect tools

Issue	Sources	Data collection tools
Coffee primary production	Statistic household survey in 400 households of 20 villages of the Boloven Plateau	Household questionnaires on coffee production, coffee selling and labor issues
Coffee buying, pre-harvest-loans	Interviews with 21 small-scale village buyers from 20 different villages and 3 wholesalers from Paksong and Laongam district towns	Middle-buyer questionnaires
Private investors	Private investors and provincial authorities	Provincial authorities statistics and informal interviews
Industrial processing	Interviews with 11 roasting companies in Pakse and Vientiane	Roasters' questionnaires
Export	Interviews with 8 major coffee exporters Lao Coffee Association X main Lao coffee importers	Exporters' questionnaire Statistics from the Lao Coffee Association Importers' e-mail questionnaires
Retailing (domestic market)	Visit of 42 coffee retailers in Vientiane and Pakse	Retailers' questionnaires Coffee products characterization
Consumption	Coffee retailers Consumers (170: Laotians and foreigners)	Retailers' questionnaires (indirect information) Preliminary results of a coffee market study carried out by a student in the scope of setting up of a Geographical Indication for Lao coffee
Regulations, institutional frame, trade agreements, etc.	Ministry of Agriculture and Forestry (MAF), Ministry of Commerce and Industry, Food and Drugs Department, Lao Coffee Association, provincial authorities of Champasak and Saravan, UC-PCADR, PAB, etc.	Informal interviews Statistic data available Bibliography Workshop on coffee supply chain analysis within the GTC

2. A brief review of coffee sector in Laos and its recent development

In this section we give a quick overview of coffee sector in Laos as regards its history and recent evolutions. The aim is to give some elements of explanation that allow an understanding of coffee sector today.

2.1. History of coffee in Laos

The beginnings of coffee in Laos (1920-1950)

The first coffee plantations in the Boloven Plateau were set around 1920 by French settlers alongside the roads built by the colonial administration. Coffee rapidly became the main crop in the area, especially after the construction of a research center near Paksong in 1930 (Ban Lak 42). At that time, settlers grew exclusively arabica trees of Bourbon and Typica varieties. Within few years, native farmers living near colonial plantations started to grow coffee in small gardens, and then real coffee plantations from 1940. At its maximum level, coffee surfaces in the Boloven reached 5,000 ha. (Babin, 1998).

At that time coffee was entirely processed following the wet method and all technical steps (pulping, fermenting, washing, etc.) were made manually. The coffee obtained was then mainly exported to France with a very high-quality image.

War and coffee sector deliquescence (1950-1975)

From 1950 onwards, several external factors trigger a disorganization of coffee sector in Laos. In the first place, there was a progressive dismantlement of coffee marketing network, downstream with the Second World War and upstream when main planters, investors and traders flee the zone because of the recurrent conflicts. In the same time, colonial arabica plantations were being severely damaged by recurrent frosts and more particularly by leaf rust disease attacks. The first consequence was the progressive abandonment of coffee plantations by native farmers who had to focus on food crops. The second consequence was the progressive replacement of *Coffea arabica* Typica trees with newly introduced species resistant to leaf rust, mainly *Coffea canephora* (commonly called robusta) and in a lesser extent *Coffea liberica*. In a context of war and production deliquescence these new species had many advantages: not only they required less workforce and allowed higher yields, but the time and workforce required for coffee harvesting and processing was also reduced as *C. canephora* is processed with the dry method with very little care of cherries' quality during and after the harvest.

The preeminence of robusta in a state-controlled coffee sector (1975-1990)

After 1975 and the end of the war, native farmers as well as new settlers from the lowlands started to reoccupy the abandoned lands in the Boloven Plateau. In the same time, new authorities set a collectivization program that included the creation of coffee production and trading cooperatives (Sallée, 2007); as a result, the coffee sector became State-controlled: collection, trading, exporting as well as prices' policies were controlled by national authorities with a view of high-production and little care of coffee quality. This system didn't allow great profitability.

During this period, coffee export benefits were mainly used to reimburse the Comecom debt with former socialist countries. Under this marketing system the price of Lao coffee resulted from a bilateral negotiation and didn't reflect the state of international markets (Matsushima, 2004). This production-directed policy triggered a drop in coffee quality as farmers took less care of their plantations and simplified harvest and post-harvest practices (focusing on coffee volumes to the detriment of quality).

Market liberalization and the resurgence of arabica (1990-2007)

In the late 80's, under the New Economic Mechanism regime (NEM), coffee sector was progressively liberalized and private operators could finally enter it (Matsushima, 2004). The convergence of different

situations such as a new economic conjuncture, a dramatic rise of coffee prices in 1994 due to frosts in Brazil and the devaluation of Lao Kip in comparison with the dollar in 1997 following the Asian crisis triggered a spectacular development of coffee export sector. Indeed, despite a period of depletion in international coffee prices between 1998 and 2003, the advantageous currency exchange rate policy allowed to keep coffee sector profitability. As a consequence, Lao coffee exports steadily increased during this whole period.

Until the late 90's, the increase of production had mainly been made through of the extension of *C. canephora* plantations so in 2000, it represented more than 95% of total coffee surfaces. In the early 90's, national authorities had started to promote arabica production through two main development projects: LUADP[9] (1991-1995) and PDRPB (1997-2002). One of the main objectives of these projects was to develop an intensive cropping system using the high-productive dwarf variety[10] of arabica called Catimor. This variety requires more workforce than *C. canephora* as regards growing, harvesting and processing. Indeed, as most arabicas, cherries from Catimor are processed following the wet method. Despite the greater demand in workforce for this cropping system (to such a point that farmers call it the "King of coffee"), farmers and investors are very attracted to it as coffee is sold at higher prices in international markets. Besides, arabica has a better image in importing countries and offers the possibility to enter high value niche markets.

The result of this policy has been a steady increase of arabica share during the past 10 years to such extent it now stands for almost 15 % of the total coffee surfaces.

Lao coffee has 100 years of history. Its international reputation was built on high-quality washed arabica from Bourbon and Typica varieties (1920-1950). Between 1950 and 1990, external factors (war, diseases) made that arabica was progressively replaced by C. canephora (robusta) so Laos specialized in the production of natural robusta with no quality standards. Since 1990, there is a policy of reintroduction of arabica using a high-productive dwarf-variety with a slight but progressive adoption of the wet-method.

2.2. Some facts on coffee production

2.2.1. Production area

Although some coffee is produced in Northern provinces like Luang Prabang or Phongsaly, this study will focus on Southern provinces, and more particularly on the Boloven Plateau as it stands for more than 99% of total Lao coffee production. Production is more specifically concentrated in the districts of Paksong in Champasak province, Laongam in Saravan and Thateng in Sekong.

Table 3: Total coffee area and production by region in 2004-2005

	Area (ha)	**Production (MT*)**
Northern Region	**125**	**80**
Central Region	**30**	**20**
Southern Region	**42,425**	**24,900**
TOTAL	**42,580**	**25,000**
Detail of Southern Region production by province:		
Champasak	25,100	14,610
Saravan	13,100	7,830
Sekong	3,865	2,200
Attapeu	360	260

**MT of green coffee*

[9] See abbreviations' index in page 5

[10] Catimors are descendencies of a cross between Caturra and Timor Hybrid, resistant to coffee leaf rust

Source: Agricultural Statistics Year Book 2006. Ministry of Agriculture

The Boloven Plateau is located at a latitude of 15° N, which engenders a strong seasonality with hot summers and relatively cold winters. Altitudes range from 400 to 1400 m with a strong vertical agro-ecological differentiation.

The Boloven Plateau is a very suitable place for arabica growing as it provides an excellent agro-ecologic environment for the growing of this East-Africa native specie (See Annex 1 in page 80). In the first place, altitude attenuates the great variability of monsoons and regular dry-season rainfalls allow coffee flowering and vegetation maintaining. Besides, the relatively cool climate (between November and February) allows an adequate vegetative development in the same time it confers organoleptic qualities to coffee. Finally, Plateau's rich-acid-deep soils are perfectly suitable for high-demanding specie such as *C. arabica*. *C. arabica* naturally grows in altitudes ranging from 800-900 m up to 1400 m. Its upper development limit is determined by frost risks whereas its bottom limit depends on the amount of dry-season rainfalls.

Surprisingly, the Boloven Plateau is not the most suitable place for the main specie grown in Laos, *Coffea canephora,* which is native of Wets-African lowland rain-forests. In Laos, *C. canephora* is grown in altitudes ranging from 400 to 1400 m. In high altitudes, *C. canephora* hardly bear low temperatures which often lead to flower abortions. In low altitudes (between 400 and 800 m) trees suffer from a lack of water with recurrent defoliations. In such altitudes, it is quite common that flowering rains (March) are followed by drought episodes which causes massive flower abortions, which leads to a drop of global production as it happened in 2004 and 2005 (see export figures in 2005 and 2006 in Figure 2 page 24). However, thanks to its resistance (robustness) and strong adaptation capacity, *C. canephora* managed to adapt to the environment of the Boloven Plateau.

In Laos, the introduction of robusta in a zone that is more suitable for arabica growing resulted from historical reasons (war, diseases). The unexpected consequence of this situation is that Laos is the only robusta producing country in which C. canephora is grown at such latitude (15°) and altitude (400-1400 m). Only Uganda grows robusta at quite high altitudes (below 900 m) with the difference that the production area is located near the Equator.

Coffee, in general, is the main crop for a large majority of families. In altitudes below 800-900 m, families grow mostly robusta (mixed with some Liberica trees); above 800-900 m, beside robusta, farmers have started to plant dwarf arabica trees in new areas or inside old robusta plantations. Many of these new plantations are not productive yet. Besides coffee, farmers develop other activities mainly linked to agriculture and livestock breeding.

Table 4: Other productive activities in the Boloven Plateau

Crop / Livestock	% of farmers	Average surface / number of animals
Rice	20%	0.5 to 1 ha
Other crops (vegetables, fruit trees)	30%	0.5 ha
Cattle	15%	8 to 10
Pigs	30%	2 to 3

Source: Producers' survey (2007)

2.2.2. Coffee products

The two main coffee species grown in Laos are *Coffea arabica* and *Coffea canephora* which have different botanical, productive and taste characteristics[11] (see Annex 1 in page 80). In a much smaller scale there are also some plants of *Coffea liberica*.

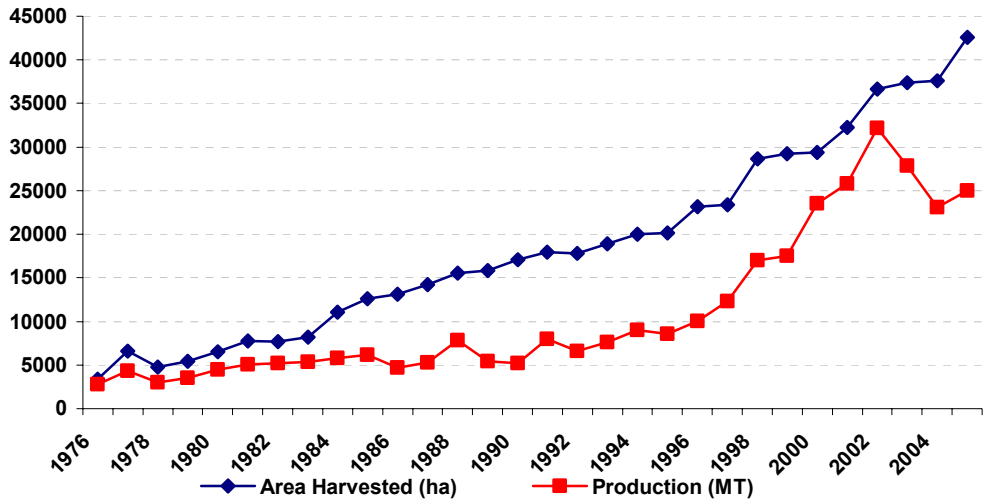
[11] In importing countries, washed arabica is considered as a high quality coffee and is mainly consumed as drip coffee. On the contrary, robusta is still considered a cheap and low quality coffee and is mainly used to make coffee blends or instant coffees.

All robusta exported from Laos is obtained through the dry method; it means that immediately after harvest, cherry beans are sun dried (the product obtained is called dried cherries) and then hulled in order to obtain unsorted merchantable green coffee (see Annex 3 in page 81). In many cases farmers dry the cherries on the bare ground as very few have set wooden or cemented drying areas. The final output of dry-process (after shelling, sorting and grading) is called "natural robusta" green coffee.

Arabica coffee exported from Laos is actually a mix between beans from the old Typica variety and the newly introduced dwarf variety (Catimor), with a high predominance of the latter. In most cases exporters and buyers do not make the difference and both varieties are mixed. The only exceptions are some Fair Trade, Gourmet and other niche markets who specifically ask for 100% Typica beans. Most arabica is processed with "wet method". After harvest, selected red cherries are pulped, fermented and washed with water before being dried. The product obtained is called "washed arabica" or "fully washed arabica". In Laos, unripe or defective arabica beans are often processed following the dry method and sold either in the domestic market (roasted coffee) or in the international market as "unwashed" or "natural" arabica.

2.2.3. Recent evolution of coffee production

Figure 1: Evolution of coffee surfaces and production in Laos (1976-2005)



Source: Yearly statistics from the Ministry of Agriculture

This graph made from official statistics shows that global coffee surfaces and production have been steadily increasing for the past 30 years. However, as no breakdown by specie is available, it is not possible to see the different dynamics between robusta and arabica. What we know is that before 1990, *C. canephora* (robusta) represented more than 95% of total coffee surfaces. The rapid increase of coffee surfaces and production observed since 1995 is mainly the result of the setting of new arabica plantations (promoted by local authorities and different projects such as LUADP, PDRPB, FAO coffee project, etc.).

Table 5: Evolution of coffee surfaces and species share in the Boloven Plateau

Year	Total surface (ha)	Robusta %	Arabica %	Source
1990	**17,066**	**> 99 %**	**Residual Typica**	PDRPB
1999	**25,000**	**98,5 %**	**1,5 %**	(Duris, 2000)
2007	**45,000**	**87 %**	**13 %**	Extrapolation from PAB figures and producers' survey 2007

Table 5 shows the evolution of robusta and arabica surfaces since 1990. As no official statistics are available, figures were taken from different sources. We observe that the greater increase of arabica surfaces took place since 1999 as the share of arabica went from less than 2% to 13% of total surfaces. In

Table 6 we present the current productive situation in the Boloven Plateau and specially a prospecting of arabica surfaces.

Table 6: Boloven Plateau coffee productive situation in 2007

Robusta (ha)	Production (MT green coffee)	Arabica (ha)	Production (MT green coffee)	Young unproductive arabica surfaces (ha)	Nurseries (number of plants)	Potential new arabica area (ha)
39,000	15,500	6,000	3,000	6,000	15'000,000	3,300

Sources: Extrapolation from PAB figures and 2007 producers' survey considering a total number of coffee producing villages in the Boloven Plateau of 125 for a total number of 15,300 households.

By extrapolating the results observed in 400 households interviewed in 20 villages during 2007 producers' survey, we see that arabica went from very small surfaces made of residual Typica trees to 6,000 ha in less than 20 years. Besides, this strong planting dynamic seems to be ongoing as there are further 6,000 ha that will become productive within the next two years. Finally, we observe that there is still a planting dynamic illustrated by the number of coffee trees in farmers' nurseries that will allow the planting of further 3,300 ha within the next years.

Total coffee surfaces in Laos climbed up from around 20,000 ha to more than 40,000 in 10 years. In the same time, the share of arabica passed from less than 1% to 13% of total surfaces.

Eventually, we must add the impact of commercial plantations as they play a role in this recent planting dynamic. Indeed, private investors have been setting coffee plantations in land concessions granted by local authorities. This specific issue will be discussed later on (see paragraph 5.1.2.2 in page 41).

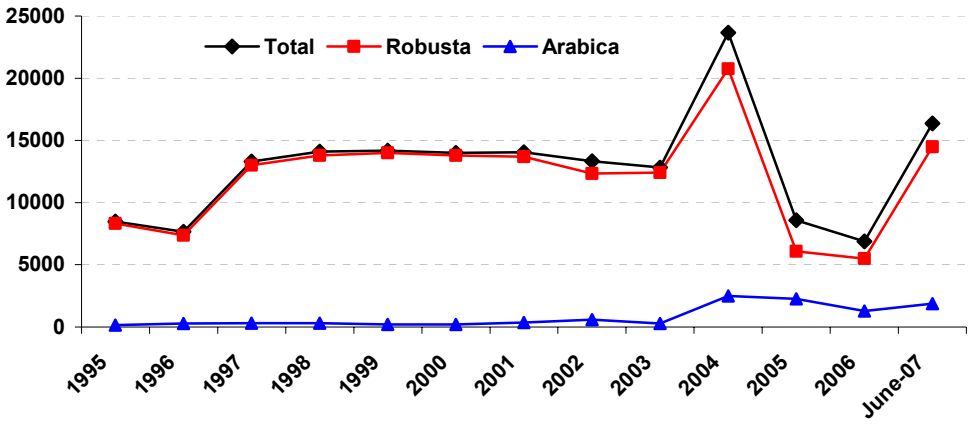
3. Relations with international economy

3.1. Relations between Lao coffee sector and international coffee market

Lao coffee and international market dynamics

With a current annual output that oscillated between 10,000 and 20,000 MT of green coffee in the past three years (80% of which is robusta), Laos is a very small producer on the world scale as its production stands for less than 0.2% of world coffee production. In comparison, neighbor Vietnam, a major robusta producing country exports around 800,000 MT/year[12] and has become the second world's coffee exporting country. Other important robusta producing countries are Indonesia (300,000 MT), Uganda (130,000 MT), Ivory Coast (130,000 MT), Cameroon (45,000 MT) and Thailand (30,000 MT).

Figure 2: Lao coffee exports (MT) (1995 – 2007)



Source: Figures from the Lao Coffee Association

Two main patterns have affected the international market of robusta coffee in the last years: first of all a global increase of robusta share in the international coffee market (see Figure 3 in page 25) and secondly a spectacular increase of the share of robusta from Asian producing countries mainly due to the spectacular increase of Vietnamese exports (see Table 7).

Table 7: Coffee area and exports of main robusta producing countries

	1990		1994		1998		2002		2006	
	Area (ha)	Exports (MT)	Area (ha)	Exports (MT)	Area (ha)	Exports (MT)	Area (ha)	Exports (MT)	Area (ha)	Exports (MT)
Cameroon	300,000	156,676	250,000	32,753	300,000	44,743	140,000	38,381	230,000	44,385
Ivory Coast	1'323,900	256,971	800,000	146,639	883,279	261,917	520,000	195,192	480,000	135,029
Indonesia	746,759	414,194	797,000	276,278	844,172	335,882	1'372,184	257,150	1'263,606	317,466
Laos*	17,066	5,880	20,021	9,000	28,640	14,096	36,624	13,330	43,140	6,877[13]
Thailand	60,320	60,086	69,920	68,163	65,027	46,682	67,000	15,198	68,780	28,518
Togo	21,000	14,330	45,000	9,948	48,200	9,948	48,200	6,011	34,000	7,074
Uganda	270,000	141,161	263,000	202,126	265,000	197,161	217,504	201,471	220,000	130,373
Vietnam	61,857	68,714	106,300	163,255	213,802	388,003	470,000	706,282	488,600	834,282

*Sources: ICO (*for Laos, figures come from the Lao Coffee Association)*

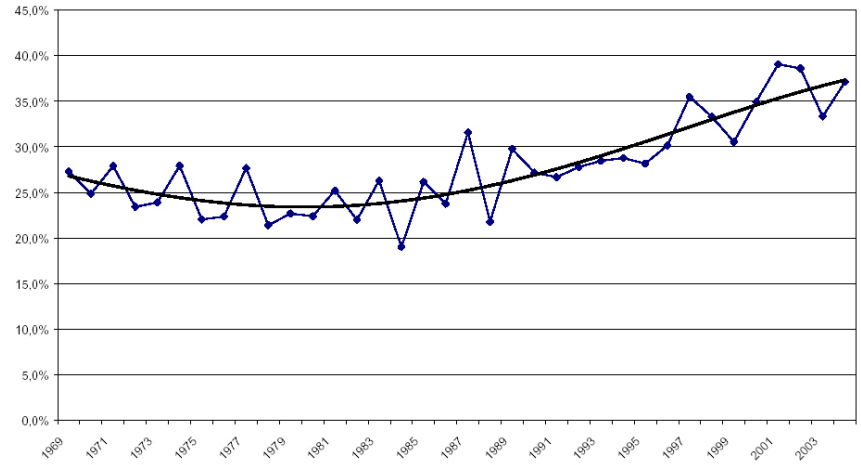
[12] All figures quoted include robusta and arabica. However, all countries named are mainly robusta producers.

[13] After having reached a historical record of 23,000 MT in 2004, Lao exports dramatically dropped in 2005 and 2006 due to drought episodes and CBB (coffee berry borer) attacks. Exports have considerably recovered in 2007. For instance in July 2007, more than 18,000 MT of green coffee have already been exported according to the Lao Coffee Association.

As regards regional disparities among major robusta producing countries, we observe that exports have stagnated or even dropped in the past 15 years in most African countries which are traditional robusta exporters. In the same time, most Asian countries have considerably increased their surfaces and exports (see Table 7 in page 24). One of the main reasons of this dynamic is the devaluation of most Asian currencies following the crisis of 1997 as this exchange rate policy generally boosts countries' exports (coffee international prices are in US dollars). We observe the same trends concerning coffee surfaces as in most African robusta producing countries surfaces have stagnated or decreased in comparison to their 1990 level whereas in most Asian countries coffee areas have spectacularly increased; they have been multiplied by 8 in Vietnam, by 1.7 in Indonesia and have more than doubled in Laos.

As regards the relative increase of robusta share in the international market shown in Figure 3, the global trend (the share of robusta went from 25% to 40% in 20 years) appears contradictory with the commonly accepted idea that coffee market should be governed by quality demand since the dismantlement of quotas policy in 1989. In fact, there has been an increasing demand for low-price coffee with low quality standards for the needs of down-market coffee products segment, collective catering, coffee machines, instant coffees, etc. These markets generally use robusta coffee.

Figure 3: Share of robusta in world coffee production (1969-2003)



Source: Daviron and Ponte (2005)

In such scope, Lao robusta turns out to be very attractive for international coffee buyers as they can buy it at a quite low price (there are not quality standards and there is a price penalty for Lao origin) and it has certain organoleptic qualities (Lao robusta is strong and balanced which makes it interesting in the making of coffee blends as a taste balancer).

Remark: There is a gap between export and production statistics. Indeed, when we compare Figure 1 and Figure 2 we observe a great difference between exports and production that cannot be explained by domestic consumption. The reason is that production is calculated by national authorities based on field estimations whereas exports are calculated by the exporters' association (LCA) based on exporters' invoices. In the first case, local authorities lack the means to carry out proper statistics and rely on second-hand information. In the second case the reliability of the data depends on the accuracy of the figures lent by exporting companies.

Lao coffee and international coffee prices

The prices of Lao coffee depend entirely on the international coffee prices (as Laos doesn't have any power of negotiation because of its small production and doesn't belong to any international coffee body). The price of Lao robusta is fixed according to the robusta international coffee price (in London) whereas

the price of Lao arabica is decided according to the price of "other arabica milds" in the New York market[14]. The evolution of international coffee prices since 1975 is shown in Annex 4 (page 81).

