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## Cross-border coordination in the Madagascar-EU lychee chain: the role of GlobalGAP<sup>1</sup>

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### Abstract

Madagascar has a tradition of agricultural trade (coffee, vanilla, cloves). In the 90s, the country started developing non-traditional exports, such as lychees, to the European Union (EU), thereby generating substantial cash revenues for small producers. In 2005, access to the EU market became more difficult, due to more stringent quality requirements and to the growing use of the private retailer standard GlobalGAP. Whereas the empirical literature on private standards presents GlobalGAP either as a success story or a threat for small producers, the case of Madagascar exhibits a specific dynamics: after booming in 2007, GlobalGAP is actually collapsing. The aim of this article is to disentangle the mechanisms of this evolution and to draw some conclusions regarding market access enhancement through private standards. This work is based on semi-structured interviews carried out with all stakeholders of the export chain, government agencies and programs supporting lychee production and on weekly data on lychee trade flows (2001-2010). Using a global value chain approach, we first show the importance of the chain structure: importers are identified as lead-firms (conversely to most studies dealing with private certification) in an environment characterized by low competition at the international level. We then evaluate the role of donors and trade facilitators as actors of the chain. After giving evidence for the collapse of GlobalGAP, we assess what is left of the GlobalGAP procurement system once it has been abandoned: stabilization of the relationship between exporters and producers and thus enhanced traceability, upgrading of private marketing infrastructures, improved management discipline. We conclude that in the Madagascar lychee chain, although GlobalGAP had little impact on market access.

### Keywords

Private certification, Global chains, Non-tariff measures, Foreign aid, Non-traditional exports

JEL: Q13, O19, L22

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## **Introduction: Standards, trade actors and international donors**

Since the 90s, recurring food safety failures<sup>1</sup> have raised consumer awareness and concerns about food safety in industrialized countries (Henson and Caswell, 1999). As a consequence, public and private standards regulating the production process and handling of food were adopted to reduce risks at the consumer level. In this context, flows of fresh products from developing to developed countries are under close scrutiny since they are viewed as riskier than local production due to weak domestic legislation and monitoring of food safety (Unnevehr, 2000). Alongside public regulations that deal with this problem by setting standards for imported products, private standards were also created to mitigate reputational and commercial risks of the private sector (Henson and Reardon, 2005). Moreover, under strict liability rules, food handling firms are liable for injuries caused by defective products, regardless of where the food safety problem originated. As a result of being asked to prove that they have taken all reasonable precautions to ensure food safety, they impose specific standards on their suppliers, behaviors and traceability (Loader and Hobbs, 1999). Finally, private standards were shown to transpose performance standards (e.g. maximum residues limits) into process standards (Henson and Humphrey, 2010) that set a practical guide of conduct, thereby increasing the probability of actually meeting the performance standards.

However, the literature shows that the impacts of standards are ambiguous. On the one hand, standards are supposed to increase the competitiveness of exporting countries by reducing transaction costs and to enhance consumer confidence (Jaffee and Henson, 2004). Moreover, standards may be seen as codified behaviors that help food operators align their requirements with international ones, and thus alleviate information asymmetries regarding food quality. On the other hand, standards are increasingly regarded by some as a potential obstacle to trade, as fixed and recurring costs of compliance may undermine long term competitiveness. Indeed, several studies emphasize the difficulties faced by developing countries in complying with the food safety standards set by industrialized countries (Reardon and Timmer, 2007). Compliance costs<sup>2</sup> are partly viewed as insurmountable barriers to trade, especially for small producers (Graffam et al., 2007).

As a consequence, considerable donor attention (e. g. USAID, GTZ, DFID) has been directed at building export capacity, both within the public and private sectors (Humphrey and Navas-Aleman, 2010). Such interventions aim at reducing poverty by improving the access of smallholders to global markets. In this respect, horticulture is an important sector that generates high expected revenues per unit of land (Weinberger and Lumpkin, 2007) and is very labor intensive.

The Malagasy export lychee chain exhibits in that respect interesting characteristics: exports towards the European Union (thereafter EU) have been developing rapidly since the beginning of the 1990s. . In 2005, access to the EU market became more difficult, due to more stringent quality requirements and to the growing use of the private retailer standard GlobalGAP. As soon as 2006, a small part of the exported produce was GlobalGAP certified; the peak is observed in 2007, followed by a collapse in the volumes of certified produce as

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<sup>1</sup> Recent food-borne disease outbreaks linked to fresh fruit and vegetables include E. Coli outbreaks on leafy greens in the US in the 1990s, and on bean sprouts in Germany in 2011.

<sup>2</sup> Such costs include: costs of initial investment in specific physical assets, costs of sustaining the code of conduct, costs of increased labor supervision, reporting, and specific agricultural practices (Graffham, 2007), certification costs.

well as in the number of certified producers. This evolution contrasts with that of other countries. In Kenya (Dolan and Humphrey, 2000) and in Senegal (Maertens and Swinnen, 2009), the dynamics of GlobalGap exhibits a decrease in the number of producers involved in the scheme. However, the consolidation of production due to its integration by exporters induces allows to stabilize the volumes of the GlobalGAP certified produce directed to the exports. In Uganda, even though promoted by numerous donors, GlobalGAP certification never turned out to be successful (either in terms of producers or of production) (Diaz Rios et al., 2009). Madagascar presents a very specific dynamics for the case of lychee exports: a scattered production organization increases the costs of supervision and the difficulties of organizing the procurement for exporters therefore decreasing the advantage of GlobalGAP as to access markets, especially when the international competition is low. In the rest of this article, we depict the evolution of GlobalGAP in Madagascar and the role of donor intervention in it. The unexpected withdrawal of donors in 2009 due to the undemocratic coup represents an opportunity to assess the importance of programs in GlobalGAP development: we evaluate which is the role of the donors and what is left from their intervention.

We first depict the lychee production and exports to the EU. Second, we highlight the role of importers as the drivers of the chain, managers of marketing. However, we then focus on the intervention of international donors and its impact, in particular regarding the adoption of GlobalGAP. After analyzing the overall collapse of GlobalGAP in Madagascar, we document what is left from this experience in terms of chain structure.

## **1. Lychee production and exports from Madagascar: a description**

### *1.1 The importance of lychees for Madagascar*

In 2000-2004, Madagascar's agricultural sector accounted for almost 30% of the GDP and provided livelihood for over 70% of the population (Sandri et al., 2007). Moreover, the agriculture and processed food sector represented as much as 60% of all export earnings for the same period. However, while the share of agriculture in GDP grew over time (from 20% in 1965), the proportion of exports generated by agriculture declined (90% in 1965).

This evolution can be related to different trends (Maret, 2007):

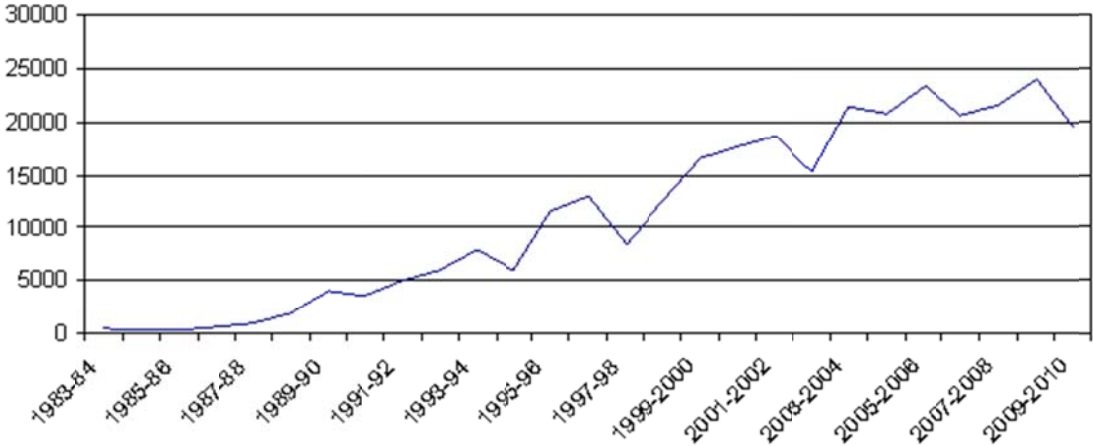
- the liberalization and stabilization programs<sup>3</sup> adopted in the 1980s sounded the death-knell for the marketing agency in charge of setting the prices of the main cash crops (vanilla, coffee and cloves). This led to a reduction of Madagascar's bargaining power on world markets after 1993 (Cadot et al., 2008). The end of state regulation led in 1996 to the collapse of the parastatal UCOFRUIT (Union des Coopératives Fruitières) in charge of marketing fresh fruit and vegetables for exports, namely lychees and bananas (CITE, 2008);
- the promotion of export-oriented industries has been strong since 1989, with the emergence of export processing zones where enterprises enjoy a large variety of tax exemptions. This has led to the development of sectors other than agriculture (e.g. textile, Razafindrakoto and Roubaud, 2002). Over the last decade, vanilla, coffee, cloves, pepper and cocoa represented respectively 30%, 20%, 14%, 6% and 5% of the total value of agricultural exports (Maret, 2007). Recently, the country benefited from the development of non-traditional exports such as French beans (Minten et al., 2009), and from the development of European outlets in the 1990s.