Coffee international prices are characterized by great fluctuations and the succession of crisis and expansion periods. A first period of crisis started in 1989 (when ICO quota policies were suppressed) and ended with a dramatic raise of international coffee prices after Brazil's frosts in 1994. In 1999, international coffee market entered a second period of depletion in which robusta dropped to its historical lowest prices in 2002 (the international price of robusta was divided by six between 1994 and 2002).

It seems that Lao coffee exports resisted well to these crisis mainly because of an advantageous currency exchange policy (strong national currency devaluation). During the hardest crisis for robusta coffee, Lao exports remained still and even increased in 2003 and 2004 (Figure 2). Since 2003, there has been a slight recovery of international prices for both arabica and robusta and in 2007 they have reached their level of the later 90's: around 75 cents/Lb (1,653 USD/MT) for robusta and 120 cents/Lb for arabica (2,646 USD/MT).

Major markets for Lao coffee

Lao coffee is mainly exported to European countries like Poland, Germany, Belgium and Switzerland. Exports to neighbor Vietnam have also considerably increased as shown in Table 8.

Table 8: Lao coffee exports (MT) by importing country (2002 – 2006)

Country	2002	2003	2004	2005	2006
Poland	2,014	4,521	9,345	3,599	3,199
Germany	1,956	2,031	1,672	862	418
Belgium	1,490	3,035	2,633	77	1,171
Switzerland	1,130	967	3,295	721	0
Other European countries	5,718	665	1,546	207	112
Vietnam	249	621	3,423	2,326	1,183
Other ASEAN countries	500	330	686	399	639
USA	0	0	12	18	18
Japan	115	3	6	45	14
Other countries	158	648	709	324	124
TOTAL	**13,330**	**12,821**	**22,617**	**8,578**	**6,753**

Source: Exporters' association (LCA)

As we can observe, there isn't a clear pattern for Lao coffee in the international markets as the quantities exported to one specific country can strongly vary from one year to another. The explanation of such situation comes from the organization of Lao coffee export sector. The different commercial strategies and the competition among a bunch of importers' local agents are determinant factors on the final markets of Lao coffee. Moreover, most Lao exporters follow an opportunist strategy that privileges the highest bidder at the detriment of long-term commercial relations.

It is very difficult to follow the path of exported coffee. The type of buyer (international coffee traders, representatives from regional branches, local agents, etc.) and the final use of Lao coffee (coffee blends, instant coffee making, etc.) make it hard to follow up the products. Besides, there is a certain lack of transparency regarding some coffee exports, especially those to Vietnam. Indeed, despite these exports are recorded in the exporters' association figures, it was impossible to interview an exporter having sold coffee to this country in the past years.

[14] International coffee prices are fixed in coffee exchange markets of importing countries (London, New York, Hamburg). They are made by taking into account the prices of main producing countries. These prices are calculated for four great categories of coffee: Colombian milds, Brazilian naturals (both arabicas), other arabica milds and robustas.

Another remarkable fact is that in spite of the alleged uniqueness (in terms of taste) and the great demand of Lao robusta, coffee exports still suffer from a price penalty of 100 to 150 USD/MT according to the international price (London). It seems that Lao coffee has not managed to get rid of a certain bad reputation in terms of international quality standards and the reliability of its operators.

In spite of its uniqueness and a high demand, Lao robusta is bought with a price rebate in international market.

The markets for Lao arabica are for a great part the same as for robusta[15], excepted for the arabica sold in niche markets. Washed arabica exports started in the later 90's as a result of the development of new plantations of the dwarf-variety. However, the first experiences of high-quality arabica for niche markets were made with coffee from the old variety (Typica) as the dwarf variety has a problem of bad reputation in some important markets like the United States.

3.2. Trade organization

As Laos is a landlocked country, coffee must be exported through another country which is generally Thailand. Paksong (the largest town of the Boloven Plateau) is only 50 Km from Pakse and less than 100 Km from the Thai border (Vangtao/Chong Mek check point). Export scheme is the same for most Lao operators: coffee is bagged and stock in one of exporters' warehouse located alongside the road between Pakse and Paksong; exporters bring the coffee to Chong Mek check point and then lend it to a Thai shipping company that carries out the transport until the international port in Bangkok.

There is no data about exports through other countries even if officially coffee is exported to Vietnam (by land? by sea?). Moreover, it seems that no coffee is exported through Cambodia.

Laos is a landlocked country. Most coffee exports are made through Thailand (Bangkok) which engenders high transport costs and heavy export procedures. So far there hasn't been any prospecting about alternative shipping ways (Cambodia, Vietnam) even if big amounts of coffee have been exported to Vietnam in the past years (according to LCA figures).

Coffee prices structure in Laos is mainly determined by the contracts between exporters and buyers. The strategy of most coffee actors mainly consists in seeking profitability in the short-term, so there isn't any kind of reward or special market networks for different qualities of coffee.

At institutional level, no specific supply chain coordinating organization has been set up in Laos. As a consequence, coffee trade is in the hands of private actors (exporters, importer agents, middlemen and producers) with a partial control of national authorities (taxes, certifications, overall control). Moreover, the geographical concentration of coffee production and a quite small number of actors make that Lao coffee supply chain is shorter that in many exporting countries. For example, 50% of the green robusta coffee is sold directly to exporters by producers.

3.3. Trade agreements

Laos is member of ASEAN Free Trade Area (AFTA) since 1997 and has trade preferences from Australia, China, the European Union, Japan and Thailand as well as a bilateral trade agreement with the United States. Moreover, Lao PDR is negotiating for WTO membership and its accession is expected in 2008.

As a Least Developed Country (LDC), Lao PDR has trade preferences from different countries and trade blocs. There is a trade preference from Thailand, though it is not very relevant in the case of coffee as very little amounts are exported to this country. Trade preferences from Vietnam might have a stronger impact as coffee exports to this country are increasing (see Table 8 in page 20). Besides the preferential tariffs, these agreements foresee a development of exports to Vietnam through the development of

[15] In fact, most arabica is bought by the same buyers than robusta

communication roads and the facilitation of cross-border transports. In the next years, coffee exports through Vietnamese ports could become an alternative to exports through Bangkok.

Finally, the most relevant trade preference agreement as regards coffee exports is the European Union's Generalized System of Preference (EU-GPS) that has been applied since 1999. Since 2002, almost all products from the Lao PDR (including green coffee) are eligible for duty free export to all EU countries. The only products excluded are sugar, rice and bananas.

4. Relations with national economy

4.1. The importance of coffee sector in national economy

According to statistics from the Ministry of Industry and Commerce (MIC), during the fiscal year 2005/2006, the amount of coffee exports represented 1% of the value of total Lao exports (minerals, gold and garment represented almost 70% of total export value). However, coffee is a major agricultural export-commodity for the country. In 2004/2005 it represented 16% of total agricultural exports (Table 9).

Table 9: Value of Agricultural Exports 2004-2005 (USD)

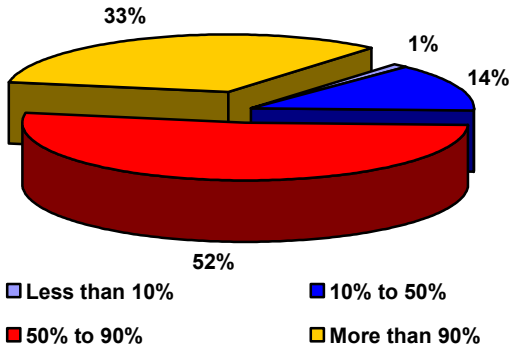
Export	Total Value (official and informal data)	% share of Total
Livestock	15'539,540	**25%**
Coffee	9'599,327	**16%**
NTFPs*	11'756,668	**19%**
Other Agricultural Products	24'556,657	**40%**
Totals	61'452,192	**100%**

Source: Table from UNDP report on International Trade and Human Development in the Lao PDR, 2006.

**Non Timber Forest Products*

At regional level, coffee is a first-order crop for thousands of households in the very specific area of the Boloven Plateau. By extrapolating the figures from PAB baseline survey and 2007 farmers' survey, we can estimate that coffee represents 30 to 40% of total surface and remains by far the main crop in zones above 900 m of altitude. Besides, it is by far the main source of income for more than 80% of the households in this area as shown in Figure 4.

Figure 4: Importance of coffee in households' annual income in the Boloven Plateau



In conclusion, we can affirm that coffee is economically important for the country (as an export commodity) and fundamental for southern provinces and Boloven Plateau households.

4.2. Coffee domestic market

So far, Laos's coffee consumption per capita remains limited if compared with other countries' level (see Table 10). With a yearly consumption per capita of around 120 g, Lao domestic market consumes more than thirty times less than most importing countries and several times less that some important exporting countries. According to our estimations, Lao domestic market uses around 600 to 800 tons of green coffee per year which stands for less than 5% of total coffee production.

Table 10: Coffee consumption (in Kg/capita/year) in some importing and exporting countries

Exporting countries		Importing countries	
Brazil	**5.15**	**Belgium**	**8.84**
Indonesia	**0.51**	**Finland**	**11.92**
Ethiopia	**1.44**	**France**	**5.15**
Mexico	**0.83**	**Germany**	**6.6**
Colombia	**1.89**	**Poland**	**3.07**
India	**0.07**	**Japan**	**3.41**
Philippines	**0.60**	**Switzerland**	**7.51**
Laos*	**0.12**	**USA**	**4.09**

*Source: Newsletter from the International Coffee Association (*excepted Laos)*

Nevertheless, even if no official figures are available and no specific study has been carried out on this issue, most actors agree on the fact there has been a great development of coffee domestic market and domestic coffee consumption within the last years. Some qualitative indicators illustrate this recent dynamic: new roasting companies have appeared, roasting methods have been improved, the range of coffee products proposed to consumers has considerably widen, roasted Lao coffee has started to be sold abroad with a high quality image, etc.

Lao domestic market is characterized by a great segmentation of its products and a strong differentiation of consumers (see also chapter 6.3 page 62). In the one hand, most Laotians consume a beverage made from low quality robusta coffee mixed with volume and flavor additives (palm sugar, butter, local alcohol, etc.). In the other hand, we observe an increase of a certain category of well-off customers (foreign residents, some tourist as well as a developing middle-upper Lao class) living in large cities and demanding pure roasted coffee (or "European style" coffee). Finally, there has been a great development of instant coffees consumption in the past years, to such point that some local roasting companies have started to sell their own instant coffees.

These new consumption behaviors as well as the increase of Lao domestic consumers' purchasing capacities have engendered a segmentation of domestic market (Table 11) according to the type of product, the type of consumer and the place of consumption.

Table 11: Characterization of coffee domestic market

Type of product	Places of consumption	Consumer typology
Local-style or Mixed coffees	Countrywide (markets and street spots)	Occasional consumers, mainly Laotians
European style or Pure roasted coffees	Large cities: Vientiane, Luang Prabang, Pakse…	Regular consumers. Mainly foreigners and some Laotians
Instant coffees	Countrywide	Occasional consumers, mainly Laotians

As the purchasing power of the population will grow and that new consumption habits will develop, one might expect that coffee domestic market will continue to expand within the next years.

Coffee consumption per capita is very low in Laos (120g/cap/year). However, domestic market is very dynamic and segmented.

4.3. Coffee sector's political and institutional frame

With the dismantlement of the State-controlled system that prevailed until the late 80's, national authorities and public institutions stepped out from Lao coffee sector which was put in the hands of private actors. Today, even if some governmental and non-governmental entities are partially involved in the supply chain, their role often remains limited to tax collecting and certificates delivery.

Officially, coffee sector's policy is under the supervision of the Ministry of Agriculture and Forestry (MAF) for all aspects linked to production and the Ministry of Industry and Commerce (MIC) for market issues. As regards national coffee policy, Lao authorities have been very active in the promotion of dwarf

varieties of arabica and the replacement of robusta through successive development projects in the Boloven Plateau (LUADP, PDRBP, FAO coffee project and PAB).

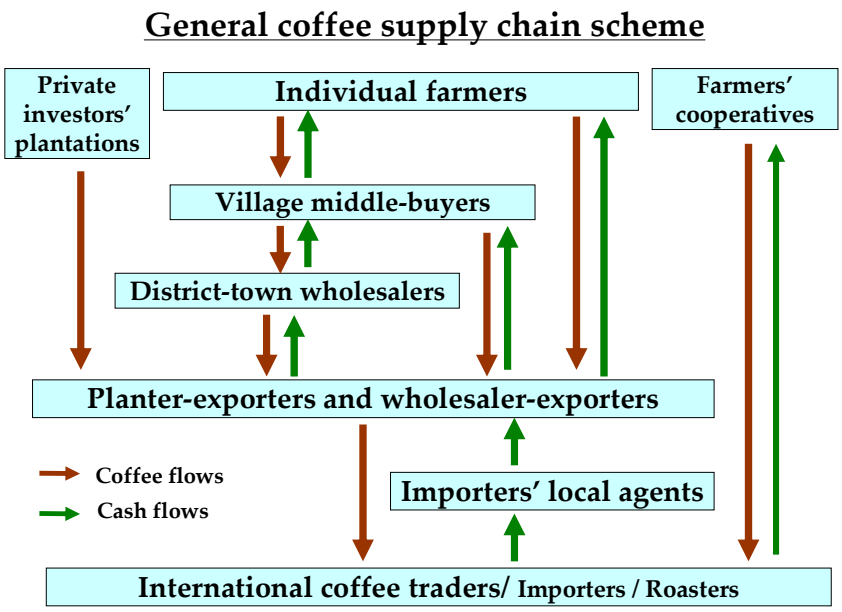
The main private actor[16] is indubitably the exporters' association (called the Lao Coffee Association) that gathers main coffee exporters and some roasting companies. Producers have started to organize and have recently created a second level organization called the AGPC (Coffee Producers' Groups Association, "Association des Groupements de Producteurs de Café du Plateau des Boloven" in French) which gathers more than 50 small producers groups. All these actors will be described in detail in sections 5, 6 and 7 (from page 32 to page 73).

[16] LCA is under the supervision of the Chamber of Commerce, which means it depends on the Ministry of Commerce and Industry (MIC)

5. Main actors and activities of export coffee sector

In this section, we aim to present main actors involved in coffee sector and more particularly primary actors presented in general coffee supply chain scheme (Figure 5). First of all we will describe coffee production in Laos through the presentation of main cropping systems and the main actors involved, before focusing on specific issues affecting the productive sector. Then, we will describe all the agents involved in coffee trade from the first selling to the final buyer. Finally we will describe the main actors of coffee domestic market through the presentation of roasting and retailing activities.

Figure 5: General scheme of Lao coffee supply chain in 2007 (for export coffee)



5.1. Coffee production

Several factors have affected coffee production in the past 10 years: First of all, the introduction and extension of arabica by individual farmers has triggered an increase of cultivated surfaces, the progressive adoption of the wet-method technique and a progressive change of farmers' cropping systems. Moreover, the arrival of private investors developing large surfaces of arabica in land concessions is starting to have significant impacts not only on global coffee production but also on aspects such as the labor availability issue, land pressure or local environmental impact. The last relevant factor regards some successful experiences of Lao coffee exported to high quality niche markets by small farmers' groups.

5.1.1. Main coffee cropping and processing systems

5.1.1.1. *C. canephora* cropping system

The current cropping system of *Coffea canephora* was introduced in the 50's as a replacement of former arabica Typica cropping system that had been affected by a cryptogamic disease (coffee leaf rust due to *Hemileia vastratix*), the dismantlement of arabica commercialization network during the Second World War and recurrent frost episodes (Sallée, 2007). It can be defined as a low intensive productive system with a structure of plantations (trees' density, pruning techniques, etc.) meant to be as low labor-demanding as possible and that allows the transit of cattle under coffee trees (see Picture 1). Economically speaking, we can say it is a low-risk cropping system for farmers as it requires very little inputs in terms of workforce and investment.

The following table summarizes its main technical characteristics:

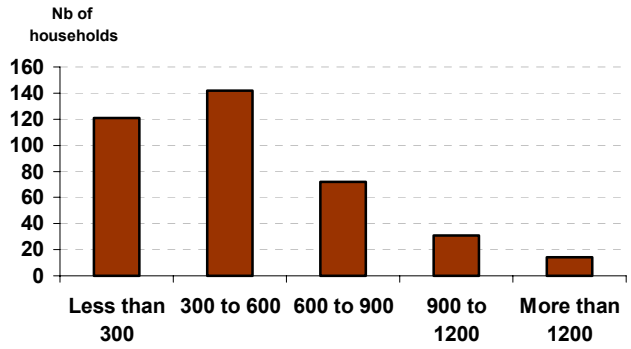
Table 12: Characteristics of *Coffea canephora* cropping system in the Boloven Plateau

Variety (cultivar)	Seeds introduced from Africa and Vietnam in 1940-50.
Age of the plantations	10 to 50 years
Type of plants	Seedlings harvested under existing coffee trees. Very rare tree nurseries
Previous cultivations	Long time ago, after slash and burn or as replacement of old Typica plantations
Shade	Natural and heterogeneous (forest trees, fruit trees, etc.)
Density of plantation	Low: 900 to 2,000 trees / ha. 1,111 trees (3x3m) is the most frequent density
Association	Fruit trees, shade trees, other useful trees (for cattle feeding and night penning)
Pruning	Free growth with regenerating of some axes after the harvest. Very high tree structure allowing the passage of cattle. Great number of orthotropic axes (between 5 and 30)
Fences	None (cattle passing)
Technical itinerary	- Weeding before harvest - Harvest - Maintenance through cattle passing
Fertilization	None. Otherwise through cattle passing and night penning
Type of system	Low intensive "picking" system
Annual labor out harvest	About 50 DW for weeding
Yields	From 100 to 600 kg of green coffee/ha following the altitude and the year (strong biannual variability)
System's current dynamic	Under replacement (by arabica) in the uplands (in altitudes above 900m)

DW=Days-worker (one day of work carried out by one worker)

Picture 1 : Robusta plantation with cattle

Figure 6: Robusta yields in 2007 (households' distribution ranges)



Robusta yields (in Kg of green coffee/ha)
Average: 517 Kg, Median: 420 Kg
Sample size: 380

Remark: 2007 was an exceptional year (following two years with very low yields). The actual average yield should be around 300 kg of green coffee/ha.

The robusta cropping system is the most widely spread in the Boloven Plateau. It is carried out in altitudes between 400 and 1400 m. Its bottom limit is around 700m, as under this altitude robusta trees are heavily affected by the length of the dry season (flower abortion). Above 1200 m, the risks of frost are very high.

Robusta cropping system is the most widespread in Boloven Plateau. It is a non intensive system, without chemical input, adapted to divagation system of cattle. It is also an economically non risky system.

By extrapolating the data from producers' survey we can estimate that this cropping system is carried out in around 90% of the farms (the percentage would be around 40% for arabica).

5.1.1.2. Arabica cropping systems

Table 13: Characteristics of arabica cropping system in the Boloven Plateau

	Typica system	"Dwarf variety" system
Variety (cultivar)	Typica	Catimor (lines from Portugal and Costa Rica)
Age of plantations	More than 50 years	Less than 15 years
Type of plants	Seedlings picked under existing coffee trees. Rarely with nurseries.	Seeds (from a research centre or existing plantations) and nursery in plastic bags
Previous cultivation	After slash and burn system	Generally inside old robusta plantations
Density of plantation	Low 900 to 1,200 trees per ha. 1,111 trees (3x3m) is the most frequent	High in general 2 x 1 m, 5,000 coffee trees/ha
Plantation	Old. Without visible lining. Agro-forest type. High trees with multiples trunks.	Homogenous with lining and staking well marked lines. One/two trunk(s) dwarf shrubs.
Association	Fruit trees and shade trees	Vegetables, rice, annual crops at young stage
Shade	Residual trees from slash/burn	Erytrin trees (10 x 10) as well as other leguminous.
Pruning	Free growth with regeneration of some axes after the harvest	Top pruning and regeneration (technique in process of assimilation, not fully adopted yet)
Fences	None	Fence to prevent from animal entrance (cattle)
Technical itinerary	- Weeding before harvest - Harvest - Maintenance through cattle passing	**Farmers' system and commercial plantations** - 2-3 weeding/year (specially at young stages) - Some mulching and organic fertilizer (mainly cattle manure and coffee pulp) - Pruning - Harvest - Sanitary picking after harvest (for CBB control) - Replacement (nurseries) **Commercial plantations only** - Chemical fertilizers - CBB chemical control
Fertilization	Cattle passing and penning	Organic or combined mineral/organic
Type of system	Low intensive "picking" system	Intensive system (variation of Latin-American systems)
Annual labor out harvest	About 30DW for weeding	About 110 DW/ha
Yield	< 150 kg of green coffee/ha	600 to 1,500 kg of green coffee/ha
System's dynamic	Under elimination and replacement. Subsistence due to JCFC and Oxfam groups markets	On rapid increase. The area should increase by three-fold in the next five years

CBB: Coffee Berry Borer (*Hypothenemus hampei*)
DW= Days-worker

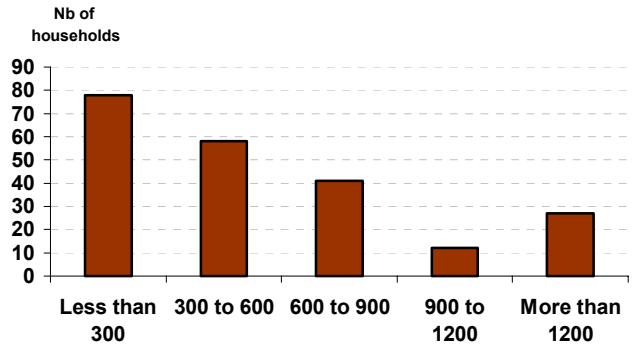
There are two different cropping systems for arabica in the Boloven Plateau depending on the variety: the "Typica" cropping system and the newly introduced "dwarf variety" cropping system (referring to the Catimor variety). The "dwarf system" was introduced in early 90's in the scope of development projects (especially LUADP and PDRPB) and has been steadily developing ever since (even replacing some old Typica and *C. canephora* plantations). The "Typica" cropping system is a remnant of old colonial system (set between 1920 and 1950). Currently, this system is in decrease.

Picture 2: Arabica plantation (dwarf variety cropping system)

Arabica Typica cropping system is "semi abandoned".
Arabica Catimor cropping system has been well adopted by producers and is rapidly spreading.
It is an intensive system very high-demanding of labor and fertilization.

Around half of arabica surfaces aren't productive yet, besides, many farmers have nurseries with arabica trees (mainly Catimor). For instance, among the total arabica surface in our study's sample (around 400 ha), only 50% is productive. In the same sample, the number of arabica trees in the nurseries would allow the planting of further 170 ha (which represents a potential increase of 42%).

Figure 7: Arabica yields in 2007 (households' distribution ranges)



Arabica yields * (in Kg of green coffee/ha)
Average 573 Kg, Median:433,5 Kg
Sample size: 216
* Including both Typica and Catimor varieties

This graphic is typical of young plantations that are just starting to produce. The column "less than 300 Kg" represents young Catimor plantations (during their first year of production) and the old Typica cropping system. In a few years, we should observe two clearly different columns representing the two cropping systems. The average yield for adult Catimor plantations should range from 800 to 1,000 Kg of green coffee/ha.