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<sup>3</sup> Structural Adjustment Programs were launched in 1985.

With an average volume of 20,000 tons exported each year since 2004 (graph 1), lychee is one of the major fresh crops exported by Madagascar. It represents on average 7% of the total value of agricultural trade<sup>4</sup> flows between 2005 and 2010, and ranks each year among the top five export crops, after vanilla and cloves and before cocoa, coffee and green beans<sup>5</sup> (INSTAT, 2011)<sup>6</sup>.

Graph 1: Exported volumes, lychee, 1983-2010 (tons)



Source: Eurostat, Comext<sup>7</sup>

Over the period 2000-2009, lychees from Madagascar accounted in average for roughly 70% of the total annual volume of lychees marketed in the European Union, varying according to the years from 60% to 80% (Eurostat, Comext). The major alternative origins are: South Africa (12% of the total market on average between 2000 and 2007); Thailand (6%); Israel (3%) and, with a small but recently growing but unstable share, India and Pakistan (1% each). Around 80% of the Malagasy produce is handled by French operators (Gerbeaud, 2010). South Africa is Madagascar’s major competitor, although most of South Africa’s exports go the United Kingdom.

1.2 Quality requirements for lychee exports

Madagascar enjoys duty and quota-free access to the European Union under the *Everything but Arms* (EBA) agreement. However, non-tariff measures can act as barriers to trade, especially private certification which is less easy to control than public regulation (Henson and Reardon, 2005). Since the mid 2000s, the European regulatory system has evolved towards tighter conditions under which produce is marketed on European markets:

<sup>4</sup> According to the World Trade Organization (WTO) definition.  
<sup>5</sup> The relative weights of the export revenues for each crop, lychee as a reference, are on average (2005-2010): vanilla, 3; cloves, 2.2; lychee: 1; cocoa: 0.9; coffee: 0.75; green beans: 0.45.  
<sup>6</sup> [http://www.instat.mg/doc/export\\_ppaux\\_mada.xls](http://www.instat.mg/doc/export_ppaux_mada.xls) (last accessed August 2011)  
<sup>7</sup> HS 08109030 “tamarinds, cashew apples, jackfruit, litchis and sapodillo plums”. But for the marketing window considered (November to February), the quasi-total volumes concern lychees. Note that, in this graph, the figures are not reported for the civil years but for the marketing seasons.

- Regulation (EC) No. 178/2002, implemented in 2005, sets food and feed safety requirements and establishes the responsibility of business operators. Statutory instruments implementing and enforcing this regulation in domestic laws vary according to the countries. In the British Food law (enacted in 1990), the responsibility falls upon the retailer, whereas the French regulatory framework stipulates that the importer is legally responsible for the safety of the produce he markets. Downstream operators adapted their behavior to secure their procurement, and translated the safety requirements up the chain (Fulponi, 2006).
- Regulation (EC) No. 854/2004, implemented on January 1<sup>st</sup>, 2006 sets obligations in terms of hygiene and requires the application of the HACCP principles (Hazard Analysis Critical Control Point) along the marketing channel.
- Regulation No. 882/2004 on official controls performed to ensure the verification of compliance with feed and food law specifies that the origin country should be able to give information on the structure and functioning on its overall domestic food safety regulatory and enforcement system.

EurepGAP (renamed GlobalGAP in 2007) is a collective private standard for the certification of the production process. It was established in 1997 by European food retailers as a response to the concerns of European consumers, following several food safety outbreaks. Export growers must be certified, either individually (option 1) or as a group (option 2). Certification is obtained when passing an on-farm inspection and paying a fee that must be renewed every year. Quality management systems must be developed to ensure safe pesticide use, and compliance with handling and hygiene standards. Last, exporters must be able to trace production back to a specific farm from which it was procured in order to ensure the compliance of the product with the standard. Compliance with the standard involves fixed costs (*e.g.* the construction of sheds and of latrines with running water) and recurring costs (*e.g.* record keeping of all farm activities related to the production of the certified crop, both at the individual and the group level, monitoring costs).

The organization of lychee marketing was heavily affected by trade liberalization programs, and the business opportunities attracted many occasional operators that built their strategies on volumes rather than on quality. The limits and non-sustainability of this system were highlighted by the monitoring agencies involved in agriculture and rural development (since CTHT, 1998/1999 until CTHT, 2006/2007; MAEP, 2004). Beyond the difficulties to meet the norms in terms of fruit size and color, sulphur residues due to postharvest treatment for conservation reasons were identified as the major source of concern. Moreover, the question of traceability is a major difficulty since Madagascar's lychee chain exhibits a low level of coordination which renders traceability difficult. As a result, the campaigns of 2004/05 and 2005/06 were reported as "difficult" (CTHT, 2006/07): exporters received low prices and shipped low quality produce damaging the reputation of Malagasy lychees on European markets. As soon as February 2006, German and British retailers began to require GlobalGAP<sup>8</sup> certified produce from their importers. In this context (stringent standards, low coordination, large number of occasional operators), the role of intermediaries is of major importance.

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<sup>8</sup> EurepGAP was renamed GlobalGAP in 2007. For conveniency reason, we only keep the latter brand in the text.

### 1.3 Lychee procurement from the EU

Our analysis is based on: (1) the extensive analysis of the Lychee Letter (*La lettre du litchi*) edited by the CHTT (*Centre Technique Horticole de Tamatave*) and the reports summarizing each campaign (see Appendix 1 for the description of the sources). The information gathered in this technical literature comprises: weekly Cost Insurance Fret (CIF) prices reported by the French lychee importers for 9 commercial seasons; weekly minimum and maximum prices; weekly boat procurements by the European market; opening dates of the cultural season in Madagascar; departure and arrival dates of each boat supplying lychee to the European market; and some data on the coalitions of importers for each year. (2) Semi-structured in-depth interviews carried out in 2010 with stakeholders at each level of the export chain (producer-exporter-importer) and interviews with government agencies and programs supporting lychee production.

Using a global value chain approach, we first show the importance of the chain structure: importers are identified as lead-firms (conversely to most studies dealing with private certification) in an environment characterized by low competition at the international level.

#### 1.3.1 Lychee production

*Lychee production* in Madagascar is estimated at 100,000 tons per year produced by around 30,000 households (Gerbeaud, 2008). Due to agro-climatic reasons, the production stretches southbound along the Eastern coast of the island over 800 km, from an area located to the North of Toamasina (Tamatave). More often than not, lychee trees are wild trees grown on cultivated plots or in forests. Family farming represents 95% of total production, with 15% of total production coming from organized orchards. The remaining 5% are grown on industrial farms (CITE, 2008). Households own only a few trees, each of them producing on average 100 kg of lychees – the major part of their agricultural activity consists in cultivating rice. The location of the region where lychees are dedicated to export is dictated by the infrastructure. All lychees shipped to the EU leave from the harbor of Toamasina (Tamatave). Considering that the sulphur treatment is done best when temperatures are lower (evening, night) and that lychees must be harvested early in the morning, the procurement area extends southward towards Manohoro and northward towards Soanierana-Ivongo. Most lychees come from the region of Brickaville and Fenoarivo (see Appendix 2 for a map).

The opening of the harvesting period is proposed at the provincial level<sup>9</sup> by commissions composed of producers, exporters, and representatives of public authorities (institutions in charge with food safety and law enforcement). The decision is then set by a provincial decree. In addition to climatic conditions and the degree of fruit maturity, social and political events are taken into account (*e.g.* elections). The boats are loaded as soon as the lychees have been treated, and the first boat leaves the harbor three to four days after the beginning of the campaign. The ability to rapidly harvest and transport the lychees to the treatment plants located in Toamasina is highly strategic. As a result, collecting services proposed by intermediaries increase dramatically during the harvesting period, thereby expanding the agricultural labor market. Actually, many people engaged in other sectors of the economy – including urbanites from as far as the capital (Antananarivo), located over 350 km from the production zone – are attracted to the area during the harvesting season.