5.1.1.3. Dry method process (for *C. canephora*)

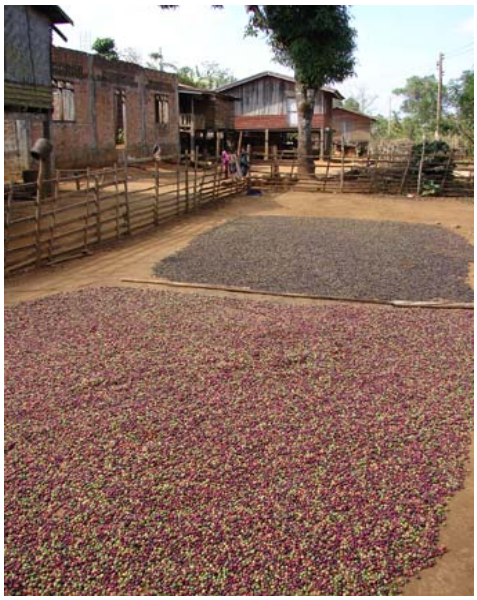
In Laos, almost all robusta coffee is processed through the dry method (Table 14). A complete absence of quality standards at export level (which is reflected at production level) makes the farmers take very little care during harvest (one or two harvest rounds versus three to five for arabica) and at all stages of coffee processing, especially during cherries' drying (in many cases cherries are dried on the bare ground where they are in contact with animals, excrements, etc). One of the causes is the absence of a real quality-remuneration system (farmers get the same price whatever the quality of their coffee is, except penalties for very bad coffees).

Farmers have the possibility to sell either dried-cherries or unsorted green coffee (after hulling). In most cases, dried-cherries are hulled in modified rice hullers, in small workshops belonging to another villager (generally a village buyer). All wholesalers and exporting companies have also modified rice huller or specific coffee hullers for dried-cherries transformation.

Table 14: Robusta coffee dry-process in the Boloven Plateau

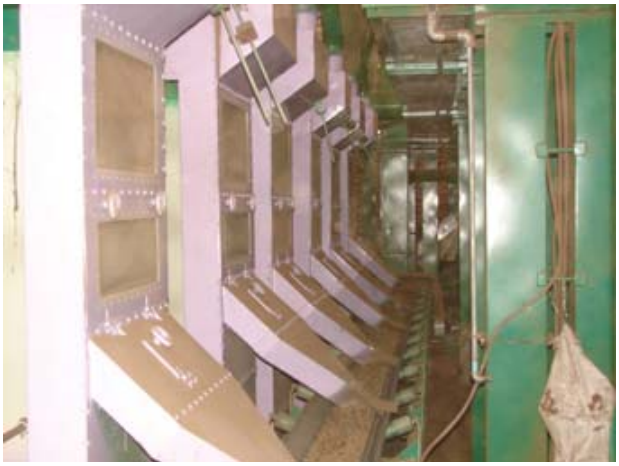
Operation	Product obtained	Theoretical yield
Reception	30-50% of red cherries	**100 kg**
Drying on the bare ground, tarpaulins, tables or concrete areas.	15-23 % HR dried-cherries	**42 kg** (if 12% HR which is the international standard)
Hulling in modified rice-huller	15-20% HR green coffee	**22 kg** (if 12% HR)

HR= Humidity rate



Picture 3: Robusta cherries drying on bare ground

Picture 4: Robusta cherries drying on tarpaulin



Picture 5: Village modified coffee huller **Picture 6: Industrial hullers (Dao Heuang company)**

Quality control is very rough and generally subjective. In most cases, coffee buyers just check the global quality through simple observation or by using very empirical methods (biting, shaking, etc.). If the product doesn't satisfy some basic criteria (especially humidity) buyers give price penalties. The scale of such penalties is also subjective and can reach 20% of the total value of the product.

Robusta post-harvest process is the dry-method, careless about the quality: drying cherries on the bare ground is very common; the quality control system set by buyers is light, subjective and engenders penalties to producers. Producers sell both dried-cherries and unsorted green coffee.

5.1.1.4. Wet method process (mainly for arabica)

Arabica coffee is almost exclusively processed through the wet method following a technical scheme introduced in the 1990's by the PDRPB project and adopted ever since by most producers. Producers mainly process their coffee with little manual pulpers (in some cases motorized), ferment and wash it in plastic buckets before drying it on tables or racks. The only variation brought in the early 2000 was the substitution of the natural fermentation by a mechanical demucilaginating. The main difference between Lao standards and most exporting countries' standards (for washed coffee) is that in Laos beans aren't sorted after the pulping. Some robusta coffee has been processed through this system on very specific export demands. Samples processed in 2006 and 2007 demonstrated unique and very original taste characteristics.

Table 15: Wet process system in the Boloven Plateau

Operation	Product obtained	Theoretical yield
Reception	95% of red cherries	**100 kg**
Selection by floating	First quality red cherries	**97 kg**
Mechanical pulping	Humid parchment with mucilage	**54 kg**
Fermentation or mechanical demucilaginating.	Humid parchment coffee	**45 kg**
Washing	Washed humid parchment coffee	**45 kg**
Drying on racks	Dry parchment coffee (12-15% HR)	**23 kg**

Farmers have the choice between red cherries and parchment selling, depending on their transformation capacity. Today, many farmers can only sell cherries as they lack the means and infrastructures to carry out the wet-process. The type of coffee sold also depends on the moment during harvesting period. At the beginning and at the end of harvesting period, when the amounts of coffee harvested are very small, farmers will rather sell cherries (great need of cash at the beginning of the harvest for current expenses and labor paying).

Picture 7: Reception and weighing of red cherries

Picture 8: Arabica cherries pulping

Picture 9: Washing and density grading of arabica parchment in the washing canal

Picture 10: Drying of arabica parchment in trays

There is a link between the final quality of coffee and the wet-method process. Indeed, the final quality of coffee depends for a great part on the percentage of red cherries during the harvest and processing coffee through the wet method compels to a meticulous harvest in which only ripe red cherries are picked (selective picking) as green cherries cannot be pulped easily. When producers only sell cherries, the percentage of green cherries is higher.

Arabica post-harvest process is the wet-method with good care of coffee quality. It has been recently adopted by producers without any problem of adaptation. Today, the main limiting factor is farmers' processing capacity (financial capability to build either individual or collective wet-mills).

5.1.2. Coffee producers' typology

5.1.2.1. Individual farmers

Individual farmers are the main actors of coffee primary production (despite the rapid development of commercial coffee plantations). It was difficult to estimate the actual number of households producing coffee. In 2002 Duris *et al*. estimated to 27,000 the number of coffee producer households in the Boloven Plateau. By extrapolating the figures from PAB project village baseline data as well as figures from 2007 producers' survey we estimated the total number of households producing coffee to around 15,000 (for a total number of coffee producing villages of 125). We estimate that individual farmers cultivate more than 90% of total coffee surfaces, which stands for more than 42,000 ha.

There are around 15,000 households that produce coffee in the Boloven Plateau. They cultivate more than 40,000 ha.

In the scope of this study, a specific farmer survey was carried out between May and August 2007 with 400 households of 20 villages. Villages were randomly selected among the 51 villages supported by PAB project in Paksong and Laongam districts (see Annex 5 in page 82). Inside each village, 20 households were also randomly selected. Household questionnaires dealt with issues such as household's characteristics, coffee production, first coffee selling and labor issues. At the end of the survey, a comprehensive statistic database was compiled.

Remark: Villages were chosen among PAB supported villages for material and logistic reasons (facility of transport, presence of technical staff, villagers' trust). However, this might have brought some bias to the sample for the following reasons:

- *PAB villages were selected by district authorities according to their own development criteria.*
- *Most PAB villages are located in high altitudes.*

As a consequence, there might be a bias regarding the share of arabica (as there is a government promotion policy in highland villages), the proportion of villages selling high quality coffee (mainly located in that area) and the development of livestock (as it is one of the activities of PAB project).

Based on the analysis of this database, available bibliography and relevant information brought from the field, we established a coffee producers' typology. Relevant criteria such as the altitude, the importance of coffee in households' income or households' capital were taken into account to differentiate relatively homogeneous categories of farmers as shown in Table 16 and Table 17.

Table 16: Main criteria leading to individual farmers' typology

Criteria	Relevance
Altitude	It determines the cropping system (possibility of arabica cultivation, livestock breeding, rice cultivation)
Total coffee income	Expresses farmers' wealth and investment capacity
Share of coffee in household's income	Expresses farmers' dependency to coffee.
Livestock	Expresses farmers' saving capacity and wealth
Pre-harvest loans	Expresses farmers' debt rate
Total coffee surface	Expresses farmers' productive capacity
Share robusta/arabica	Expresses farmers' strategy, diversification and investment capacity
Type of coffee sold (unprocessed, processed)	Expresses farmers' transformation and marketing capacity
Market network (mainstream, Fair-trade, etc.)	Expresses farmers' marketing capacity
Labor (Family, external waged labor)	Expresses farmers' activity and cash flow capacity
Other crops	Expresses farmers' diversification
Means of transportation	Expresses farmers' wealth and marketing capacity
Wealth range (Poor, medium, rich)	Expresses farmers' social status (this qualification is set by authorities based on their own criteria)

Based on these criteria, five main typology groups could be identified:

- A first group of **large-scale wealthy diversified farmers** growing large coffee surfaces of both robusta and arabica (more than 5 ha), upland rice and other crops (vegetables, fruit trees, etc.). They breed cattle (generally more than 10 animals), pigs and poultry. Many of them may have other sources of income: coffee trading (as many have trucks), coffee processing (if they own a coffee mill) or an external salary.
- A second group of **mid-scale diversified coffee producers** growing robusta and arabica in altitudes above 600 m besides other crops (vegetables, rain fed rice, fruit trees, etc.). They may own little livestock (few cattle and small livestock), those who have a tok-tok can sell processed coffee in Pakse.
- A third group of **small-scale diversified coffee producers** growing robusta and some arabica. Besides coffee, these farmers develop other crops (associated or not to coffee plantations) like vegetables, tea, fruit trees, etc. They have very little cattle and depend for a large part on coffee. They sell both processed and unprocessed coffee (especially arabica) depending on their capability to process coffee (either in private or collective mills). A significant percentage makes pre-harvest loans.
- A fourth group of **small-scale non diversified farmers that depend largely on coffee**. These farmers have very little livestock (generally only poultry), and have very little access to other sources of income besides coffee (high coffee-dependency). A significant percentage sells unprocessed coffee (especially arabica cherries) and makes pre-harvest loans.

- A fifth group could include **farmers living in lower lands (below 600 m)**. No specific survey was carried out with this type of farmers as all villages selected for the survey were above 600 m. According to previous surveys (Goud, 1996), in such altitudes, farmers mainly cultivate rain fed rice (in association with other crops) and banana trees. Some might cultivate little coffee (exclusively robusta).

In the scope of this study, we will focus on the four first groups as they are the main actors of coffee production. Among these producers, the share of arabica in the farming system is one of the main differentiation criteria. Indeed, not only it expresses farmers' investment capacity (as the setting of new plantations requires an investment) it also says a lot about farmer's strategy (as arabica is grown following a completely different cropping system, more intensive, labor-demanding, etc.).

The developing of arabica also implies some advantages like higher selling prices and farmers' income staggering (as arabica harvest period is different from robusta's). These reasons partially explain the boom of arabica among Boloven farmers.

Table 17 summarizes the main characteristics of each farmer typology group according to the main differentiation criteria.

Table 17: Characterization of farmers' 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**	**4 - 5 ha**	**1 - 3 ha**	**1 - 3 ha**
Robusta	6 - 10 ha	2 - 4 ha	1 - 2 ha	1 - 2 ha
Arabica	2 - 4 ha	1 - 2 ha	0 - 1 ha	0 - 1 ha
Other crops	Quite diversified	Diversified	Diversified	Not diversified
Cattle	**8 to 50 animals**	**2 - 5**	**0 - 1**	**0 - 1**
Means of transportation	Tok-tok (75% of the farmers in the sample)	Motorbikes. Some have tok-tok	Motorbikes. Few have tok-tok	Motorbikes. Very few have tok-tok
Type of coffee sold	Robusta unsorted green coffee and arabica parchment	Robusta: both unsorted green and dried-cherries Arabica: both cherries and parchment	Robusta: both unsorted green and dried-cherries Arabica: mostly cherries	Robusta: both unsorted green and dried-cherries Arabica: mostly cherries
Social status	Rich and medium	Medium	Medium and poor	Medium and poor
Annual coffee gross income[17]	**45 million Kip**	**20 million kip**	**10 million kip**	**8 million kip**
Pre-harvest loans (% of households)	30%	46%	50%	50%
% of coffee in households' income (dependency)	**>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	Mostly family and occasional waged labor during coffee harvest

[17] 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.

5.1.2.2. Private investors

In the past years, a certain number of private companies (many of them are foreign companies, mainly from Vietnam, China or Thailand) have started to develop coffee in land concessions granted by local authorities. There is a real lack of transparency regarding this issue. During the survey, and despite several interviews with local authorities' representatives, it wasn't possible to establish the actual procedure that companies must follow in order to obtain such concessions, nor was it possible to obtain accurate figures on total surfaces granted and the area effectively planted with coffee. Indeed, local authorities keep records on land concessions but don't follow up what these companies effectively do on these lands. However, according to Champasak Provincial Agriculture Office unofficial estimations, among the 1,800-2,000 ha of land granted up to 2007, around 1,200 ha have been planted with coffee trees. According to the same sources, the number of land concessions has been increasing every year and the system should continue to develop in the near future, as described in a press article on Forbes website in July 2007:

"Under the agreement made between the Vietnam National Coffee Corp., Dak Uy Coffee Company of Kon Tum province in Vietnam and the Champasak authorities, the joint venture company will rent 1,000 hectares of land to grow coffee, with the possibility of adding between 3,000-5,000 hectares at a later date.…"

And

"Each hectare of land will yield about two tons of coffee, growers said…"

And

"The proposed coffee farms will provide jobs for thousands of Laos laborers and develop currently uncultivated land."

See forbes.com/feeds/ap/2007/07/19/ap3931609.html

Regarding the last sentence, interviews with local authorities and some farmers' statements allow establishing that these concessions are generally allocated in forest areas located inside village limits; in most cases this land is actually secondary forest used in upland rice cropping rotations or old coffee plantations. In all cases it might seem quite hasty to describe this land as "uncultivated".

Within the past years, almost 2,000 ha have been granted to private investors for coffee planting. In the near future, further 5,000 ha might be granted.

It seems that in some specific cases, villagers may receive a financial compensation. However, the common pattern is a private negotiation involving the companies, local authorities and the head of village. The average length of land concessions for coffee planting is around 20 years.

Picture 11: Commercial plantation of arabica dwarf variety

Picture 12: Commercial plantation (external labor facilities in the background)

The operation scheme of these private investors is generally the same: during the early years, coffee planting and the maintenance of plantations is done by external waged labor hired in surrounding villages (besides their salary, employees generally have the right to develop food crops inside young coffee plots). When plantations become productive, the company hires a permanent team (mainly for the maintenance) and continues to hire many external labors during workforce peaks (weeding, harvest).

Commercial plantations are driven following a very intensive cropping system with a high level of chemical inputs (fertilizers and pesticides). They only grow high-density dwarf arabica varieties, using aggressive pruning techniques and no shade. Their objective is to obtain yields around 2 t green coffee/ha (see article) which represents 11 to 12 ton of cherries/ha (which is three times the current average yield in farmers' systems). Salaried technical staff is in charge of ensuring the technical follow-up of coffee growing and processing. Eventually, most companies set their own wet-method transformation unit.

In the near future, this scheme is likely to develop more and more and one can only wonder about the sustainability of this system as well as its social, environmental and economic consequences. Indeed, on the one hand there might be a heavy environmental and sanitary impact due to the high levels of chemical inputs of this intensive cropping system in terms of water quality, fertility management and human health. On the other hand the great labor demand engendered by this system (especially during harvesting season).is very likely to have a very negative impact on the global workforce availability in the Boloven Plateau (as many farmers have already difficulties to find external labor during harvest peaks) as well as on harvest quality (more and more strip picking and less selective picking) which could eventually result in a drop of coffee quality (especially for arabica).

For an in depth analysis of harvest labor issues, please refer to paragraph 5.1.4.

5.1.2.3. Producers' organizations

All existing farmers' organizations have been created through the support of NGOs and development projects (Oxfam Australia, Jhai Foundation and PAB). Generally speaking, the final objective of these programs is to increase and diversify farmers' coffee income by producing high quality arabica, which is sold in high added-value markets like Fair-trade. At first stages, these programs focused on the export of coffee from the old Typica variety but now they are starting to export coffee from the dwarf variety. Most of these experiences are quite recent (less than 10 years) so supporting organizations still undertake most marketing steps such as contacts with buyers, certifications, selling contracts, technical follow up, quality control and even coffee processing, transporting and marketing. Farmers are generally gathered in groups, which allow a better control of the product and the share of some processing assets.

Oxfam-supported producers' groups in Ban Katouat and Ban Vang Gnao

Farmers' groups from these two villages started to sell high-quality Typica coffee in the Japanese Fair-Trade market in 2004 with the support of Oxfam Australia. In Katouat[18] village for instance, the project started to support a group of 47 families in 2003. Today, there are more than 70 members. Farmers can join the groups on a voluntary basis, under the condition they produce arabica (Typica) and that they have less than 3 ha of coffee.

In 2004, the groups exported around 5 MT to the Japanese market (the buying company is called Alter Trade Japan). Since then quantities exported slightly increase every year:

"In the project's first year, 2004, the group sold 5,760kg of quality coffee to Japanese company Alter Trading Japan (ATJ) at a price of 15,000 kip/kilo (AUD $1.95), compared to the local market price of 5,000 kip/kg (AUD 65 cents). Proving it was no fluke, in 2005, they sold 6,770kg to ATJ at 14,000 kip/kg (AUD $1.82) for Catimor and 17,000 kip/kg (AUD $2.21) for Typica. This year, they exported 13,620kg at 20,000 kip/kg (AUD $2.60) for Catimor and 24,000kip/kg (AUD $3.12) for Typica. They have also received

[18] Most information about this project come from the interview of the president of Katouat's group as it wasn't possible to meet a representative from the supporting organization (Oxfam Australia).

interest from Singapore, Thailand and France and have sent samples to Australia, United States, Belgium and Germany."

See http: www.oxfam.org.au/oxfamnews/december_2006/dignity-in-a-coffee-cup.html

The Jhai Coffee Farmer Cooperative (JCFC)

JCFC was created in 2004 with villages that had benefited from a development program funded by the Jhai Foundation (United States) that promoted the production of high quality coffee as a way to improve farmers' livelihoods. In 2007, the cooperative gathers more than 500 families from 12 villages of the Boloven Plateau. Farmers have the possibility to join the cooperative on a volunteer basis and under the condition they cultivate arabica coffee (especially Typica as in the first years the cooperative only exported coffee from this variety).

JCFC exports high quality Fair-trade[19] arabica coffee to the United States and France. The cooperative still markets quite small amounts of coffee. In 2007 they exported two containers (around 36 MT) to Thanksgiving[20] roasting company (US) and Alter Eco (France).

Farmers pulp cherries in community pulping machines and carry on the rest of the process individually. The whole process takes place under the supervision of JCFC staff and the farmer commits to deliver fine quality parchment coffee to the cooperative. The cooperative sells coffee at Fair-trade prices in the international market. In 2007 Fair-trade price was around 1.26 USD/Pound (2.77 USD/Kg), including 5 cents/Lb of Fair-trade development prime. The price paid to farmers takes into account all production costs and cooperative's functioning (staff salaries, etc.). In 2007, JCFC farmers' prices oscillated between 18,000 and 19,000 Kip/Kg of parchment (1.84 to 1.95 USD/Kg). The average price for Arabica parchment on the mainstream network during the same period was 14,000 -16,000 Kip/Kg (1.43 to 1.64 USD/Kg).

Groups of coffee producers supported by PAB and the AGPC

51 farmer groups have started to organize with the support of PAB project with the view of increasing their income through the production and commercialization of high quality coffee as well as income diversification through cattle breeding (Sallée, 2007). Based on the experience of other coffee exporting countries, it was decided to set a pilot project of coffee producers' organization as a way to spread new process techniques, to promote the production of quality coffee and to be able to produce interesting volumes for international coffee buyers (as most members are small-scale producers). Farmers' groups are consolidated through the activities of coffee processing and marketing. To that matter, collective wet-processing units have been set up in 31 villages in 2007[21]. The aim is to produce high-quality washed-arabica that could be sold in high-value niche markets (Fair-trade, organic, origin coffees, etc.) with an origin recognition.

In 2007, these farmers' groups gathered in a second level organization called the AGPC (Boloven Plateau Coffee Producers' Groups Association) which represents around 2,700 households. The aim of this organization is to gather and strengthen coffee producing groups so they can have an influence on commercial negotiations and be able to channel potential technical and financial support. Its main roles will be:

- To represent Boloven Plateau coffee producers in front of national authorities, coffee sector organizations (internally and abroad) and any coffee-related event in Laos or abroad
- To support all member groups in any aspect related to coffee production
- To support all member groups in any aspect related to coffee marketing

[19] JCFC has a Fair Trade certification from FLO-CERT (Fair-trade Labelling Organizations certification company)

[20] See http://test.thanksgivingcoffee.com/cafelao/index

[21] 11 of these groups have already a wet-method process experience as they work with JCFC.

5.1.3. Limiting factors for coffee production

As shown in Table 18, coffee production limiting factors are either related to the improvement of current technical practices such as CBB (*Hypothenemus hampei* (Ferrari)) control, fertility management, plantations structure or drying (see pictures below) or to the setting of new agricultural practices linked to the recent development of arabica (pruning of dwarf variety trees, shade trees management, wet process, etc.).

Table 18: Coffee production limiting factors

Coffee primary production	**CBB control** No CBB control (for all cropping systems). Except in PAB villages which are testing a CBB integrated management using, among other techniques, Brocap® traps. **Coffee pruning** Robusta and Typica cropping systems: no pruning or very slight. Dwarf variety cropping system: pruning technique introduced by PDRPB project isn't well implemented yet. **Fertility management** Risks of unsustainability as nutrients' exports are not compensated (except for some transfers made by cattle passing and penning). No mulching and problems of root damage due to inadequate weeding techniques. **Plantation structure (Robusta and Typica cropping systems)** The structure of coffee plantations (density, shape of coffee trees, pruning) is meant to permit cattle transit which allows a certain fertility transfer. However, it imposes a low-density system with very high trees that make harvesting difficult. And yet, only 17% of the farmers have cattle[22]. **Shade trees pruning** It is becoming an issue in the dwarf variety cropping system as there is no management strategy for associated trees. **Typica cropping system is progressively being abandoned**
Coffee processing	**Harvesting techniques** There is still a high percentage of unripe green cherries, black and defective cherries since harvest stage. Robusta harvest on very high trees is difficult and expensive. **Processing** Lack of wet-method processing capacities (wet-mills) **Drying (see pictures below)** Generally speaking farmers lack drying surfaces. There is also a lack of care during coffee drying (rains, bare ground, contact with animals, etc.)

Picture 13: Drying of coffee cherries on the bare ground

Picture 14: Good drying practices: handmade drying tables

[22] PAB baseline survey and 2007 producers' survey

5.1.4. Harvest labor issues

Generally, in coffee, harvest represents 60 to 100% of total production costs. In Laos, coffee is grown following a "natural" way, with no chemical inputs. Besides, most farmers don't have access to adequate transformation means. We can then assume that in Laos, greater higher costs are linked to harvest activities (especially the remuneration of external waged labor). This is the reason why, our farmers' survey focused more particularly on harvest labor by analyzing issues such as workforce availability, labor peaks, differences arabica/robusta, differences family labor/external labor, etc. The aim was to make the balance of current situation and to provide a forecast of some of the issues that coffee sector will face within the next years.

5.1.4.1. Labor availability

Figure 8: Percentage of external labor during coffee harvest (in % of households interviewed)

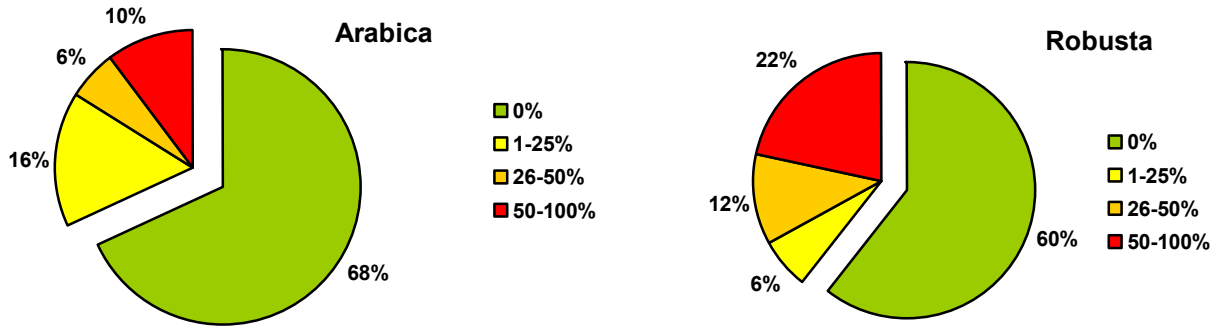
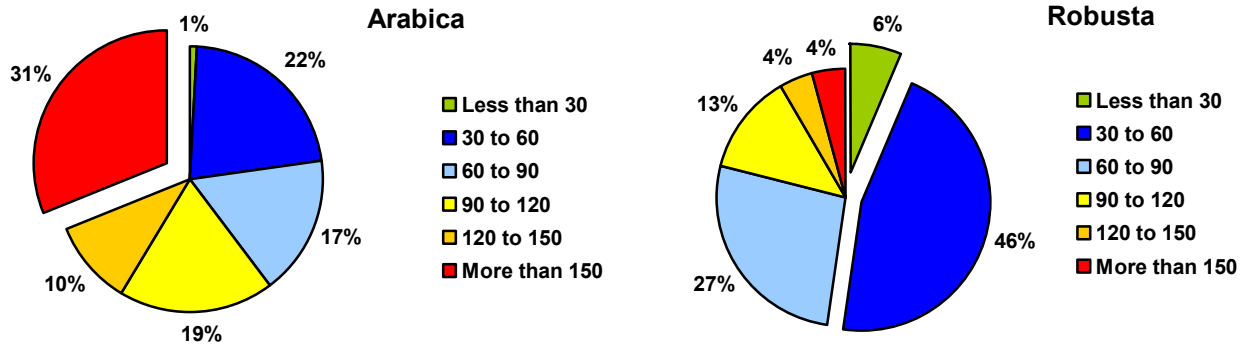


Figure 9: Coffee harvest workforce demand (number of day-worker / ha)



Number of answers:106 (sample of 200)
(Average: 139.4 days, Median: 112 days)

Number of answers:190 (sample of 200)
(Average: 69.8 days, Median: 60 days)

The issue of labor availability must be analyzed while taking into account the differences between the two main cropping systems as described in paragraphs 5.1.1.1and 5.1.1.2. First of all, these figures confirm the fact that arabica dwarf-variety cropping system is more workforce-demanding than robusta. Indeed, Figure 9 shows that arabica harvest requires almost the double of days-worker per hectare compared to robusta harvest (139.4 for arabica versus 69.8 for robusta). In fact, for a high percentage of farmers (more than 40%), arabica harvest consumes more than 120 days-worker per hectare whereas more than 50% of interviewees require less than 60 days-worker for robusta harvest. The main explanation comes from the difference of harvesting technique (strip picking for robusta and selective picking for arabica).

However, when it comes to external waged labor, we observe that robusta harvest still uses more waged labor then arabica. Indeed, for robusta, in more than 30% of the cases external labor represents more than half of total harvest labor. For arabica this percentage drops to 16%. This can be easily explained by the fact that robusta surfaces are larger in most farms and there is a greater availability of workers during

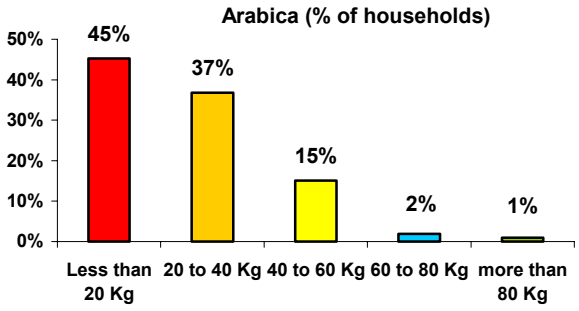
robusta harvesting period. This results echo what many farmers say about arabica harvest, that it requires more workforce but that it is difficult to find external waged labor during harvesting period as it coincides with rice harvest in the lowlands (October to December).

Arabica harvest is more workforce-demanding than robusta. However, coffee producers employ more external labor for robusta harvest for two main reasons: robusta surfaces are larger and there is a greater availability of labor during robusta harvest period. Coffee producers have started to meet difficulties finding external waged labor for arabica harvest because of the competition with rice harvest in the lowlands.

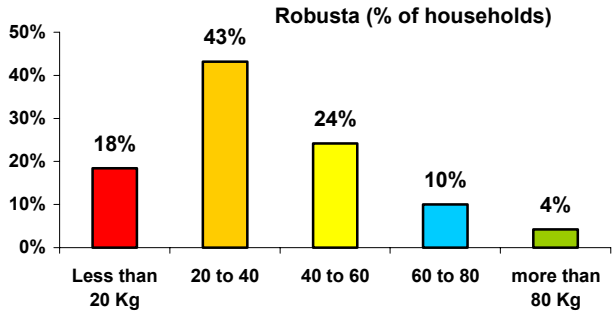
Even though there aren't clear figures about the shortage of labor for arabica harvest as arabica surfaces are still quite small and farmers still manage to find daily workers, there are some qualitative indicators of this potential shortage. During the interviews, many farmers complained about the difficulty to find labor during arabica harvesting period. For instance, a coffee producer from Maysaisomboune tells he had to go to Khone Island (more than 100 Km south of Pakse) and spend three days there to find workers for coffee harvest. Farmers have other ways to motivate workers to come to the Plateau: many producers pay for transportation, provide the food, pay bonus to good workers, etc. This is a big issue as the work conditions are not always easy (accommodation, food, low temperatures at certain times of the day, etc.). In fact, one of the biggest problems according to some farmers is that many workers from the lowlands want to leave the Plateau when the climate gets too cold.

5.1.4.2. Workforce productivity

Figure 10: Harvest workforce productivity (average weight of cherries harvested / day-worker)



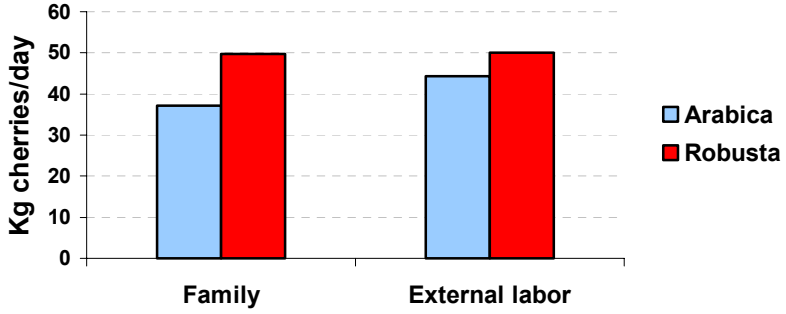
Number of answers:106 (sample of 200)
(Average: 25.2 Kg, Median: 23 Kg)



Number of answers:106 (sample of 200)
(Average: 38.3 Kg, Median: 35 Kg)

Figure 10 shows there is a greater productivity of work for robusta harvest despite the height of the trees (38 Kg of cherries harvested/day in average versus 25 for arabica). Here again, the main explanation comes from the harvesting technique (the strip picking allows greater rapidity). Unlike Laos, in most producing countries external workforce is paid according to the weight/volume and the average workforce productivity is significantly higher: 50-120 Kg/day-worker for arabica harvested with selective picking and 120-250 Kg/DW for strip picking of arabica or robusta (Brando C. in Wintgens, 2004).

Figure 11: Comparison between family and external waged labor (Kg of cherries harvested / day)



Once again we observe the same differences regarding work-efficiency between robusta and arabica. However, in Figure 11 we see that the average weight of arabica cherries harvested in one day is higher for external labor. This can be easily explained by the fact family workers pay more attention to selective picking than temporary labor. As a matter of fact, many farmers speak about the difficulty to control the quality of the picking.

This difficulty of control is reflected in the modes of payment. One of the specificities of Laos if compared with other coffee producing countries is that for arabica harvest, external labor is paid according to the number of days. In most producing countries, labor is paid according to the weight, with a strict control on the quality of cherries ensured by the farmer. Farmers interviewed say that if they pay external labor according to the weight, the picking is not careful and that there are significant loses on the ground. Many farmers believe that paying by day motivates external labor to work thoroughly and allows greater labor flexibility.

Work-efficiency is higher for robusta harvest (strip picking) as arabica harvest requires more care and dexterity (selective picking). Today, most harvest work is carried out by family workforce (Figure 8) with a greater care of the quality of harvest (Figure 11). In the next years, with the increase of arabica surfaces, farmers will have to use more and more external waged labor for arabica harvest. They might face two main issues: global labor availability and harvest quality control.

Besides, most farmers pay monthly wages for robusta harvest. For arabica harvest they prefer to pay daily or weekly wages. There are two reasons to explain this difference: in the one hand, arabica production is still quite small and can be completed within few days in youngest plantations. On the other hand, it is a way to control the quality of the harvest as farmers can control more closely the quality of the picking.

5.1.4.3. Future prospects on harvest labor issues

In order to forecast the needs of external labor for coffee harvest in the Boloven Plateau within the next years, we decided to focus on the real bottleneck, that is to say the labor for arabica harvest. Considering the current productive situation (refer to Table 6 in page 23) and the expansion dynamic of commercial plantations (paragraph 5.1.2.2), we obtained an estimation of arabica cherry production of around 60,000 MT in 2012 as shown in Table 19.

Table 19: Forecast of arabica production in the Boloven Plateau in 2009 and 2012

	2007	2009	2012
Individual farmers' arabica surface in production (ha)	5,500	11,000 (estimation)	15,000 (estimation)
Commercial plantations (estimations in ha*)	500	1,000	5,000
Total productive arabica surface (ha)	6,000	12,000	20,000
Total arabica production (MT of cherries)	15,000	36,000*	60,000*

** Estimations considering the current dynamic and land concession plan with Vietnamese companies*
*** Considering an average yield of 3 MT of cherries/ha*

Considering that, we made an estimation of global workforce needs for arabica harvest in the next 5 years:

Table 20: Estimation of global workforce needs for arabica harvest in 2009 and 2012

	2007	2009	2012
Total arabica cherries production (MT)	15,000	36,000	60,000
Theoretical total number of days-worker required for arabica harvest*	375,000	900,000	1'500,000
Theoretical number of days-worker required per day of harvest (considering an average length of harvest period of 60 days)	**6,250**	**15,000**	**25,000**
Theoretical number of days-worker required per day of harvest considering the harvest peak (5% of the cherries are harvested in one single day)	**18,750**	**45,000**	**75,000**

** Considering the average weight of cherries picked by one person in one day is 40 Kg*

We find that in 2012, arabica harvest will require an availability of more than 75,000 workers per day during harvest peak which is 4 times the current workforce demand. If we consider surface increase estimations, commercial plantations will use around 25% of this workforce. We can already foresee some of the possible consequences of such evolution:

- First of all, the price of workforce is likely to increase because of the high demand during this period. In the same time, there is a risk that the pool of local labor cannot meet such demand.
- The lack of workforce might modify the terms between employers and employees: payment according to the weight, lower harvest quality requirements, more strip picking, etc.

In 2012, global workforce demand for arabica harvest will be four times higher than today.
This evolution is very likely to be prejudicial to coffee producers as it will surely increase their production costs and will have a negative impact on final harvest quality.

5.2. Coffee commercialization (export circuit)

5.2.1. Village buyers and coffee collectors

These two categories of agents are generally farmers (many are coffee growers) that purchase coffee from other farmers living in their village or from other surrounding villages. Their main strength is the deep knowledge of farmers and their direct contact with coffee production; this is the reason why many wholesalers and exporting companies charge them of coffee supply.

In the scope of this study, 21 middle-buyers from 10 villages were interviewed. Most of them were coffee planters and some have been coffee buyers for more than ten years. Among the 21 buyers, only 3 were completely independent whereas the other 18 were linked to a wholesaler/exporter.

Most middle buyers purchase unprocessed coffee from farmers (arabica cherries and robusta dried cherries) in quantities going from 1 up to 100 tons. They generally have drying areas, coffee pulping machines, mills, etc. Thus they are able to process coffee beans and sell processed coffee to wholesalers and exporters.

Besides coffee purchasing, village buyers are generally involved in informal credit through usury credit and pre-harvest loans. This specific issue will be presented later on in paragraph 7.2.

5.2.2. Wholesalers from Pakse and Laongam districts

There are around 5 wholesalers in Paksong and 2 to 3 in Laongam. In most cases, they buy and sell different agricultural products with a high preeminence of coffee. In some cases they have coffee plantations of their own. In fact, many of them are former village buyers that specialized in trade but kept a close link with producers in the field.

Generally their range of action includes 30 to 50 villages within the limits of the district. In most cases farmers bring their harvest to the warehouse; however wholesalers also collect some of the coffee directly from the farms with their own trucks. Main coffee sellers are individual farmers even if in some cases wholesalers buy coffee from collectors and village buyers. Most transactions are carried out based on simple verbal agreements as no contracts are set.

Besides coffee buying, most wholesalers provide credit services to farmers through cash or rice loans, either following a traditional loan scheme or through pre-harvest loans (see paragraph 7.2.1). According to wholesalers interviewed (2 in Paksong and one in Laongam), monthly interest rates range from 3 up to 5%. Most farmers make these loans between July and September, at the end of the rainy season which is generally the rice-gap period and they reimburse with robusta harvest in March. Thanks to credit, wholesalers have a certain security on coffee supply. Loans are granted based on the trust between the wholesaler and the producer. This is why their good knowledge of farmers is a key aspect.

The type of coffee bought depends on wholesaler's strategy: some buy exclusively processed coffee (arabica parchment and robusta unsorted green coffee) and make their margin on the selling whereas others buy all types of coffee, carry out all the process in their warehouses and get their margin also on coffee processing. Wholesalers interviewed purchased between 200 and 500 MT of robusta and 100 to 200 MT of arabica during 2006/2007 campaign. The average profit margin ranges from 100 up to 500 LAK/Kg (for processed coffee).

Coffee is mainly sold to exporters who generally come to pick up the product in wholesaler's warehouse. No contract is set between wholesalers and exporters. In most cases, they make a simple verbal agreement on the quantity and the price of the coffee several days before the selling. In the past, most wholesalers used to borrow money from exporters for coffee buying. According to wholesalers interviewed, most of them stopped doing it because the interest rates were too high. It seems that now they manage to obtain loans in banks' local branches in Paksong with interest rates of 15%/year. Otherwise, they have the possibility to get cash advances from exporters, with no interests, if it's done few days before the selling.

Some wholesalers (especially in Paksong) have managed to create a large network of coffee suppliers and commercialize quite big amounts of coffee to the point that they are starting to think about the possibility of becoming coffee exporters.

5.2.3. Exporters

5.2.3.1. Exporters' characterization

In Laos, coffee export is largely dominated by one big company (Dao Heuang) that commercializes around 70% of the coffee production (see Table 21). The rest is exported by less than five smaller import-export companies closely linked to a small number of importer local agents. The general scheme of exporting sector has been simplified in comparison to 1999 as some categories of actors like local coffee traders and brokers are not operating anymore (PDRPB, 1999).

Under the name "exporters" we can actually find different types of agents. Many coffee exporters are import-export societies from Pakse specialized in the import of manufactured goods and the export of agricultural products (coffee, rice, soybeans, peanuts, etc.) as a way to obtain foreign currency. Some coffee exporters are in the same time coffee planters (on land concessions) and there are some exporters registered in the exporters' association but that never really deal physically with coffee. They provide "export services" to other companies that don't have an exporter license. Finally, a bunch of farmer groups have started to export high quality coffee to niche markets.

The Lao Coffee Association (exporters' association)

In Laos, some coffee exporting companies and local roasters have gathered in a private organization under the supervision of the Chamber of Commerce called the Lao Coffee Association (LCA). This entity was created through a Prime Minister's decree in 1994 with the view of strengthening coffee export sector and centralizing all export related data. Its creation engendered a cartel situation as LCA members are the only allowed exporting coffee. In exchange, they have to pay a contribution for the association's functioning[23]. Any other non-member company (national or foreign) willing to export coffee from Laos is compelled to do it through one of these companies (they get a commission on the sale in exchange of carrying out all export procedures).

A new exporting company must fill several conditions in order to join the LCA: the most important one is to have a certain level of capital in order to get an exporter license from the trade department. Then, an application is submitted to the LCA directing board that will make a decision according to internal criteria. Let's note that none of the farmers' exporting groups is member of this association.

[23] Companies have to pay to LCA a fixed annual contribution as well as 20 Kip/Kg of green coffee exported

Their main action on physical coffee is to put it into a merchantable form (FAQ green coffee according to importers' criteria). To that matter, they generally re-dry coffee (as in many cases the humidity rate is still very high when the product arrives to the warehouse).

Most exporters specialized in the selling of coffee (robusta and arabica) without quality standards (FAQ coffee). In the past years, coffee export circuit has been simplified as exporters have gotten closer to coffee production. This goes from the building of warehouses and coffee processing units near production areas to the complete integration of coffee production in the case of planter-exporters. However, they still have a quite limited role regarding many downstream activities (setting of commercial contracts, seeking of new markets or even price negotiations) as these aspects are generally undertaken by local importer agents.

The strategy of most Lao exporters consists in seeking a short term profit by selling coffee to the highest bidder. This has been possible thanks to an advantageous market frame, a sustained demand of this type of coffee in the international market, a quite permissive quality control system and very low transformation costs. The main consequence has been the setting up of a system that doesn't reward coffee quality at all stages of coffee trade (from producer to exporter). Besides, such strategy impedes the setting up of long-term and trustful relations between buyers and exporters, which confirm the reputation of unreliability of Lao agents in the eyes of some buyers.

However, in the past few years new categories of actors with more complex strategies have started to develop. Indeed, the recent development of arabica has brought a certain diversification to Lao coffee export sector which has been stimulated by the arrival of new species, processing techniques as well as new potential markets. As a result, we can now differentiate a few categories of coffee exporters according to different criteria such as market strategy, the type of coffee exported, the link to coffee production, the destination markets, etc. (See Table 21 in page 51).

There is a great concentration of coffee export as one single company is responsible for around 70% of the exports. Lao exporters have specialized in the export of coffee without quality standards (FAQ) according to market opportunities. They have little hold over coffee market strategy as their strategy merely consists in selling to the highest bidder. This role is mainly played by local importer agents.

Table 21: Exporters' typology

Type of exporter	Exporter-wholesalers	Planter-exporter-wholesaler-roaster (Dao Heuang company)	Planter-exporters	Farmers' groups
Number	Around 10 (4 or 5 active companies)	1	1 or 2	3
% of total coffee exports	Around 30%	Around 70%[24]	Less than 1%	Less than 1%
Average exported amount / year[25]	300 – 1,000 MT (80% of robusta and 20% of arabica)	5,000-12,000 MT (80-85% of robusta, the rest is arabica)	Around 500 MT (100% arabica)	Less than 50 MT (100% arabica)
Qualities of exported coffee	FAQ natural robusta FAQ washed arabica	FAQ natural robusta FAQ washed arabica	FAQ washed arabica	Washed arabica (quality standards set by the buyer)
Undersized and defective beans	Sold to local roasters	Roasting for domestic and regional markets	Sold to local roasters	Sold to local roaster
Commercial strategy	Margin on the export of FAQ coffee without quality standards Foreign currency for manufactured goods' import Credit services	Diversification and high added-value through coffee roasting and instant coffee production Margin on FAQ coffee export Credit services.	Return on investment Margin on washed coffee processing and export	Exporting of high quality coffee to niche markets
Upstream coffee supply	Producers and middle-buyers (from debt reimbursement and classical buying)	Producers and middle-buyers (from debt reimbursement and classical buying) Private arabica plantations	Arabica plantations (process of cherries in company's wet-mills)	Members' plantations (collective pulping machines, the rest is done individually)
Buyer	Generally one main buyer (through local agent)	Different international coffee traders	Generally one main buyer (long-term relations)	Specialized coffee roaster (USA, France, Japan)
Relations with buyer	Indirect contact. Preponderant role of trader's local agent	Depends on the buyer (direct contact or through local agent)	Direct contact	Indirect contact. Link through importers' representatives and NGO staff
Final destination markets	EU, Vietnam	EU, ASEAN (mainly Vietnam)	EU, Switzerland	Niche markets (fair-trade and gourmet) in USA, Japan and France

[24] Quantities were given by exporters' staff but couldn't be confirmed with the figures from the LCA.

[25] Quantities vary every year because of the biannual variability of coffee production

5.2.3.2. Export procedures, taxes and costs

Coffee export implies several procedures and costs. At producers and middlemen level, main costs are linked to local taxes related to coffee transport and a part of the tax on profits. The rules regarding these taxes are very unclear and change constantly. Once the coffee gets to the exporter warehouse, exporters must go through several procedural steps including different certifications and tax payment as detailed in Table 22.

Table 22: Coffee export procedures and costs in 1999 and 2006

Procedures	Authority	1999 (1)	2006/2007	2006/2007
		USD/ton (2)	Kip/Kg	USD/ton
Lao Coffee Association contribution	LCA	**1.25**	20	**2.1**
Disease control certificate (« Phyto »)	PAFO	**0.8**	1	**0.1**
Quality control certificate	Technology & Environment office	**0.8**	1	**0.1**
GSP certificate	Provincial Office of commerce	**0**	1	**0.1**
Tax on profits (3)	Finance office	**20.8**	300	**31.6**
Custom certificate	Customs office	**Free**	Free	**Free**
Measurements	CPTC office	**Free**	Free	**Free**
SUB-TOTAL (administrative costs)		**23.65**	323	**34**
Transport from Pakse to the Thai border		**15**	70	**7.4**
Shipping Chong Mek - Bangkok (including harbor fees)		**40**	665	**70**
SUB-TOTAL (transport costs)		**55**	735	**77.4**
TOTAL EXPORT COSTS		**78.65**	1,058	**111.4**

(1) Source: PDRPB coffee supply chain study, 1999.
(2) MT of green coffee
(3) Mode of calculation until 2005/2006 campaign.