The role of rural brokers is essential in supplying the exporters with produce. They buy the fruits at the farm gate in sometimes remote rural areas, and deliver them to a treatment plant where they sell them to the exporter. They face the risk of the produce being rejected by the

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<sup>9</sup> As for litchi production, 3 provinces are concerned: Toamasina, Fianorantsoa and Toliara (from North to South)

exporter because it does not match the quality requirements (ripeness or size, mostly); or that the price eventually paid by the exporter do not cover the transportation cost and farm gate prices. The clustering of exporters in a small area generates opportunities for the brokers: the produce rejected by one exporter can rapidly (relatively to the number of brokers queuing at the plant gate) be proposed to another exporter before lychees are spoiled. Competition among exporters is reported to be low. A single publicly-known price prevails and does not allow brokers to get any price premium. Indeed, supply is sufficiently large and regular to allow all the exporters use efficiently their treatment plant; moreover, information on the prices paid by each plant circulates rapidly; and finally, there is no differentiation of products. Payments are made at the delivery. If advance payment was made by the exporter, a negotiation on the part of the total amount to be reimbursed at each transaction takes place, and this part is deduced from the total due by the broker, at the daily price.

At this point, the exporter takes ownership of the produce. In the plant, the produce is handled immediately, or as soon as allowed by the plant capacity. The lychees are sorted to exclude the fruits that do not meet the European requirements and packed. Finally the exporter proceeds to the sulphur fumigation and transports the pallets to the dock, including the domestic registration of the volumes when entering in the harbor, where the importer loads lychees in the boats.

### 1.3.2. Lychee procurement

In Europe, lychee is a typical Christmas product: depending on the beginning of harvesting in the production regions and on the logistical constraints, lychees arrive in the European harbors a few weeks before Christmas. Over the past 10 years, the first boat delivering lychees from Madagascar arrived on average 16 days before Christmas. This date is highly variable from one year to the other, ranging from 9 days (in 2003) to 28 days (in 2007). At this point of the time, Malagasy lychees delivered via airfreight are already sold since on average two weeks on the European market, but they represent very small volumes (around 400 tons per year). The price difference between air- and seafreight lychees is considerable – the typical price of the former varies between 5 and 10 € per kilo<sup>10</sup>; that of the later range from 0.5 and 2.5 € per kilo. Moreover the dynamics of the market for lychees carried by air depends on other countries from the Indian Ocean, such as Mauritius. The study will focus on the market chain of lychees transported by boat.

Finally, lychees are sold to final consumers, mostly through supermarkets and as loss-leaders. More often than not, they are handled in bulk on the shelves. The segmentation of the product on the final European market is not significant, except for the United Kingdom, where lychees are sold in smaller packaged quantities (250 or 500 grams). In that respect, lychee has a specific position in the tropical market (large volumes marketed mainly in winter). In general, the supply and demand of tropical fruits on the European market are highly seasonal (e.g. mango, papaya) due to irregularities in the procurement and volatility of consumption (FAO, 2008). Due to the tight marketing season of lychees (9 to 11 weeks for Malagasy lychees over the period 2001-2010) and to the low substitutability of this produce with other fruits during the winter season where it has few competitors, lychee is marketed as a mass consumption product. Therefore, the main objective of the operators is the regularity of flows and the adaptation of the volumes to a fluctuating but predictable demand: with a peak right before and for Christmas, followed by a smaller increase during Chinese New year<sup>11</sup>. The price of lychees before Christmas is on average 45% higher than that of the after Christmas period

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<sup>10</sup> All the prices are CIF, when not explicitly said not to be.

<sup>11</sup> End of January.



(with an average of 1.71€ before Christmas and 1.08€ after Christmas, different at 5% level) – see appendix 3 for the graph of the weekly prices. Marketing strategies are important: the intra-annual price (in constant prices<sup>12</sup>) volatility is on average over the period 2001-2010 from 0.40 (standardized, 0.33), with very large variations according to the year: it ranges from 0.21 in 2004-05 (standardized, 0.14) to 0.68 in 2009-10 (standardized, 0.62). This intra-annual price variability is namely higher than the inter-annual price volatility, which is on average from 0.27 (standardized, 0.21) when we take deflated prices into account.

This last observation deeply influences the structure of the supply chain, and gives to importers a large weight.

## **2. The role of private trade actors in the lychee chain**

This section aims at presenting the role of importers in structuring the chain. We first define the concept of chain drivenness. We then show to what extent and how importers control the chain.

### *2.1 Chain drivenness and drivers*

We will present elements that show that they are acting as lead firms in the chain: lead firms are demonstrating how certain firms set, measure and enforce parameters under which the other firms have to operate (Humphrey and Schmitz, 2002). Governance is viewed as the process of exercising control along the chain: what has to be produced, when the product has to be delivered, in what quantity, how it should be produced, at what price. More often than not in agricultural and agro-processing sectors, lead-firms are found to be the buyers.

The literature distinguishes originally between two types of governance in supply chains: “producer-driven” and “buyer-driven” chains. The former were said to be found usually in sectors with high technological and capital requirements; the latter generally in more labour-intensive sectors, where market information, product design, marketing and advertising costs set entry barriers for potential lead firms (Gereffi, 1994). According to Dolan et al. (1999), international horticultural supply chains with supermarkets as final buyers have been orienting towards a “buyer-driven” type of governance, deriving largely from supermarkets’ increasing control over information on consumers’ preferences. They coordinate supply chains not directly, but externalise a wide range of functions to preferred importers-suppliers. However, the recent literature argues that the analysis should move beyond this dichotomy in order to capture the evolution of governance in the value chains (Sturgeon, 2009). We investigate the role of importers.

### *2.2. The role of importers*

Importers are commissioners who do not own the produce, but match sellers (exporters) with buyers (most of the time, supermarkets), and sell on behalf of the exporters. In the case of lychees, they are in charge of the logistics from Madagascar to the EU. For logistic reasons – reefs are the cheapest mean of transportation – they share the boats to optimize the use of their capacities. According to the yearly (and unstable) alliances that emerge, one to three groups of importers were observed since 2000. The decisions are taken collectively, within these groups, regarding the departure date of the boat (full or not), the route to Europe, the

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<sup>12</sup> We took into account French inflation rates, as the most part of the lychees (80% of the volumes) is marketed in France.

speed of the boat, and the arrival port in the EU<sup>13</sup>. From the data (2000-2010), we see that their margin of maneuver is substantial: for instance, the trip to Europe takes 10 to 14 days; and 1 to 6 boats are used per year. Loading the boats is a strategic decision as well, especially for the years when importers did not collude: the first boat is leaving 3 to 5 days after the opening date of harvest.

All these decisions are made according to the European market conditions and the strategies of the competing importer groups on other boats, in order to avoid a transitory saturation of the European consumption market and subsequent drop of prices.

### *Concentration of intermediation*

European lychee importers are few in number, when dropping the non significant flows<sup>14</sup>: seven French importers were identified, who belong to the so-called “Rungis group”; one German importer and a smaller Belgian one.

### *Financing*

Controlling the procurement is all the more feasible that importers often offer cash in advance to exporters, for them to support the up-front payments to be made (around 20 million euros per year): the price of the produce at the first place – they thus enjoy a market power that prevent any ex-post renegotiation on who bears the transportation costs; and because, given their intermediation role, the payment can be made to the exporter only when the produce is sold in Europe. At this point the whole structure of the costs is known.

### *Quality control*

Importers are involved in self-control private voluntary schemes. They check the quality of produce at the arrival point. However, studies show that this initiative is more often than not directed towards securing their legal defense if the produce is found not to meet the public regulation (Rouvière et al., 2010).

Moreover, German retailers (Lidl) are increasing their requirements since 2006; the German market represents 30% of the total volumes marketed in Europe. Exporters called then for international support for certification, in a favorable political environment.

### *Marketing strategies*

As the number of observations is small when studying the campaign dynamics (9 campaigns), we propose a non-parametric correlation study, namely the Spearman rank correlation which compares the ranks of the observations in two variables, and concludes that the variables are dependent if both have a similar structure or privileged order. We choose a non pair-wise comparison.

The opening of the harvesting period is regulated by public authorities. However, the marketing decisions of the importers are not totally dependant on this date. We compared over the 9 campaigns the correlation of the average price (the results are identical when tacking the median price) and the date at which the first boat arrived in Europe ( $\rho=0.63$ , significant at

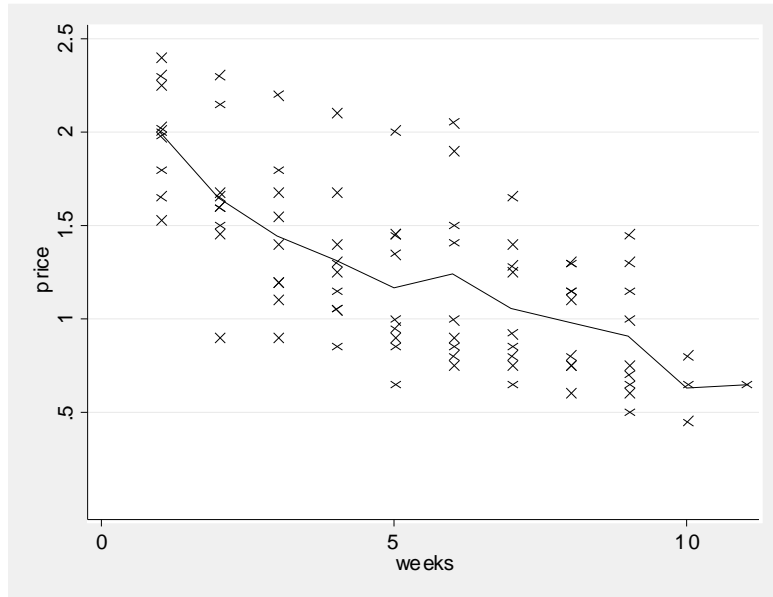
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<sup>13</sup> According to the necessary infrastructure and location in the EU, the most used harbours are: Marseille (France), Savona-Vado and Genova (Italy); Rotterdam and Vlissingen-Flushing (the Netherlands), Zeebrugge (Belgium).