In 2006, more than 90% of administrative costs (out transport-related costs) concerned the tax on profit paid to provincial authorities. During our survey, representatives from the finance department as well as exporters were questioned on this issue. According to their answers, before October 2007 exporters had to pay 300 Kip/Kg of green coffee exported to the tax division of provincial finance department.

On the 5th October 2007, the finance department released a new guideline on this tax with a new mode of calculation.

Tax on profit = (Total coffee export value x 5% x 35%)
That is to say 1.75% of total coffee value

This is a tax on the benefits of any agent receiving a payment for coffee selling (trader, wholesaler, exporter, etc.). In practice, for the 2007/2008 campaign, exporters have started to pay this tax with the new mode of calculation to the finance department in Pakse. Control is made by showing the export contract, the letter of credit and the export invoice. It is important to remark that this tax is collected by Champasak province authorities at exporters level whatever the origin of the coffee is (even coffee produced in other provinces like Saravan or Sekong).

Officially, coffee traders and wholesalers at district level have to pay the same tax following the same mode of calculation. In practice and according to wholesalers interviews carried out in November 2007, coffee traders continue to pay following the former system. Before October 2007, big-scale wholesalers having got a license form the district trade department had to pay a tax for coffee "transport" or "movement". The mode of calculation was different in the two main coffee producing districts, Paksong and Laongam. In Paksong, they had to pay a tax of 20 Kip/Kg of green coffee to the district's finance department. The tax was collected by district officials in wholesalers' warehouses after having roughly estimated the total amount of coffee that the wholesaler will potentially commercialize on that year. The system was different in Laongam where the tax was collected during coffee transport in a check-point outside town (according to truck's load). In Laongam the amount was higher as wholesalers (or transporters) had to pay 200 Kip/Kg of green coffee. It isn't clear what happened with coffee brought directly to exporters' warehouses in Pakse (did buyers pay the district tax?).

According to October 2007 decree, individual family producers and cooperatives are tax-exempt. It seems that it was already the case before, however, a farmers' group exporting coffee has been paying a 150 Kip/Kg tax to district authorities in the past years.

As regards transport related costs, we observe the impact of Laos being landlocked country as the cost of Thai shipping companies represents 63% of total export costs.

In spite of a recent effort of clarification from the Ministry of Finances, coffee tax system remains opaque and is differently interpreted by local authorities and main coffee actors.

5.2.3.3. Export quality standards

Today, only one exporter (Dao Heuang Company) has the necessary equipment for a good preparation of export lots. This is the consequence of the absence of quality standards and the lack of a recognized body (laboratory) that certifies these standards. The quality control certificate delivered by national authorities doesn't have any international validity. As a consequence, most exporters haven't set up the means to process coffee according to international quality standards. In most cases they merely proceed to a rough grading and a manual sorting of coffee beans.

Most exporters' warehouses have drying cemented areas in order to re-dry coffee beans if necessary. Dao Heuang has also vertical coffee driers and some exporting companies have artificial driers. Then, coffee is cleaned and sorted. Only one exporter has the adequate infrastructure for export lots preparing (size and density sorting machines for both species, colorimetric sorting for arabica). Most exporters just carry out a manual sorting to reduce the percentage weight of defects.

Picture 15: Density grading machine (Dao Heuang company)

Picture 16: Stocking area (Dao Heuang company)

Table 23: Main steps of green coffee export lots preparation

International standard system	Most Lao exporters' system
Reception	Reception
Pre cleaning (metal pieces, foreign matters, etc.)	Drying
Stones removing	
Hulling	Hulling
Polishing	
Grading by size	
Gravity sorting	
Colorimetric sorting	
Manual selection of defects	Manual selection of defects
Weighing and bagging	Weighing and bagging

Source: Sallée, 2007.

Most of the Lao coffee is exported as FAQ (Fare Average Quality) green coffee with less than 12% to 13% of humidity, depending on the specie. The percentage of defective beans and foreign matters tolerated by the buyer varies according to the type of contract. In average, the threshold for black beans, broken beans and foreign matters ranges from 0.5 to 1%.

In Laos no coffee quality standards have been set up. The country lacks a recognized control body (laboratory).

5.2.4. Importers, international coffee traders and their local agents

A significant part of Lao coffee is purchased by a bunch of international coffee traders who have local agents in Pakse. In the past few years, the market for Lao export coffee has been largely dominated by two main coffee traders whose agents in Pakse are very active: a company from Switzerland (Noble) and another one from Poland (Product Promotion who sells most of the coffee to another Polish company named Elite)[26]. It was very difficult to get information about these agents and their activities (lack of time to make interviews, need of a permission from their superiors to answer to our questions, etc.).

Most local importer agents work following the same scheme. International or regional representatives ask their Lao agents to provide for a certain quantity of coffee and decide of the buying price. The share of each exporter largely depends on exporter's purchasing capacity as well as the relations with the local importer agent. Generally speaking these agents work in priority with big-scale exporters, Dao Heuang in the first place and 3 or 4 mid-scale exporters (those who are able to commercialize several hundred tons per year).

Besides their role of representations, these agents play different roles throughout export process. At marketing level, they supervise the signature of contracts between the buyers and Lao exporters[27] , besides they are facilitators in price negotiations between Lao exporters and coffee buyers as they are in permanent link with importers' regional representatives (in Hanoi, Bangkok, etc.). They also play a role in the preparation of exporting lots as they are generally in charge of coffee quality control. Finally, they ensure the follow up of the product from Chong Mek check point until the shipping in Bangkok.

Most Lao coffee is purchased by a bunch of international coffee traders through the mediation of their local agents. Locally, they ensure the contact between buyers and Lao exporters and also play a role in coffee quality control and follow-up.

5.3. Secondary actors

Governmental actors

Several government and government-linked agents intervene at different levels of the coffee supply chain. Although there isn't an institutional coordination of coffee chain actors (such as a coffee board), different governmental bodies are present at all levels of the supply chain, though their role is often limited to overall supervision, certificates delivery and tax collecting as shown in Table 24.

[26] We don't know what quantities are commercialized by each agent as it wasn't possible to obtain export figures by purchasing company from LCA.

[27] All export contracts are FOB Bangkok.

Table 24: Role of main coffee sector secondary actors

Coffee supply chain level	Secondary actor	Role and action
Production	DAFO/PAFO	Normally in charge of technical follow up and awareness. In reality depends largely on project's opportunities. No real action outside of projects.
	District authorities	Collection of land taxes
	Projects	Numerous. Some are specific to coffee sector (PAB, Jhai, Oxfam…) some are transversal (Small Holders, ADP, Sufford…)
Commercialization	District trade dept.	Delivers working licenses to wholesalers
	Transport dept.	Transport tax
	Finance dept.	At district level, collection of coffee "movement" tax At province level, collection of the tax on benefit from exporters.
Export	Provincial authorities	General control
	Trade dept.	Delivers exporters' licenses
	Finance department	Tax on benefit (on exporters). Mechanisms are very unclear as well as the use of the tax
	PAFO	Delivers the phytosanitary certificate
	Technology and environment div.	Delivers a quality control certificate
	Commerce dept.	Delivers the GPS certificate
	Custom dept.	Control
LCA	Chamber of commerce	Supervision
	MIC	Officially administrative supervision. Role very unclear

Banks and other credit service suppliers

We have seen in previous sections that for most upstream actors (producers, middle buyers) the only way to access credit is through informal credit services (pre-harvest loans, informal loans, usury, etc.). At local level (Boloven Plateau), only big-scale wholesalers have access to formal credit (see paragraph 5.2.2).

At export level, most big-scale exporters make cash loans at the beginning of the campaign (December-January) from big banks in Pakse (BCEL, LDB, etc.). The interest rate depends on the risk credit grading of the company which is calculated by the bank. In 2007, the interest rates for coffee exporting companies ranged from 12 up to 15% per year for loans in Kip (mainly used for coffee buying). For loans in USD the interest rates range from 6 to 8% per year (mainly used for investment, machinery, etc.). According to a bank representative that works with more than 7 exporting companies, the minimum amount borrowed by the companies is around 500 million Kip (around 50,000 USD). Companies will make several loans during the coffee campaign.

Agricultural inputs' suppliers

Based on the interviews of three agricultural inputs shop owners from Paksong, we can conclude that very few farmers use agricultural inputs in their plantations. The few farmers that can afford to buy these kind of products use mainly chemical fertilizers (46-0-0 or 15-15-15 formulas), herbicides and on a lesser scale pesticides that they generally buy at the beginning of the rainy season (May-June). All these products are imported from Thailand.

Commercial plantations purchase their inputs directly from Thailand or Vietnam or from big shops in Pakse.

The Coffee Research and Experimentation Center (CREC)

The only research center working on coffee in Laos is the Coffee Research and Experimentation Center (CREC) located in Ban Itou (35 Km from Pakse). The CREC is a governmental institute under the

supervision of NAFRI (National Agriculture & Forestry Research Institute). Officially, its main missions are:

- Research about coffee
- Production of coffee seedlings
- Training
- Promotion of good quality practices among producers
- Promotion of other crops (fruit trees, vegetables) in the Boloven Plateau.

Until 2006, the CREC was supported by a FAO funded project with the view of upgrading local technologies in order to produce high quality arabica. Currently, there is only administrative and technical staff (1 director and two technicians) and no research programs ongoing. As regards trainings, they are regularly held in CREC facilities but they are always organized and funded by external projects (PAB, Oxfam, etc.). As a consequence, CREC has focused on coffee plants production (nurseries) that is sold either to private companies, coffee projects or directly to farmers.

In the past 2 years, CREC has been selling around 900,000 coffee plants per year. Last year, more than 80% of these plants were sold to two big private companies (Dao Heuang and Dak Lak). In the case of Dao Heuang, coffee plants are given to farmers in order to develop arabica surfaces under the condition farmers will reimburse the plants with coffee cherries once their plantations start to produce. The price of each coffee tree varies from 100 up to 700 Kip depending on the quantity bought. Big companies obtain interesting discounts when they purchase big quantities.

This specific example illustrates the lack of support for coffee research and extension in Laos. Indeed, CREC functioning and strategy leans exclusively on external projects. Many of the activities and research programs launched during former projects have simply stopped or are being abandoned[28] as there is no replacement of temporary external funding. Moreover, the sensorial analysis lab is underutilized.

Unlike many coffee exporting countries, the implication of secondary actors (governmental, financial, scientific, etc.) is either non-existent or very weak. Howeve, since the past 15 years, Ministry of Agriculture has a significant impact through its projects (LUADP, PDRPB, PCADR-PAB, FAO, etc.).

[28] Variety test plots, cutting tests, variety tests launched under FAO program, etc.

6. Main actors and activities of roasted coffee domestic market

6.1. Lao roasters

Roasters' characterization

In Laos, a very dynamic domestic market has developed in the last years. This market mainly uses downgraded export coffee (undersized and defective beans). As explained in the section on domestic market (paragraph 4.2 in page 29), there is a strong segmentation of domestic coffee market as regards the type of products, the places of consumption, selling prices, the types of consumer, etc. This segmentation is reflected in roasters' typology as different types of roaster have specialized in different market segments as shown in figures below.

In the one hand, a bunch of industrial or semi-industrial roasters have specialized in the production of European-style coffee (with a very large dominance of 3 companies: Dao Heuang, Sinouk and Lao Mountain Coffee). On the other hand, local-style coffee is produced by a bunch of small and medium roasting companies from Pakse and Vientiane, characterized by the use of hand-made roasting machines and flavor additives. Among the 600 to 800 tons of green coffee used every year for domestic consumption, 400 to 500 tons are transformed in local style coffee whereas the other 200 to 300 tons become pure-roasted coffee.

Finally, there is an emergent market for instant coffees with the selling of instant and 3 in 1 coffees by some local companies and the building of a freeze-dry plant by the biggest roasting company (Dao Heuang).

Figure 12: Scheme of local-style roasted coffee supply chain

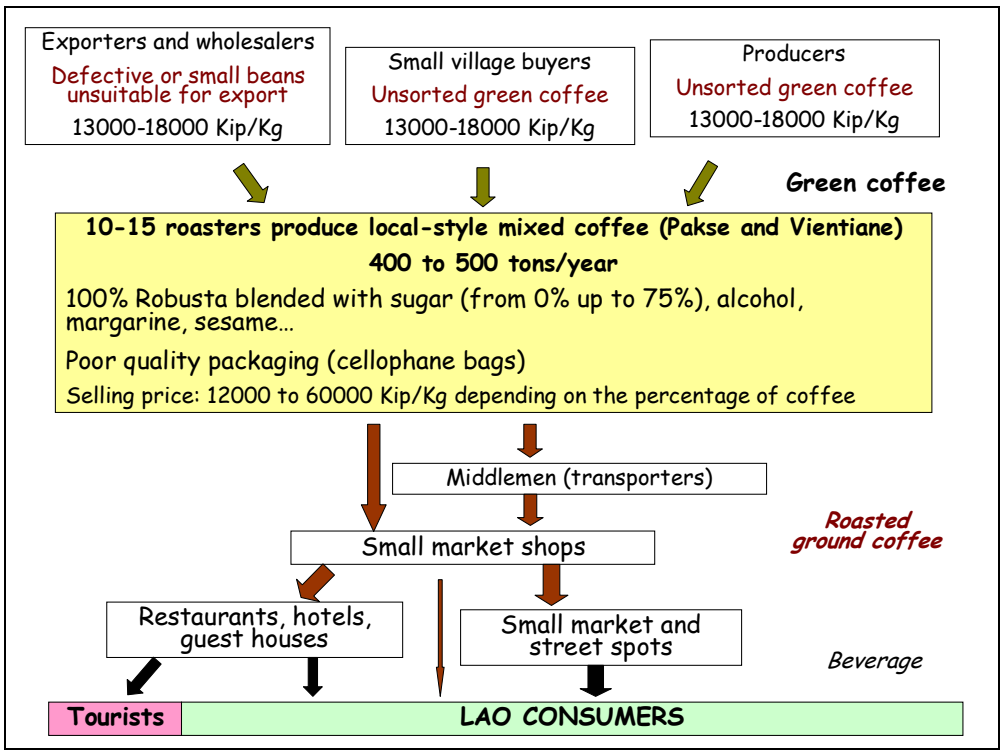


Figure 13: Scheme of "European-style" roasted coffee supply chain

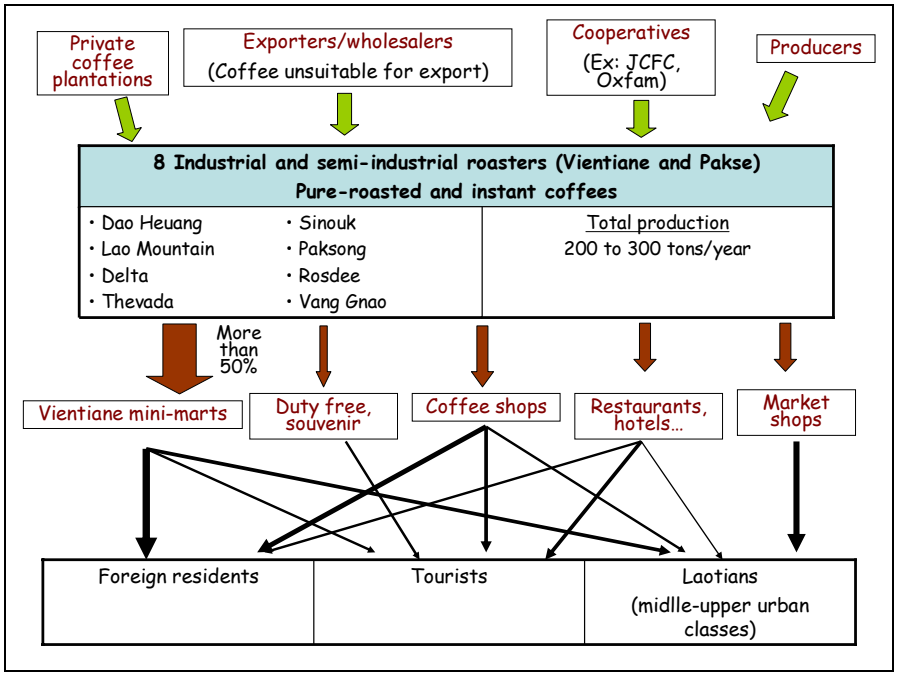
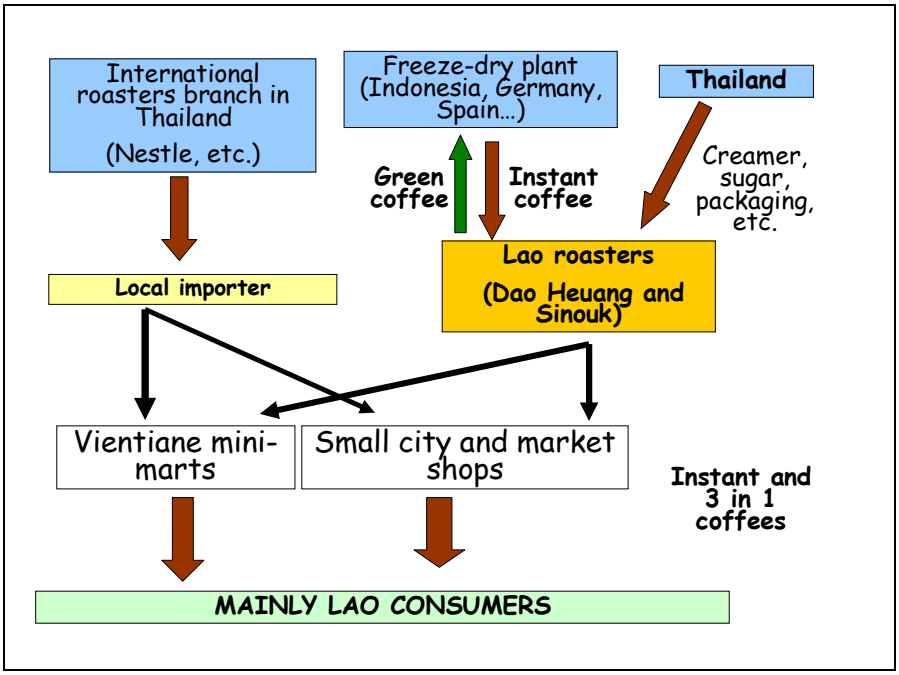


Figure 14: Simplified scheme of instant coffees supply chain



Upstream coffee supply

As explained above, the domestic market of roasted coffee mainly uses downgraded export coffee. Downgraded robusta coffee is used in both local-style and European-style coffee preparation whereas arabica is exclusively used for European-style roasted coffee making. So far, we haven't heard of a company that roasts export quality coffee. Although there has been some interesting experiences of coffee roasting by small farmers' groups (Thevada, Vang Gnao), they remain anecdotal and limited to very small quantities.

Roasting companies generally purchase processed coffee (green or parchment) either from exporters, in some cases (like some small roasters in Pakse) directly from producers and middle-buyers or they get it from their own plantations (Dao Heuang and Delta for instance). Buying prices fluctuate according to the period of the year. It was quite difficult to obtain reliable data on the price of coffee from most roasters interviewed.

Table 25: Prices paid by roasting companies in 2007

Type of coffee	Price (Kip/Kg)
Downgraded export robusta (green coffee)	9,000 – 13,000
Downgraded export arabica (parchment)	10,000 – 14,000
Downgraded fair-trade arabica parchment	21,000

Source: Roasters' interviews

Roasting activity

European-style coffee (pure roasted coffee) is produced either in industrial or handmade roasting machines. Among the eleven roasters interviewed, only two used industrial imported roasters (Dao Heuang and Sinouk). Other companies use either hand-made roasters or improved hand-made roasters. Hand-made roasters are very rustic machines made from oil barrels and using wood as heat source. Improved hand-made roasters use gas and have a simple temperature-control device.

Picture 17: Hand-made roaster using wood

Picture 18: Main local-style coffee additive: melted palm sugar

Picture 19: Improved hand-made roaster using gas

Picture 20: Industrial imported roaster (Dao Heuang company)

All local-style coffee is made in one of those handmade roasting machines. Roasters add melted palm sugar (25 to 75% depending on the mix), margarine, alcohol and other additives. These machines don't allow controlling the temperature of roasting or cooling which are key parameters in the final quality of the product. Main technical characteristics of each type of coffee are summed up in Table 26 and Table 27.

Table 26: Roasting technical characteristics

Criteria	Local-style coffee	European-style coffee
Coffee used	Robusta (downgraded export quality, defective beans)	Robusta and arabica (downgraded export quality, export quality?).
Mix/preparation	Coffee and additives: Palm sugar (25 to 75%), alcohol, margarine, sesame, etc. Proportions change from one roaster to another	100% coffee. Pure robusta, pure arabica and robusta/arabica blends
Type of roasting machine	Rustic hand-made (made from oil barrels)	Imported Italian-style roaster or improved hand-made roaster
Roasting capacity	20-40 Kg	10-20 Kg
Heat source	Wood	Gas
Temperature control	None	Thermostat
Type of roasting	Generally dark roasting. One hour in average.	Medium to dark. 30 min in average
Grinding	Ground coffee	Ground and whole beans

With the development of instant coffee consumption, two local roasting companies (Dao Heuang and Sinouk) have started to market their own instant coffees (at the beginning, instant coffee was imported from Thailand). However, as there is still no freeze-drying plants in Laos, these companies make their instant coffee in a different country (Indonesia, Germany, Spain, etc.). Coffee is then mixed and packaged in roasting companies' plants. In the case of 3 in 1 coffees, all ingredients (creamer, sugar but also the packaging) are imported (see Figure 14).

Coffee products (downstream supply)

In the past years, Lao roasters have managed to expand the domestic market by developing a wide range of coffee products (see Table 27) using aggressive and effective marketing strategies. Besides the selling to traditional retailing places (mini-marts, coffee shops, restaurants, hotels, etc.), some roasters have set their own consumption places like specialized coffee-shops, coffee stands, etc. where they can sell coffee beverage and advertise their products.

Table 27: Roasted coffee products' differentiation criteria

Criteria	Local-style coffee	European-style coffee
Blends	100% robusta, additives. (up to 75% of palm sugar)	Pure robusta, pure arabica and robusta/arabica blends
Roasting type	Unknown, but generally very strong (even burned)	Light ("Scandinavian roast", "city roast") Medium ("French roast"...) Dark ("Italian roast", "Espresso roast"…)
Presentation	Ground	Beans and ground
Packaging	Simple plastic or cellophane bags	Depends on the brand -Cellophane bags -Multi-foil bags with degassing valve
Information	None	Quite wide information for the consumer (weigh, blend, origin, roasting type, roasting date, etc).

Regarding the quality of coffee products, it is too early to launch a comprehensive market study as Lao costumers are relatively new coffee consumers. However, we have the results from a cup tasting training hold in the Boloven Plateau in 2007. During this training session, coffee producers, roasters, exporters and other coffee sector representatives were trained to sensorial analysis of coffee through the sampling of some coffee products commonly sold in the Lao market. Table 28 summarizes some of the results of this tasting.

Table 28: Lao coffees cup tasting results

N° (1)	Type of coffee	Description(2)	Global judgment
1	Local-style	Quite strong and low quality aroma. Strong body. Absence of acidity and average bitterness. Burnt flavors.	**Average**
2	Local-style	Very intense and low quality aroma. Pronounced acidity and sourness.	**Very bad**
3	Local-style	Intense aroma. Strong body. Low acidity and strong bitterness. Strong taste of burnt	**Weak**
4	European	Intense and good quality aroma. Good balance between body, acidity and bitterness. Strong ligneous aromas.	**Average**
5	European	Strong aroma and bitterness. Strong chemical and burnt taste. Strong astringency.	**Very weak**
6	European	Intense and average quality aroma. Earthy taste. Quite astringent	**Weak**

(1) For confidentiality reasons brands are not named

(2) Cup tastes were carried out on a single sample, on one time

As we can see, the global appreciation of Lao coffees is rather low. As a matter of fact, none of the samples tasted during this training obtained a good global judgment.

Lao roasted coffee domestic market is very dynamic with very active actors, a wide range of products and strong marketing strategies. It mainly uses downgraded export coffee and roasting techniques are not yet well controlled in many cases. As a result, the global quality of Lao roasted coffee remains quite low according to international standards. So far, this hasn't had a repercussion on domestic costumers as they are quite new coffee consumers. However, further efforts on global quality should be made in order to meet the demands of an increasingly exigent public.

6.2. Coffee retailing (domestic market)

This issue was analyzed based on 42 surveys carried up in different retailing places in Vientiane and Pakse as well as information given by roasting companies.

The domestic market supply chain is quite short as in most cases roasting companies deliver their products directly to final retailers (mini-marts, coffee shops, hotels, etc.). Main buyers of "European style" coffee are foreign residents and wealthy Lao costumers living in large cities (Vientiane, Luang Prabang, Pakse, etc.). They generally buy coffee bags in mini-marts and market shops or consume beverages in coffee-shops, restaurants and hotels. On the contrary, main buyers of local-style coffee are Laotians in both urban and rural areas (but mainly urban).

According to retailers' survey results specific costumers' request is their number one purchasing criterion for packaged roasted coffee (35% of the answers). Indeed, it seems that many costumers ask for a specific product mainly based on publicity, special offers or other costumers' advice. Other major purchasing criteria are the brand and the selling price. Regarding coffee beverage, the price is the first purchasing criterion (in 30% of the answers) followed by the physical characteristics of the beverage (the mousse in the case of espresso coffee, the color, the aroma, etc.).

Table 29: Example of coffee products' range in Vientiane mini-marts for 3 major brands

	Dao Heuang	Sinouk	Lao Mountain Coffee
Number of coffee product ranges	**9** (great diversity of instant coffees)	**7**	**8**
Number of coffee products (types of packaging and presentation)	**40**	**21**	**46**

Coffee products are generally highlighted. In some mini-marts of Vientiane there are entire shelf-spaces exclusively for coffee products and in many places they are shown in strategic places of the shop (near the entrance or the checkout). Moreover, there is a wide choice of coffee products according to its origin,

brand, weight, specie, blend, roasting degree, etc. (Table 29). In some mini-marts there are more than 80 different coffee products.

The selling prices depend on different aspects such as the type of coffee, the mode of preparation, the brand, the packaging, the coffee blend, etc. Table 30 summarizes the average prices for different categories of coffee products sold in different Vientiane retailer shops.

Table 30: Ranges of selling prices for different categories of coffee product in the domestic market

	European style			Local-style coffee	Instant coffees		
	Pure Arabica	Blend	Robusta		Imported instant	Lao brand instant	Lao brand 3 in 1 coffee
Average price in LAK/Kg	**109,200**	**106,280**	**49,200**	**19,875**	**169,000**	**228,000**	**46,296**
In USD/Kg	***11,5***	***11,2***	***5,2***	***2,1***	***17,8***	***24,0***	***4,9***
Min	**92,000**	**88,000**	**40,000**	**13,000**	**150,000**	**180,000**	**40,741**
Max	**122,000**	**152,000**	**76,000**	**30,000**	**220,000**	**360,000**	**70,370**

Source: Surveys from the Participative Coffee Supply Chain Analysis

6.3. Domestic consumption of Lao coffee

It is very difficult to analyze the consumption of Lao coffee in importing countries as it is always used in coffee blends or for instant coffee making. Therefore this chapter will focus only on national/domestic market.

As described above, the domestic market is segmented according to the type of product and consumption habits. A qualitative analysis focused on quotas approach has been achieved in 2007 with a survey on 170 households in Vientiane and Paksé.

As expected, the typology of consumers follows the 3 types of coffee produced by roasters: consumers of instant coffee, of European style and local/traditional style.

Table 31: Domestic market: buyers and consumers typology

Groups of consumers	Buying	Consuming
Instant coffee consumers	Buyers of **Dao** coffee more precisely "**3 in 1"**, want to have details concerning **ingredients** in that product.	Young consumers of brands like **Dao or Nescafé**, of **instant coffee and "3 in 1"**, they **add sugar** in their coffees and consume **less than once a day**.
	Buyers of instant coffee **Nescafé**, their criteria of buying is **the packaging**.	
European style coffee consumers	Buyers of coffee in **mini-mart**, worried about **origin**.	Consumers of **Sinouk coffee**, living in Vientiane, **European way of consumption**, **hot black** coffee with sugar if too bad taste.
	Buying in the coffee company, they want coffee in beans.	Consumers of **Lao Mountain Coffee** prefer to buy **coffee in beans**.
Traditional/local style coffee consumers	Buying in **street spots or in market spot**, **no criteria** of buying, but want to know the brand of the coffee they are drinking.	Consumers of coffee beverages. They drink during the afternoon only occasionally.
	Habit-buying customers, no criteria of buying and no special wish concerning coffee packaging.	Consumers of "**Paksong Coffee**" or **coffee without brand**, living in Paksé, older, consume their coffee **in the morning**, it's often **iced coffee** with **sweetened condensed milk**

In the producing province, the habit of consumption is very typical; they have hung on their habits for a long time and they are not ready to change. Coffee is not really in the Lao culture outside the south of Laos.

Roasted coffee is mainly consumed in urban areas by locals, resident foreigners and tourists. Pure-roasted "European style" coffee is mainly consumed by foreigners, whereas Laotians mainly consume local-style mixed coffee.

The kind of use is also different according to the type of costumer. Foreigners and tourists mainly reflect their original consuming behavior; they prefer a sophisticated packaging, an Arabica coffee, and the moment of consumption is the most important for them, a convivial and pleasant moment with friends or family or a good way to do business at work. The fact that they feel a little bit nostalgic (homesick) when they speak about coffee shows that they don't find exactly what they want in Laos. However, their average consumption per capita is quite important. They purchase bags of ground coffee and consume coffee on a regular basis in specialized places such as coffee shops or mini-mart where the offer (of European style coffee) is the best. The "focus group" method revealed that the foreigners taste a lot of coffee before making their choice and when they find the best one for them, they keep it quite a long time, and then, they try another one…So, they are not totally satisfied with the coffee offer in Laos.

On the other hand, most Laotians mainly consume traditional style coffee. They buy it mainly in market, where they choose either ground coffee in a transparent cellophane packaging, or directly in beverage with sweetened condensed milk; most of the time they consume it iced.

Finally, there has been a very rapid development of instant coffees in the past years, especially amongst local consumers. At first, this market mainly used imported instant coffee (generally imported from Thailand). Boosted by this success, some big roasting companies in Laos started to sell their own instant coffee (which is also imported; as well as sugar and creamer) to diversify their range of products. This market of instant coffee concerns mainly young people but everywhere in Laos (Vientiane and Paksé); it is often for an occasional consumption. In 3 in 1 coffee, ingredients are generally sugar (54%), cream (37%) and coffee (9%); the coffee taste is not very important. These consumers do not have a coffee culture, they do not have models, and so, for them it is a good coffee, which corresponds to their taste.

Table 32: Characterization of coffee consumption in domestic market

	Instant coffee consumers	**European style coffee consumers**	**Traditional style coffee consumers**
			
WHO ?	Laotians and foreigners at work	Foreigners and Laotians with a higher standard of life	Laotians
WHAT ?	Pure instant or "3 in 1"	Arabica or blend	They don't know (Robusta)
WHEN ?	Coffee break for foreigners / Afternoon for Laotians.	Morning and after lunch (more than once a day).	Essentially in the morning but just once a day.
HOW ?	With sugar and milk (ready to consume with "3 in 1").	Black and hot. Add sugar if the coffee is too bad.	With sweetened condensed milk, hot or iced.

Places of purchasing are numerous but most of the time specialized in each type of coffee. Foreigners have a good choice in mini-mart, so they can try several coffees and, if they know exactly what they want, they go to coffee shop. Lao consumers buy their coffee in the market, where there is the biggest offer corresponding to their habits.

The study shows also that instant coffee and "3 in 1" are sold everywhere: supermarket, mini-mart, coffee shop and market.

Table 33: Domestic market: places of purchasing coffee

	Mini-Mart	Coffee Shop	Market	Street spots (only beverage)
Instant coffee consumers	39%	5%	56%	0%
European style coffee consumers	41%	32%	27%	0%
Traditional style coffee consumers	6%	0%	76%	18%

(Based on 117 coffee consumers interviews, in Paksé and Vientiane)

All these results show the complexity of segmented market for buying and consumption. To improve consumption, it would be necessary: i) to "educate" the younger generations with coffee consumption, type/"species" of coffee, taste of coffees and ii) to promote the image of the Boloven Plateau and the traditional know how. People of Vientiane and tourists do not know the Plateau or have a pejorative image of it. The objective will be to create or develop a better image of the coffee chain in general which would enable every Laotian to be proud of the coffee produced in his/her own country.

Like in many cases, a coffee-producing country is not really a coffee-consuming country, first because it is not cultural yet and then because "European style coffee" is expensive for local consumers (same price as Europe with a very distinct standard of living). The conviviality around a coffee gathers only consumers. There is very little communication between producers and consumers about conditions of production, of post-harvest process and quality criteria. The example of wine industry communication could be a model.

7. Organization of main Lao coffee market circuits

A market circuit is defined by its size (volumes, market shares, etc.), the type of product exchanged, the marketing strategy and the final destination of the product. Marketing circuits' analysis is based on two different aspects:

- Agents' strategies
- Relations between agents

In this section, we will first describe main Lao coffee circuits by emphasizing major actors' strategies. Then we will describe the relations between these actors before analyzing how the final value is shared between all categories of agents (price structures).

7.1. Coffee circuits characterization

In the case of Lao coffee, main market circuits are determined by the type of product exported (which depends on the specie and the processing method), the type of buyer and the final destination. Each circuit is then characterized by a specific quality of product (natural robusta green coffee, washed arabica green coffee, roasted coffee, etc.), a specific market (conventional export market, niche markets, domestic roasted-coffee market, etc.) as well as different strategies and relations between actors.

Considering that, we can differentiate 3 main circuits for Lao coffee. In order of importance:

- **The mainstream export circuit** (that includes two types of product: FAQ natural robusta and most washed arabica)
- **The circuit of washed arabica for niche markets** (exclusively for arabica)
- **The circuit of roasted-coffee for domestic market**

Remarks:

-Although there is a small percentage of dry-processed arabica produced, it generally follows the same circuit as washed arabica or it is sold to the domestic market.

-Even if it is technically possible, no robusta is processed through the wet-method. However, there has been some experiences of washed robusta selling (small amounts sold to Taiwan) and some opportunities in the near future (2 containers to New Zealand in 2008).

7.1.1. Mainstream FAQ coffee export circuit

Circuit characterization

More than 99% of Lao coffee is exported through mainstream commercial circuits including 100% of robusta and most arabica (see figures below). In both circuits, the final product is green coffee without strict quality standards (FAQ) and for which there is a price penalty (according to some exporters). In both cases, a significant share of the coffee sold by farmers is unprocessed so a large part of coffee processing is made at middlemen and exporters' level.

Figure 15: Scheme of natural robusta circuit

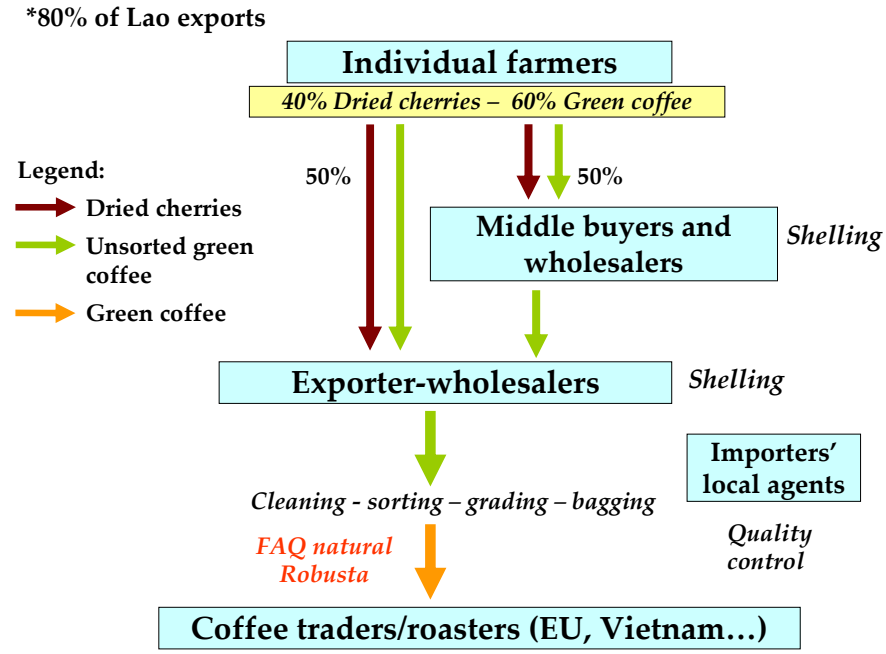
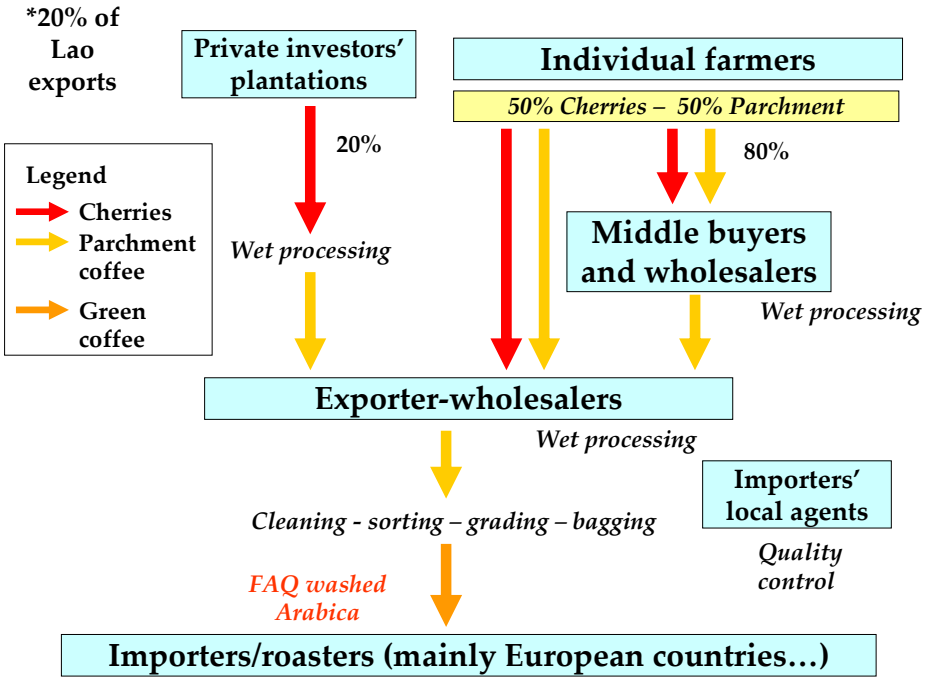


Figure 16: Scheme of washed arabica circuit



The following table analyses the main actors, activities and products of this circuit:

Table 34: Functional analysis of mainstream export circuit

Activities	Actors	Activities	Exchanged products
Primary cherry production	Individual farmers Commercial plantations	Cropping, harvesting In some cases selling of unprocessed coffee in the farm	Robusta and arabica cherries
Post-harvest activities	A part of individual farmers Middle buyers and wholesalers Some exporters	Drying Robusta dry-process and shelling Arabica wet-process Selling in the farm or transport to buyers' warehouses	Robusta dried cherries Robusta unsorted green coffee Arabica parchment
Production of merchantable export coffee	Exporters and some wholesalers	Re-drying (in most cases) Hulling (parchment) Grading, sorting, bagging.	FAQ natural Robusta FAQ washed Arabica
Export	Exporters (role of importers' local agents) Shipping companies	Rough quality control Transport to the border Exporting procedures and taxes Transport to Bangkok and shipping	60 Kg bags of FAQ natural Robusta and FAQ washed Arabica
Import	International traders Roasting companies in importing countries	Shipping, receiving, selling. Sometimes grading (in their local branch)	Green coffee (sometimes graded and sorted)
Roasting	Roasters in importing countries	Blending, roasting Instant coffee making	Coffee blends (Lao origin mixed with other origins)

Mainstream circuit's functional analysis shows a low level of involvement of producers in all stages related to coffee processing (especially for arabica). Unlike many other exporting countries, Lao producers sell a great part of their coffee at very early stages: dried-cherries of robusta and arabica cherries (refer to Table 37 in page 71). According to farmers' survey, the main reason for selling unprocessed coffee is the lack of means to set up coffee post-harvest facilities.

Another remarkable fact is the relative shortness of mainstream circuit supply chain. Indeed, not only there are few categories of agents involved (producers, village buyers, wholesalers and exporters) but almost half of the farmers (in the case of robusta) sell coffee directly to exporters (refer to Table 38 in page 72).

In the mainstream circuit, coffee prices are fixed according to international prices made in importer countries' markets. The price of Lao arabica is made according to the international price of "other arabica milds" decided in New York market. In the case of robusta, the international standard is the LIFFE price fixed in London. In both cases, according to exporters, there is a price penalty of 0 to 5 cents/Pound (100 USD/MT) from Lao coffee buyers. The main reasons would be the global reputation of the product and the reliability of Lao agents.

Actors' strategies

Table 35 summarizes the strategies of main coffee actors participating in the mainstream circuit.

Table 35: Mainstream export circuit actors' strategies

Agent	Type of agent	Strategy
Producers	Individual farmers	Mainly livelihood. Relatively extensive cropping system (robusta) with a minimum risk. Diversification (arabica) with a view of income increase and credit-dependency reduction.
	Farmers' groups	Livelihood. Coexistence of a low-risk extensive cropping system with a more intensive system of high-quality coffee production for high-value niche markets.
	Private investors	Return on investment
Middlemen	Village buyers	Usury credit and margin on coffee sales
	Wholesalers	Usury credit and margin on coffee sales. For the biggest, coffee export (in the near future)
Exporters	Wholesaler-exporters	Margin on coffee exports and foreign currency for the import of manufactured goods. Credit services (to middle-buyers and farmers)
	Big wholesaler-exporter-roaster	Complex strategy: Diversification and high added-value through coffee roasting and instant coffees making. Margin on coffee exports. Credit services.
	Planter-exporters	Return on investment (coffee plantation) Processing and export of washed arabica from own plantation to the same coffee trader
Importers	International coffee traders	Purchase of coffee with interesting organoleptic characteristics, without quality standards at a low price

Individual farmers mainly follow a livelihood strategy based on a cropping system (robusta) that requires very little investment and workforce. With the reintroduction of arabica and the development of the wet-method they have had access to a new circuit (washed arabica) with higher prices. However, this diversification implies the setting up of a more intensive system requiring a higher level of inputs (capital and workforce). Middle-men and most exporters have a double-strategy of margin on coffee sales and credit services. Only one company has developed a high added-value strategy through the development of roasted coffee market. Importers' strategy consists in purchasing an interesting product at a low price.

99% of Lao exports are made within a circuit without quality standards. There is a poor product's quality control system at all stages of coffee commercialization. Final product is average quality green coffee for which there is a great demand but bought at a low price (price penalty).

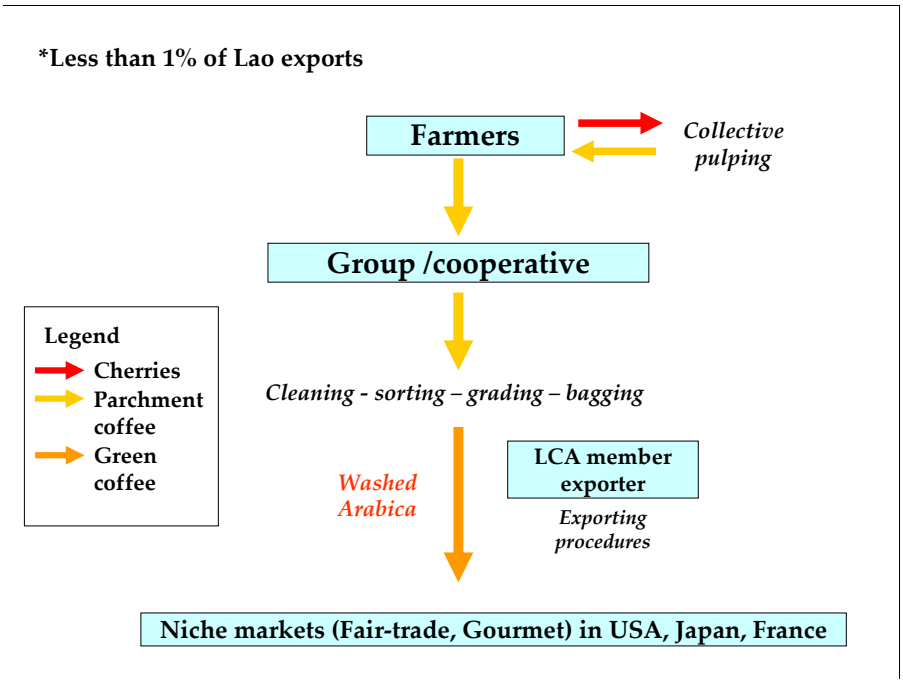
7.1.2. High-quality coffee niche markets circuit

In Laos, only a very small quantity of coffee (less than 100 MT of washed arabica per year) is marketed through this circuit which represents less than 0.5% of total coffee exports. The main actors of this circuit are Laotian producers' groups (as in Katouat and Vang Gnao villages and JCFC), international organizations (Oxfam Australia and Jhai) and foreign roasting companies specialized in Fair Trade specialty coffees. The role of organizations is to set up the link between producers and buyers, to carry out export procedures and to supervise coffee processing (in order to meet buyers' quality requirements).

Farmers deliver exclusively arabica parchment (mainly from the Typica variety but recently also from the dwarf variety). As explained in previous sections pulping is carried out in collective wet-mills (set through the support of NGOs), whereas the rest of the process is carried out individually. Final preparation of export lots is done at group's level. The follow up of NGOs technical staff is a key factor as they are in charge of checking that farmers' coffee match buyers' quality standards.

The price paid to farmers is calculated according to the fair-trade price for south-east Asia plus a fair-trade bonus. Then, the group deduces all costs related to coffee process and conditioning, cooperative staff salaries, logistics, material, etc. In 2006, producers received 19,000 to 21,000 Kip/Kg (1.95-2.16 USD/Kg)

Figure 17: Scheme of niche markets circuit



7.1.3. Domestic roasted coffee market circuit

This circuit was fully described in paragraphs 4.2.page 29 and 6.page 57.