<sup>14</sup> After New year, imports are made by containers, which allows importers to procure small quantities.

10% level) and is negatively correlated to the standard deviation of the price ( $\rho=-0.56$ , significant at 10% level). But the computation of the same correlations with the opening date of the harvest are far from significant. We conclude therefore that the marketing strategy of the importers is important and that it obviously aims at sustaining prices. Prices are in fact decreasing on average across the weeks (see graph 1) and their variability is decreasing.

Graph 1: weekly prices and average price (2001-2010)



In turn, the date of arrival of the first boat is not correlated to the number of weeks lychees are present on the European market, even though we could have thought that the harvesting season in Madagascar dictates the marketing window of importers, for its beginning and for its end. And, more surprisingly, the date of arrival of the first boat is only weakly correlated to the proportion of the total volumes that is marketed before Christmas (15%). Even though the first part of the marketing window seems to be strategic (with around the three quarters of the produce marketed at higher prices), the second part of it is not marginal. First, the proportion of the weeks before Christmas in comparison with the total period during which the produce is marketed is low, 30% on average and always less than 50%. Second, the shipments of lychees (in volumes) rapidly slow down during the season. On average, more than 85% of the total volumes arriving to the EU is shipped during the first 4 weeks, and 30% of the volumes in the first week (see appendix 4 for a more precise graph). However, lychees keep then fresh during three weeks, and the Spearman correlation index shows that the timing of lychee arrival (number of weeks until the procurement reaches 90% of the total volumes) is not correlated to the length of the marketing window. As regards the possibility for importers to anticipate prices, the tests show that prices are highly correlated from one period to the other. When considering the final week (the ninth or tenth week for 8 of the campaigns), we observe price correlation up to 4 weeks before it. Actually, when looking at the intertemporal correlation of prices, it turns out that there is a break at week 4/5, and that prices before that date are not much related to those after that date. We saw that this point is when the whole volumes of lychees have arrived in the European Union, and when importers have to store them and find outlets for them. The two periods are characterized by a higher price in the first period (1.5€ to 1€, different at 1% level), and a lower the price variation in the first period but

the standardized price variation is not different from one period to the other. In that regard, we do not find that the end of the marketing window is riskier than the beginning. When lychees are in the European Union, they should be, from the exporter's point of view, sold at any price, even very low. However, from the importer's point of view, if the cost of handling (sorting, grading, storing, transporting) lychees is higher than the commission he expects from the sale, then lychees are dropped.

### 3. Donors as actors of the chain

#### 3.1. Taking donors into account in global chain analysis

The empirical literature directly concerning the role of donors in global chains management in developing countries is scarce. However, concerning the adoption of private standards by agricultural producers, they are sometimes mentioned. In fact, stimulating high-value exports is in fact viewed by some authors (Aksoy and Beghin, 2005; World Bank, 2008; Swinnen et al, 2008) as a pro-poor development strategy, based on the promotion of smallholder<sup>15</sup> and the inclusion of smallholders in high-value global chains is put forward. Therefore, GlobalGAP is a tool enhancing potential market access.

- *The cost of certification* is first at stake as the returns to it is delayed. In particular, some analyses emphasize the question of the recurring costs (Ashraf et al., 2009; Asfaw et al, 2010). According to who bears the costs: in particular, costs can be shared between producers and exporters (IIED and NRI, 2008), donors will be willing to pay for certification.
- In the case of GlobalGAP adoption, Okello and Swinton (2007) emphasize the importance of *collective action* (especially under GlobalGAP, option 2, see below) and the role of donors in it. This coordination allows smallholders to overcome their disadvantage in terms coordination costs to market high volumes.
- Last, donors target many actors in the chain. In particular, the export level is viewed as decisive (Humphrey, 2008; Henson et al., 2011; Jaud and Cadot, 2011).