7.2. Relations between main actors

7.2.1. Relations between producers and coffee buyers

Farmers have two different ways of selling coffee: they can either sell it during the harvest period or they can sell it to a middle-buyer or exporter several months before the harvest in order to obtain pre-harvest loans. This system has a double advantage for coffee buyers. Indeed, not only they obtain substantial benefits from usury credit but they also ensure coffee supply.

7.2.1.1. Coffee selling through pre-harvest loans

When farmers are in need of cash, they have the possibility to borrow money by using their future harvest as a guarantee; farmers say they sell "green coffee" or "café khiaw" in Lao (because cherries are still green when the coffee is sold). Farmers can get pre-harvest loans either from village buyers, wholesalers or exporters. In our study[29], 45% of the farmers interviewed borrowed money through this system last year (66% of these loans concerned robusta, 24% arabica and 10% arabica and robusta). Small-scale poor farmers are most likely to make pre-harvest loans as shown in Table 17 and Table 36.

Table 36: Percentage of households having made pre-harvest loans according to their social status

Rich*	Medium	Poor
0%	33%	44%

** In Laos the social status of a household is decided by local authorities based on several criteria such as the type of house, the land, livestock etc. It is not very clear how this scale is calculated or how it evolves in the time.*

[29] A specific survey on coffee selling was carried out in half of the households of the total sample, that is to say 200 households in 20 villages.

There are two modalities of loan:

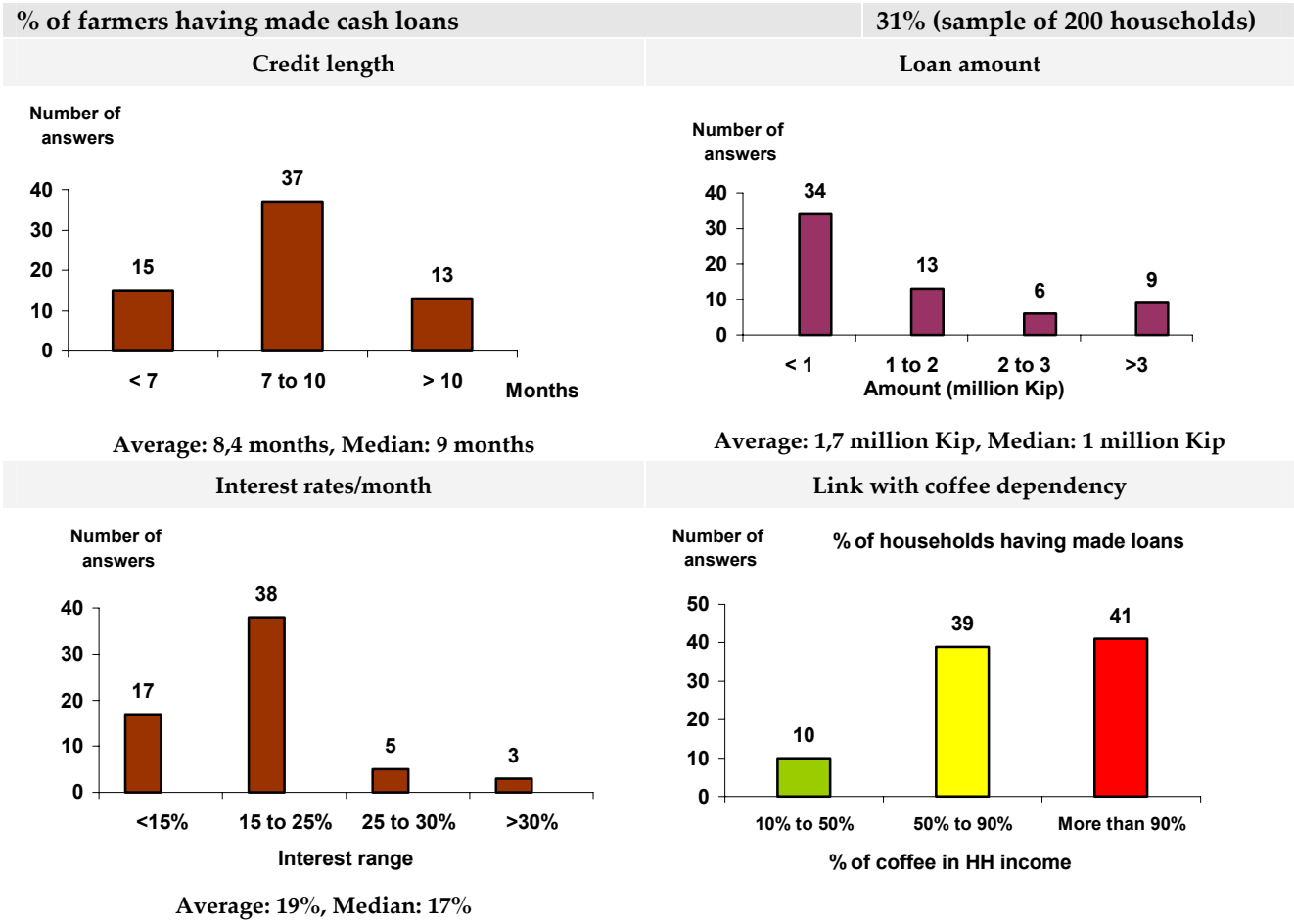
- The classical loan system in which farmers borrow money with a monthly interest rate and reimburse it thanks to coffee selling. There is a tacit agreement on the fact that farmers will sell most of their coffee to the lender.
- The second system is similar, except that farmers reimburse the debt in kind (coffee) at a price decided in advance. This price is always below the market price at the moment of the selling (in most cases it is half the market price). Generally farmers deliver unprocessed coffee (cherries or dried cherries).

If the borrower is unable to reimburse his debt, the lender will give a penalty. Normally he extends the debt by increasing the interest rate (generally he doubles it). However, in some cases it happens that the buyer takes livestock or farmer's assets (motorbike, etc.) as a guarantee.

In both cases the scheme of coffee selling disadvantages coffee quality as the priority for farmers is the coffee volume. Moreover, they can no longer benefit from the competition between coffee buyers.

Main modalities of these loans are summed up in Figure 18. These results come from farmers' survey.

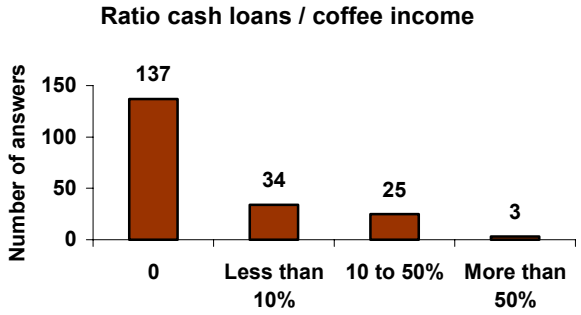
Figure 18: Summary of farmers' cash loans modalities



In average, farmers borrow money 7 to 10 months before the harvest. The average amount requested is 1.7 million Kip, but more than half of the households borrowed less than 1 million. The average monthly interest rate is around 20%. Finally, we notice that households that rely on coffee for a great part of their income are more likely to make loans. According to farmers' interviews, beside the payment of external labor these loans are mainly used to buy rice or to provide for exceptional expenses such as illness or religious ceremonies. A small percentage of the families interviewed (around 5%) have made pre-harvest loans every single year during the past 5 years.

Figure 19 allows visualizing the impact of pre-harvest loans in households' economy. This figure only includes cash loans (it is the reason why the percentage of indebted households is smaller than in Figure 18). In average, cash loans represented 7% of the total coffee income in 2006. For 17% of farmers the amount of loans represented less than 10% of the coffee income, for 12% between 10 and 50% and for 3 farmers (1% of the sample) cash loans stood for more than half of the total coffee income.

Figure 19: Ratio between cash loans and total coffee income (sample of 200 households)



If we consider that around 45% of farmers make pre-harvest loans and that the average amount borrowed is around 1 million kip, the global need for coffee pre-financing would be around 6,750 million Kip per year (around 700,000 dollars). Knowing that the total coffee value can be roughly estimated in 34 millions dollars; it means that farmers' pre-financing needs stand for only 2% of global value.

Almost half of coffee producers have to make informal pre-harvest loans every year with quite disadvantageous conditions (high interest rates, low selling price…). And yet, their global financing needs only represent 2% of total coffee production value.

7.2.1.2. Coffee selling during harvesting period

Ten years ago, most of the coffee was sold at farm level, at an early stage of processing to village-buyers or coffee collectors. Now, many farmers are able to sell processed coffee directly to wholesalers and exporters outside the village. One of the main reasons is the wider access to transportation means such as tok-toks. In our study's sample, 31% of the farmers interviewed had a tok-tok and around 6% had a pick-up or a bigger truck. The type of coffee sold also depends on the total production, farmer's processing capacity and household's cash needs.

Table 37: Type of coffee sold by farmers during 2006/2007 campaign

Arabica			Robusta		
Type of coffee sold	**% of farmers**	**% of coffee harvest**	**Type of coffee sold**	**% of farmers**	**% of coffee harvest**
Cherries	**55%**	**34%**	**Cherries**	**10%**	**2%**
Dried cherries	**14%**	**8%**	**Dried cherries**	**35%**	**19%**
Parchment	**40%**	**49%**	**Unsorted green coffee**	**61%**	**79%**
Green coffee	**12%**	**9%**			

Source: Household survey 2007 (sample of 200 households)
Note: Totals above 100% as many farmers sell different types of coffee

In 2007, 20% of robusta coffee was sold without processing (cherries and dried-cherries). As a comparison, in 1999 this percentage was around 95% (PDRPB, 1999). There is a different situation regarding arabica. During 2006-2007 campaign almost 55% of the farmers sold cherries (and in a lesser scale dried cherries). The main reason is the perishability of coffee red cherries that require an immediate processing. Robusta dried-cherries on the contrary can be kept for several days and transported. Farmers cannot sell processed arabica unless they have access to a wet-milling facilities right after the harvest.

Another consequence of the lack of access to wet-mills is that more than 50% of farmers sold arabica coffee to small village buyers living in the area who carry out coffee processing in their own wet-mills. In the case of robusta, more than 65% of the farmers sold unsorted green coffee directly to wholesalers and exporters as shown in the table below.

Table 38: First coffee buyers

Arabica		Robusta	
Type of buyer	**% of farmers**	**Type of buyer**	**% of farmers**
Village buyer	**25%**	**Village buyer**	**14%**
Neighbor village buyer	**33%**	**Neighbor village buyer**	**23%**
District town buyer	**18%**	**District town buyer**	**18%**
Exporter/wholesaler	**16%**	**Exporter/wholesaler**	**48%**
Farmer group*	**21%**	**Other**	**2%**

Source: Household survey 2007 (sample of 200 households)

Note: Totals above 100% as many farmers sell to more that one type of buyer

* Bias in the sample as villages with farmers groups are over represented

Most buyers check coffee quality using rough-empiric methods (see Table 39) and give penalties according to subjective appreciations. Humidity testers are hardly ever used except for one big exporting company and farmers exporting high-quality coffee to niche markets (as buyers' quality standards are higher). In that case farmers generally borrow a humidity tester from the Coffee Research and Experimentation Center (CREC) in Ban Itou.

Table 39: Main quality criteria and controlling methods during first coffee selling

Type of coffee	Defective beans		Humidity rate	Foreign matters
	Quality criteria	Control method	Control method	Control method
Arabica cherries	Number of unripe green cherries	Rapid observation	- - -	Rapid observation
Arabica dried parchment	Color, homogeneity, CBB attacks	Rapid observation	Biting	Rapid observation
Robusta dried cherries	- - -	- - -	Shaking[30], biting	Rapid observation
Robusta unsorted green coffee	Number of black and broken beans, CBB attacks	Rapid observation	Biting	Rapid observation

If coffee doesn't meet the quality standards set by the buyer, the penalty is generally a price or a weigh reduction going from 5 up to 20%.

The buying price is always decided by the buyer and farmers have generally little power of negotiation. In most cases, coffee is sold by Kg excepted for robusta dried-cherries which are often sold by bags of 80 Kg. In 2006-2007 campaign the average prices paid to producers were the following:

Table 40: Prices paid to producers during 2006/2007 campaign

Type of coffee	Average price (Kip/Kg)	*Average price in USD(1)/Kg*	Min	Max	Median
Robusta dried-cherries	**5,600**	***0.57***	**3,100**	**9,000**	**5,500**
Robusta green coffee	**11,600**	***1.19***	**8,000**	**16,000**	**11,500**
Arabica cherries	**2,260**	***0.23***	**1,000**	**2,800**	**2,300**
Arabica parchment	**15,900**	***1.63***	**10,000**	**19,000**	**17,000**

Source: Farmers' survey (sample of 200 households)

(1) 1 USD = 9735 LAK (exchange rate February 2007)

[30] Buyers can roughly check the humidity rate in dried-cherries by shaking the beans and hearing the sound it makes.

As we can notice, there is a great variability of prices paid to producers. This is mainly due to the differences between the beginning and the end of the harvest period. Besides, selling prices may vary according to the location, the type of buyer, the terms of the selling (pre-harvest loan, regular selling), etc.

7.2.2. Relations between exporters and upstream suppliers

Exporters buy most of the coffee from middlemen and producers. Planter-exporters get arabica cherries from their private plantations. Most exporters set contracts or informal agreements with local middle-buyers in order to ensure coffee supply. There are different types of relations between exporters and middle buyers:

- Middle-buyers can be completely independent
- They can be partially independent but linked to an exporting company
- They can be coffee collectors paid by an exporting company

Independent buyers are not linked by a commercial contract. They sell coffee to the higher bidder. Some buyers are officially independent but punctually set short-term contracts with an exporter for a specific amount of coffee and a specific price. The middle buyer commits to deliver that amount and takes the risk of any big fluctuation on coffee price. Generally there is no problem as these small-contracts are completed within few days. In most cases, coffee buying is partially financed by the exporter. However, most buyers refused to tell the terms of such cash advances.

Coffee collectors are middle buyers working exclusively for an exporting company. It can be either a trader from a district town or a farmer living in the village. They use companies' trucks and money to buy coffee in different villages and normally don't work on commission. Only the biggest exporting companies work with this type of agents.

Some exporters also provide credit services to village buyers, wholesalers and producers. Regarding informal credit to farmers, one big exporting company has set up a system of credit based on the lending of coffee trees. Through this system, farmers get trees from the arabica dwarf-variety that they reimburse with their coffee production once the plantations start to produce. It wasn't possible to know the actual terms of this type of loan.

7.2.3. Relations between exporters and downstream actors

Local importers' agents

As explained before, in Laos local importers' agents play a very important role. First of all they are the main contact between the international buyer and exporters. Moreover, they ensure the follow up of coffee quality in exporters' warehouses by checking the minimum quality standards.

In the last years, two main international coffee traders (one from Switzerland and one from Poland) have purchased more than half of Lao coffee exports. They rely on very active local agents that are in charge of finding the sellers, coffee quality control and follow up of coffee shipping.

Other secondary actors

As regards governmental and government-linked secondary actors, we have already pointed out the fact that we find them at all stages of the chain but their action remains very limited. There is an absence of State-control as no norms or quality standards have been set up. In other exporting countries, a state body is in charge of verifying the conformity of coffee lots with the established standards. To that matter, most countries have set up certified laboratories under the supervision of the national coffee board or coffee council.

7.3. Coffee price structures

Based on information collected from main actors, we set up a theoretical price structure for each coffee market circuit presented in Annex 7, Annex 8 and Annex 9 (pages 84 to 86). These price structures

represent an average theoretical situation that allows visualizing the distribution of main costs and margins within each circuit. It has been done with 2006-07 harvest which was a good year for prices and yields. Average annual price structures could be distinct.

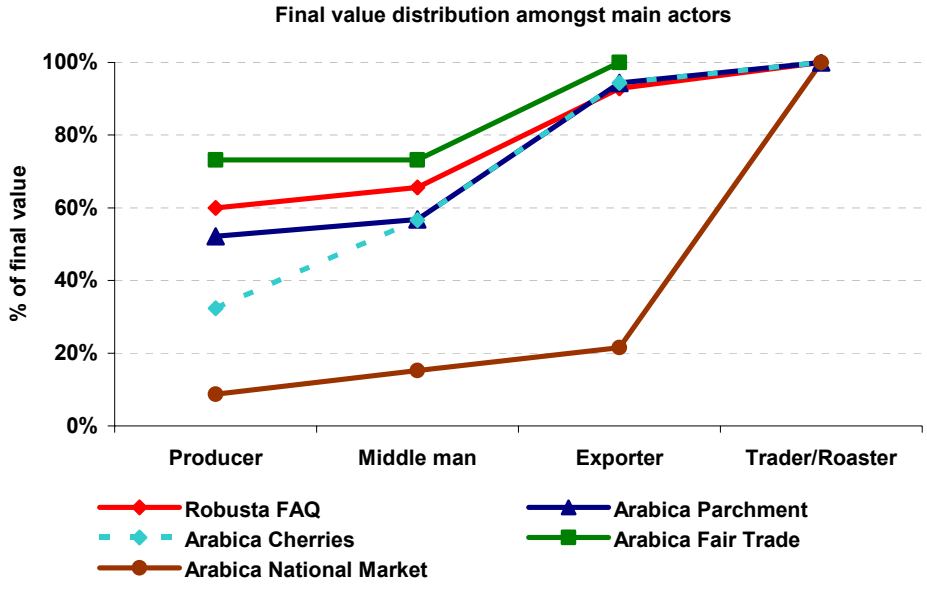
First of all, we notice that the price penalty in the mainstream circuit is slightly higher than 100 USD/MT according to the contract prices given by exporters. This situation is very unclear: nobody really knows if there is a standard penalty for Lao origin, why there would be also a penalty for washed arabica or what are the reasons that would explain such penalty. The amount of the penalty also varies according to the sources (some importers say they don't give penalties at all, some sources give the figure of 170 USD/MT but most actors say it is around 100 USD/MT). In the case of arabica, the difference between the international price and Lao contract prices is even higher (120 to 190 USD/MT). It is possible that some actors' margin might be higher than announced.

Regarding the price structure of mainstream washed arabica (Annex 8 in page 85); we can visualize the difference on value's distribution depending on the type of coffee sold by producers. When producers sell cherries they receive 33% less than parchment selling.

Finally, if we compare the mainstream circuit to the niche market circuit, we notice that export costs are higher for farmers' export groups (103 USD/MT versus 76 USD/MT in the mainstream circuit). The main reason is the district "coffee movement" tax that is higher for farmers' groups[31] and the commission paid to the LCA exporting company (for export procedures).

In Figure 20 we have represented the share of the total value obtain by each category of actor. For export circuit, the final value is the price received by importers[32]. For domestic market circuit, the final value is the price of roasted coffee sold to the retailer.

Figure 20 : Lao coffee circuits value chain analysis



As we can observe, producers obtain a larger percentage of the final value in the niche market circuit (73.2%) and in a lesser extent in the mainstream FAQ robusta circuit (60%). In this graph we can also visualize the loss of added value for farmers selling arabica cherries as they only get 32% of the final value versus 52% for parchment selling. Finally, producers only get 9% of the final value in the case of roasted coffee for domestic market. For producers, it is evident that the access to the 2 mains markets of coffee in

[31] For instance in Paksong, a farmer cooperative pays 150 LAK/Kg whereas wholesalers only pay 20 LAK/Kg. And yet, according to the last regulation released by the Finance department, farmer cooperatives are tax exempt.

[32] We have made the assumption that importers sell Lao coffee at the international price.

Laos, exportation of green coffee and roasted coffee domestic market, would provide them better coffee end-value share. This objective would be reach only through collective organization.

The graph also shows that middlemen obtain a very small share of the final value except for those who transform arabica cherries. In that case they get 24% of the final value. In the export circuit, exporters get in average 32% of the final value. Finally, we see that in the roasted market circuit the largest share is obtained by the roaster as he gets almost 80% of the final value.

Farmers obtain the highest percentages of the product's final value for niche market coffee and robusta FAQ coffee. On the contrary, they only get 32% of the final value when they sell arabica cherries. In that case, the added value is retrieved by middlemen who carry out the wet-process. In the case of roasted coffee circuit, roasters obtain almost 80% of the final product's value.

8. Conclusions on Lao coffee sector analysis

A supply chain analysis is a very complex issue involving different categories of actors, activities, markets, products, etc. In order to compile the main findings and results of this study by highlighting the strengths and limiting factors of Lao coffee sector we decided to use the SWOT analysis methodology. (Strengths - Weaknesses - Opportunities - Threats).

There are two main steps in a SWOT analysis:

First, we must draw up the list of strengths, weaknesses, opportunities and threats for Lao coffee sector (Table 41). In the specific case of Lao coffee supply chain, we decided to group these results according to 4 main themes:

- **Production**
- **Markets**
- **Supply chain organization**
- **Institutional frame**

Then, the crossing of these results in a SWOT matrix allows visualizing the outputs in terms of strategies, as shown in the following table:

	Strengths	**Weaknesses**
Opportunities	**Strategies to develop in priority** Strategies that lean on coffee sector strengths in order to take advantage of external opportunities.	**"Bottleneck" strategies** Strategies that need to overcome some weaknesses in order to be viable
Threats	**Contingency strategies** Strategies that allow to reduce coffee sector vulnerability by leaning on its strengths and by taking into account coffee sector weaknesses	

An example of what can be a SWOT Matrix output is presented in Table 42

Table 41: Summary of strengths, weaknesses, opportunities and threats of Lao coffee sector (SWOT analysis)

	Coffee production	Coffee markets (international and domestic)	Supply chain's structure and functioning	Coffee sector's environment and institutional frame
Strengths	• Farmers process coffee by wet-method (for arabica) • "Natural" production (no chemical inputs) • Farmers have adopted the "arabica dwarf variety" cropping system • There is a potential for arabica surfaces increase	• Typicity of Lao robusta (grown in unique agro-ecological conditions) • FAQ Lao robusta has a good ratio quality/price in the international market • Good image of Laos ('exotic touch") • Lao arabica has managed to enter high quality niche markets • Small producer at world scale (possible origin niche specialization)	• Development of a high quality segment inside domestic market and good image of "European-style" roasted coffee • New coffee consumption places • Short supply chain, geographically concentrated • A bunch of very dynamic actors (Dao, Sinouk, LMC) have developed and innovated coffee domestic market	• Authorities' willingness to exploit high quality circuits (MAF and Provinces) • Funding institutions have interest in developing high quality coffee projects (AFD, Oxfam, JICA, New Zealand, etc.) • Succession of international projects working on coffee development (LUADP, PDRPB, PAB)
Weaknesses	• Lack of quality control system at all stages of coffee supply chain • Lack of processing means (specially regarding coffee drying and arabica wet-milling) • Absence of a management strategy for soil fertility • Lack of knowledge on coffee trees pruning • Low intensive cropping system (robusta and Typica) due to cattle transit adaptation	• Small producer at world scale (little influence and lack of recognition) • Organoleptic defects on both types of roasted coffee (local style and "European") • Low consumption per capita (domestic market) • The history of Lao robusta is based on the selling of low-price, low-quality coffee for which there is a very high demand • Price penalty for Lao FAQ robusta	• Producers are not organized • Unofficial costs ("transport taxes", discriminatory local taxes, etc.) • Lack of contact between Lao exporters and coffee international market • Preeminence of one actor in the chain • Lack of a structure gathering main coffee actors • Monopole of coffee exports (exporters' organization functions as a cartel)	• Lack of access to a fair and transparent credit system for harvest costs financing • Absence of research and knowledge spreading among coffee actors • Laos doesn't belong to any international coffee-related organization (ICO, etc.) • Laos is a landlocked country which engenders slowness at different levels (financing, transport through Thailand, etc.)
Opportunities	• Availability of land for coffee expansion • Room for quality improvement through coffee processing (density selection, etc.)	• Good image of Laos (exoticism) • Niche markets for high quality robusta (washed, altitude, GI, etc.) • Further expansion of niche markets for Lao arabica (Fair-trade, organic, etc.) • Potential of increase for domestic market • Organic certification for farms, producers' organizations, production areas, etc. • Reduction of price penalty for Lao robusta	• Room for producers' organization strengthening inside coffee sector • Future creation of the coffee board CNCL • Possibility to set up quality standards as well as a controlling entity (Lab)	• Cost-reduction by exploring other shipping ways (Cambodia, Vietnam) • Better use of coffee taxes (clarification and transparency)
Threats	• Risk of a lack of labor for arabica harvesting (rapid surface increase, migrations to Thailand, competition of commercial plantations, etc.) • Risk of shortage of dry-season rains (because of deforestation) • Massive utilization of chemical inputs in commercial plantations	• Risk of fluctuation of international coffee prices	• Risk of importers' diversion towards other producing countries because of an irregular supply (absence of long-term relations, lack of trust)	• Pressure on land due to rubber tree and coffee commercial plantations' expansion, bauxite mine, etc.

Table 42: Example of SWOT analysis output in terms of strategies for coffee sector

	S	W
O	• Launch a recognition campaign of Lao robusta in order to eliminate the price penalty for FAQ robusta • Explore cheaper shipping ways (Cambodia, Vietnam) in order to reduce export costs • Strategy for the access and promotion of high-quality Lao coffee in niche markets (washed arabica, washed robusta, organic, organic fair-trade, Geographical Indication, etc.) • Program of promotion of domestic coffee consumption	• Carrying on with wet-method centers building and dry-method improving techniques in producing villages • Strengthening and extension of coffee producers' organizations. • Supporting organizations to reach export/green and national/roasted markets. • Launch a global reflection about putting into place a harvest pre-financing system (banks, micro credit, turnover funds, etc.). • Setting up of a tax system that meets all parties' interests (provinces, districts, exporters, producers…). A part of these taxes should finance the coffee supply chain structures. • Setting up of quality standards and a control body (laboratory) in order to project a professional and clear image internationally • Creation of a coffee board (CNCL) and participation to international coffee entities and events • Improving of technical supporting structures (research and vulgarization)
T	• Reflection (at 3-provinces level) about environment protection policy (especially regarding chemical products' management and forest and water conservation) • Setting up of a prospective and scientific report about the impact of land concessions in the Boloven Plateau • Launch a reflection about the harvest labor issue with practical suggestions (Examples: regional adaptation of school holidays, thinking about the temporary migrations between lowlands and highlands, etc.)	

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www.ico.org; website of the International Coffee Association
www.faostat.fao.org

Annexes

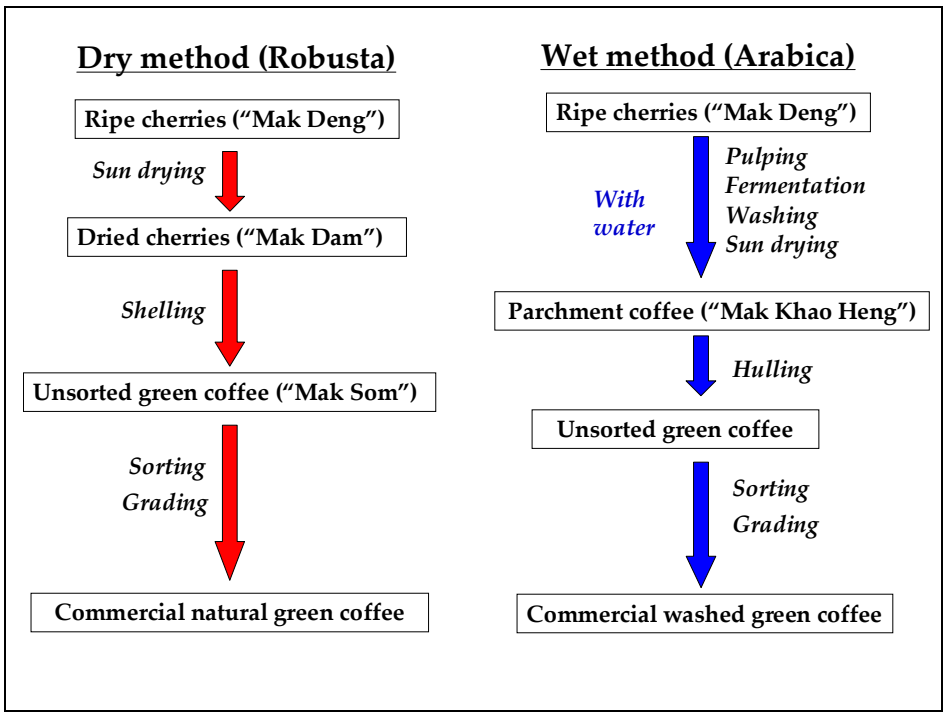
Annex 1: Main characteristics of *Coffea arabica* and *Coffea canephora* species

	C. canephora	*C. arabica*
Origin	Equatorial forest West-Africa (From Guinea to Congo)	East-Africa high Plateaus (Ethiopia, Kenya, Tanzania)
Growing agro-ecological environment	Well distributed abundant rains. Hot temperatures, low altitudes.	Well distributed abundant rains. Cold periods (floral induction). Fog and drizzle. High altitudes,
Other species growing in those environments	Banana, cocoa	Highland forests, Eucalyptus, Pine trees, vegetables, temperate climate fruit trees
Latitude	Generally in equatorial low zones	Generally in mountainous tropical zones. Near the tropics, possibility to grow arabica in lower altitudes (Cuba, Brazil, etc.)
Optimal rainfall	2000-3000 mm	1500-2000 mm
Yield (kg green coffees/ha)	From 200 Kg (Ivory Coast, Cameroon) up to 1,500 Kg (Vietnam)	From 200 Kg (Venezuela) up to 3 ton (Costa Rica, Colombia)
Robustness	Very robust tree	Lack of vigor
Resistance to diseases ***Hemileia vastratix (leaf rust)*** ***Nematodes***	 Generally tolerant, sometimes resistant Generally tolerant	 Generally susceptible Susceptible
Density	1,000-2,000 trees/ha	1,000-10,000 trees/ha (for dwarf varieties, it is 5,000 in average)
Shade	Generally no shade	Associated with shade trees (generally leguminous)
Caffeine content of beans	2 - 4.% (3% in average)	0.8 - 1.4% (1.2% in average)

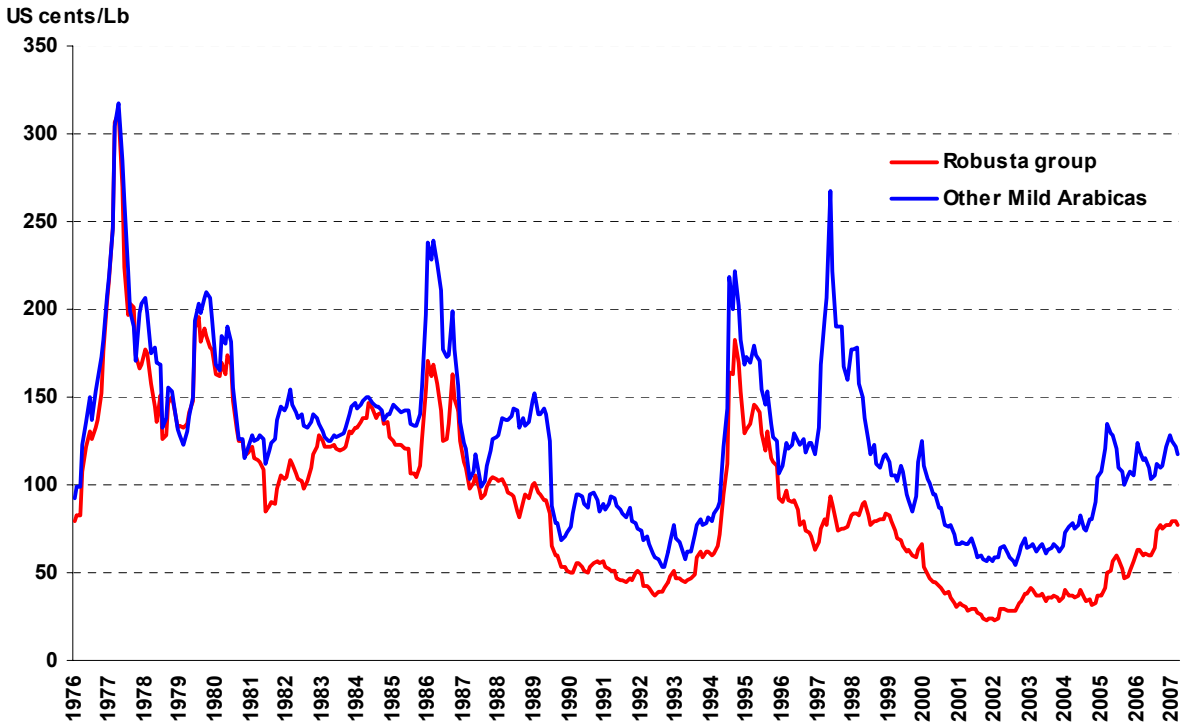
Annex 2: Main characteristics of arabica and robusta coffees

	robusta	**arabica**
Brew characteristics	Strong body, bitterness, may be aromatic	Light body, acidity, aromatic
Beans' processing	Mainly dry-process (some wet process in India, Indonesia, Uganda)	Mainly wet-process (with big producing countries doing dry process like Brazil, Ethiopia and Ecuador)
Transformation yield (green/cherries)	22%	19%
Quotation markets	London, Le Havre	New York, Hamburg
Average international price in 2006	67.5 cents/Lb	114.4 cents/Lb
Market share in 2006	35-40%	60-65%
Consumers' image	Bad image	Good image
Destination markets	Southern Europe, Northern Africa, Middle-East.	Northern Europe, USA
Final products	Pure robusta or coffee blends (bottom-of-the-range products) Instant coffees Espresso blends	Pure arabica or arabica blends Specialty coffees Origin coffees

Annex 3: Coffee processing, in Laos from beans to commercial green coffee



Annex 4: International coffee prices (1975 – 2007)

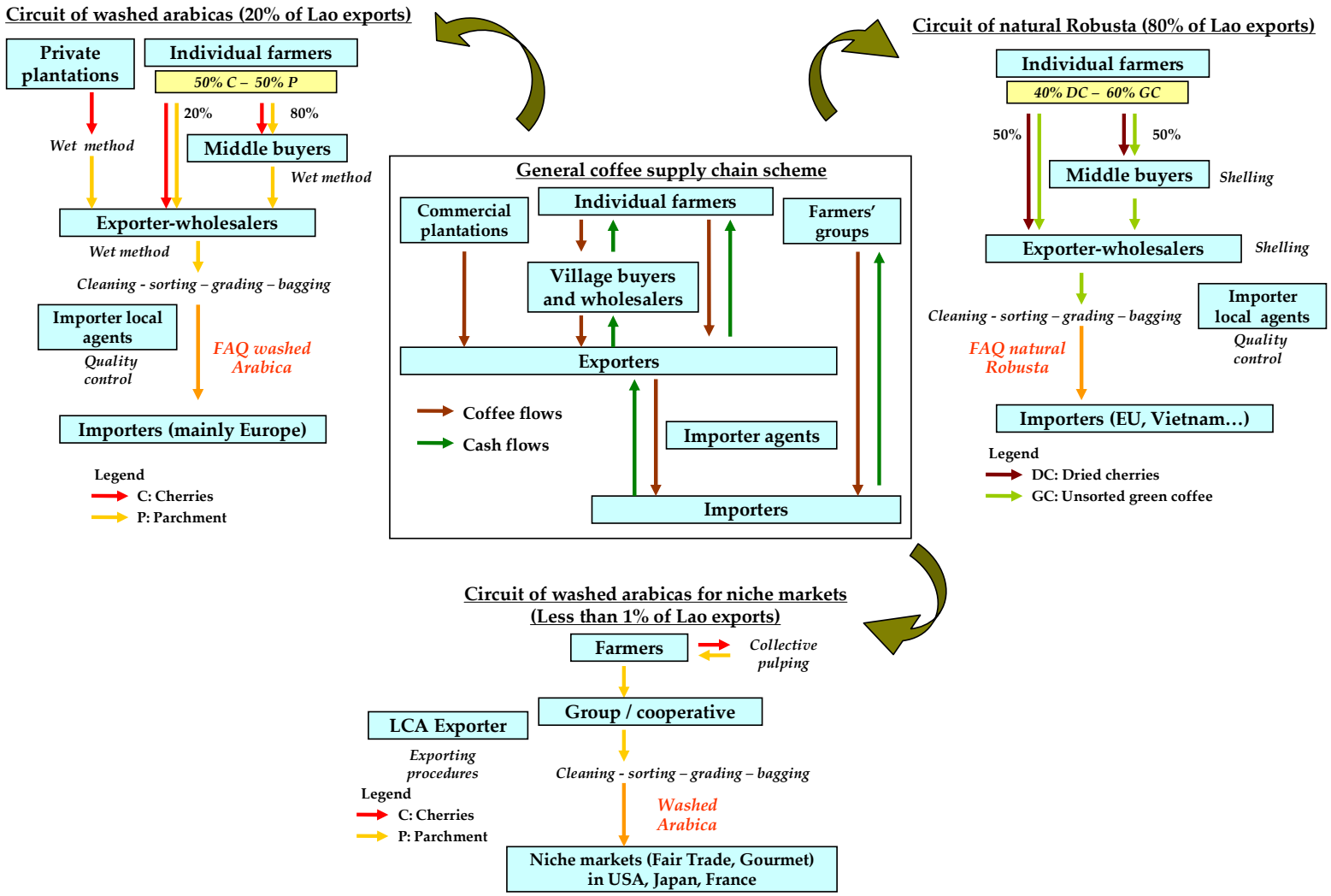


Source: International Coffee Association ICO

Annex 5: Farmers' survey village list

Village name	District	Altitude
Lak 35	Paksong	920
Katouat	Paksong	1200
Phou Oy	Paksong	1310
Houeixanh	Paksong	1185
Maysaisomboune	Paksong	1000
Somsanoukmay	Paksong	930
Beng	Paksong	1245
Denesavang	Paksong	920
Houeivay	Paksong	1055
Lak 45	Paksong	1110
Nongbone	Paksong	915
Phoumakko	Paksong	1220
Nonglouang	Paksong	1180
Phoudinedeng	Paksong	1180
Xetapoung	Paksong	1190
Onh Noi	Laongam	600
Houeixeng	Laongam	850
Nambeng	Laongam	905
Sixiengmay	Laongam	680
Vang Gnao	Laongam	835

Annex 6: Lao export coffee supply chain scheme



Annex 7: Price structure for natural robusta in the mainstream export circuit

International price ICO[1] (March 07) in USD/MT (0.79 cent/Lb)	**1,742**
International price ICO (June 07) in USD/MT (0.92 cent/Lb)	**2,028**
Contract price FOB Bangkok [2] min	***1,600***
Contract price FOB Bangkok max	***1,900***
Average contract price FOB Bangkok (USD/MT)	**1,750**
Total shipping costs Chong Mek - Bangkok (USD/MT)	**60**
Theoretical price FOB Chong Mek (USD/MT)	**1,690**
Exporter profit [3] (in USD/MT of green coffee)	**280**
Total Export costs FOB Chong Mek (USD/MT)	**76**
Total Export costs FOB Chong Mek (LAK/Kg)	***743***
Including	
Lao Coffee Association Contribution	20
Quality control certificate	1
GSP certificate	1
"Phyto" (disease control certificate)	1
Transport (Chong Mek)	70
Tax on profit (Champassak Province)	300
Financial expenses	350
Theoretical exporter warehouse exit price (USD/MT of merchantable green coffee)	**1,334**
Exporter warehouse exit price (LAK/Kg of merchantable green coffee)	**12,983**
Total conditioning costs (USD/MT non-merchantable green coffee)	**90**
Total conditioning costs (LAK/Kg of non-merchantable green coffee)	***880***
Conditioning related costs (in LAK/Kg of non-merchantable green coffee)	
Weight losses due to drying (around 3%)	360
Weight losses due to grading (around 5%); sold to local roasters	50
Manual sorting	200
Export quality bags	120
Bagging / weighing / stocking / loading	150
Exporter warehouse entrance price (USD/MT)	**1,243**
Exporter warehouse entrance price (LAK/Kg)	***12,103***
Middle-buyer profit (LAK/Kg of non-merchantable green coffee)	**1,000**
Total collecting costs(USD/MT of unsorted green coffee)	7
Total collecting costs(LAK/Kg of non-merchantable green coffee)	*65*
Collecting related costs (in LAK/Kg of non-merchantable green coffee)	
Transport village - warehouse	40
District "coffee movement" tax	20
Bags	5
Theoretical price paid to producer / Kg of non-merchantable green coffee (USD/MT)	**1,141**
Theoretical price paid to producer / Kg of non-merchantable green coffee (LAK/Kg)	**11,103**

Rate USD/LAK 9,735

Selling rate at: February 1, 2007

Source: BCEL

(1) Buying contracts for Lao robusta are generally set according to the LIFFE price which can be different from the ICO price (generally lower).

(2) These are average contract prices given by exporters during the interviews.

(3) Theoretical estimation of exporters' profit for 2006-07 campaign with good prices and high production. Exporters interviewed speak about 200 USD/MT. The exporters' profit is estimated between 100 and 300 USD/MT depending on the year.

Annex 8: Price structure for washed arabica in the mainstream export circuit

Type of coffee sold by producers:	Cherries	Parchment
International price ICO NYC (December 06) in USD/MT (1.28 cent/Lb)	**2,822**	**2,822**
International price ICO NYC (February 07) in USD/MT (1.22 cent/Lb)	**2,690**	**2,690**
Contract price FOB Bangkok[1] min	**2,500**	**2,500**
Contract price FOB Bangkok max	**2,700**	**2,700**
Average price FOB Bangkok (USD/MT)	**2,600**	**2,600**
Total shipping costs Chong Mek - Bangkok (USD/MT)	**60**	**60**
Price FOB Chong Mek (USD/MT)	**2,540**	**2,540**
Exporter profit [2] (in USD/MT of green coffee)	**350**	**350**
Total Export costs FOB Chang Mek (USD/MT)	**76**	**76**
In LAK/Kg	*743*	*743*
Including		
Lao Coffee Association Contribution	20	20
Quality control certificate	1	1
GSP certificate	1	1
"Phyto" (disease control certificate)	1	1
Transport (Chang Mek)	70	70
Tax on profits (Champassak Province)	300	300
Financial expenses	350	350
Theoretical exporter warehouse exit price (USD/MT of green coffee)	**2,114**	**2,114**
Total conditioning costs (USD/MT of green coffee)	**420**	**420**
In LAK/Kg of green coffee	*4,090*	*4,090*
Conditioning related costs (in LAK/Kg of green coffee)		
Weight losses due to drying (around 3%)	510	510
Weight losses due to hulling (around 18%)	2,960	2,960
Weight losses due to grading (around 5%); sold to local roasters	150	150
Manual sorting	200	200
Export quality bags	120	120
Processing / bagging / weighing / stocking / loading	150	150
Theoretical exporter warehouse entrance price (USD/MT of parchment)	**1,694**	**1,694**
In LAK/Kg of parchment)	***16,487***	***16,487***
Middle-buyer profit (LAK/Kg of parchment equivalent)	**5,000**	**1,500**
Total collecting costs(USD/MT of parchment equivalent)	**156**	**7**
In LAK/Kg of parchment equivalent	*1,520*	*65*
Collecting related costs (in LAK/Kg of parchment equivalent)		
Transport village - warehouse	174	40
District "coffee movement" tax	20	20
Wet processing costs / Kg of parchment equivalent (labor, electricity, etc.)	1,304	0
Bags	22	5
Theoretical price paid to producer(USD/MT of parchment equivalent)	**1,024**	**1,533**
Theoretical price paid to producer(LAK/ Kg of parchment equivalent)	**9,967**	**14,922**
Theoretical yield dried parchment / cherry beans	**23%**	
Theoretical price paid to producers (LAK/ Kg of cherry beans)	**2,292**	

Rate USD/LAK 9,735
Selling rate at: February 1, 2007
Source: BCEL

(1) These are average contract prices given by exporters during the interviews.

(2) These are theoretical estimations of exporters' and middle-buyers' profits for 2006-07 campaign.

Annex 9: Price structure for washed arabica in niche market circuit (example of farmers' export groups)

Fair-trade contract bottom line price (USD/MT) FOB Chong Mek in 2006 (1,21 c/Lb)	**2,668**
It doesn't include the Fair-trade bonus (5c/Lb)	
Total shipping costs Chong Mek - Bangkok (USD/MT)	**60**
Theoretical price FOB Chong Mek (USD/MT)	**2,608**
Total Export costs FOB Chong Mek (USD/MT)	**103**
Total Export costs FOB Chong Mek (LAK/Kg)	*1,006*
Export related costs (in LAK/Kg of green coffee)	
Lao Coffee Association Contribution	20
Quality control certificate	1
GSP certificate	1
"Phyto" (disease control certificate)	1
Transport (Chong Mek)	70
District "coffee movement" tax	150
Tax on profits	300
LCA exporter fee	83
Financial expenses	380
Price exporter cooperative's warehouse (USD/MT of green coffee)	**2,504**
Price exporter cooperative's warehouse (LAK/Kg of green coffee)	***24,379***
Total conditioning costs (USD/MT of parchment)	**445**
Total conditioning costs (LAK/Kg of parchment)	*4,335*
Conditioning related costs (in LAK/Kg of parchment)	
Transport village - warehouse	50
Weight losses due to hulling (around 18%)	3,700
Losses due to size grading (around 20%); undersized beans sold to local roasters	325
Peaberries 3% (sold to local roaster)	-540
Manual sorting	450
Bags	200
Processing / bagging / weighing / stocking / loading	150
Theoretical price paid to producers (USD/ MT of parchment)	**2,059**
Theoretical price paid to producers (LAK/ Kg of parchment)	**20,044**
Real price paid to producers (LAK / Kg of parchment)	**19,000**

Rate USD/LAK 9,735
Selling rate at: February 1, 2007
Source: BCEL

Assumptions:

15% of undergraded beans are sold to a local industrial roaster at a price of 21,000 LAK/Kg
5% of undergraded beans are sold to a local small roaster at a price of 10,500 LAK/Kg
Peaberries are sold at a price of 38,000 LAK/Kg

Remarks:

The difference between the theoretical and the real price paid to producers can be explained by the costs related to farmers' group functioning (staff salaries, facilities, etc.) and Fair Trade certification.