#### 3.2. Intervention, coordination with private actors and outcomes

This section draws on the annual reports of the donors and trade facilitators (PIP-ColeACP; Bamex-USAID; MCA; IFC and IFAD, see appendix 3 for a description of the data) and on the interviews of Malagasy stakeholders involved in their activities (GEL and the 4 major out-contracted institutions or individuals).

The intensification of donor intervention took place in 2006/2007 in a context of political renewal and business pressure. The national political context was favorable to attracting international funding. Indeed, the Madagascar Action Plan<sup>16</sup> was launched by the government of President M. Ravalomanana in 2005 and targeted the Millenim Development Goals (2012), with a proactive program largely advertised at the international level.

Moreover, the degradation of the reputation of Malagasy lychees on European markets was harming the sector (in terms of prices paid to the exporters and rejected shipments). This

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<sup>15</sup> A stream of the literature argues that welfare improvement in rural areas can be achieved by the development of the agricultural labor market with a consolidation of production (Maertens and Swinnen, 2009).

<sup>16</sup> <http://www.un.org/esa/coordination/Alliance/MADAGASCAR%20ACTION%20PLAN.htm>

evolution was due to the proliferation of occasional exporters, who did not grade their products or invest in quality management procedures for sulphur fumigation. The number of exporters thus grew from 30 in 1999/2000 to 38 in 2003/2004 (CTHT, 2006/2007). Moreover, as mentioned in section 2.2, the European regulatory system tightened the conditions under which produce is marketed on the European markets. Finally, British and especially German retailers threatened before the 2006/07 campaign to remove from their shelves all non GlobalGAP certified lychees<sup>17</sup>. The German market represents about 30 % of the total volumes marketed in Europe (Eurostat, Comext) and most of the produce is sold by retailers who contract with importers on the basis of back-to-back contracts signed in September for the next marketing season (as opposed to the French retailers who rely on spot markets or on informal day-to-day relationships with the importers). This evolution was considered as an important threat by four importers (one German, three French) and they required from exporters GlobalGAP certified produce: they lent money to the exporters for them to upgrade the infrastructure, invest in post-harvest equipments, and ensure traceability. The cost of certification for an exporter is estimated by the donors at 121,000 € for the treatment plant, transportation and other investments (collection points and their equipment), regardless of the investment made at the production level, for 500 tonnes of certified lychees (e.g. 200 to 500 small producers) (MCA, 2008, Annex, p. 240). This figure is consistent with the estimation of the exporters who engaged in GlobalGAP certification and report, in the interviews, an investment of about 100,000 €. The cost of the certification only is about 1,500 € per year.

The description and timing of the donors' intervention (Stabex, French cooperation, FIDA, BAMEX-USAID, MCA, IFC-World Bank) is reported in appendix 4.

While donors nominally sign to support the Madagascar Action Plan designed by the government, there are no formal central donor coordination mechanisms such as Sector-Wide Approaches (SWAs) that encourage joint planning and pooled financing at the sectoral level. However, several programs exhibit the same general philosophy and coordinate on similar activities with regards the promotion of the GlobalGAP certification.

### 3.2.1. The approach: market access, expanding markets and the role of GlobalGap

The major goal reported by all the donors and trade facilitators is business oriented. They aim to expand market penetration in exporting countries and view trade as guaranteeing pro-poor growth. Therefore, one of their major actions beside the promotion of certification is to link producers to markets by establishing marketing institutions in the region of Tamatave.

BAMEX supported the activities of the *Business Centers Ivohorena* (BCIs), marketing structures that were funded by the program ERI (2004) and provide producers with business services and promote technical and administrative skills at the producer level. MCA developed (since 2006) Agriculture Business Centers (ABCs) as a part of its agribusiness component plan: however the sectors by BAMEX and the areas covered by the two donors overlap only partially. Moreover, the PPRR used its own marketing structures, the Market Access Centers (MACs) since 2004 that are buildings managed by a union of producers' organizations and used for storage and processing (status of commercial enterprises): support for skill improvement and access to credit is provided by a separate body.

These marketing structures prove to be important for GlobalGAP certification: in the case of BAMEX and MCA, field workers belonging to them support farmers in forming cooperatives and negotiating agreements with private sector firms. As financial institutions they provide the possibility to secure credit. As marketing institutions, they allow for traceability and storage.

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<sup>17</sup> GlobalGAP certification is one of the requirements of the *Cahier des charges* which includes a specific packaging and MLRs set at 70% of the legal limit as well.

### 3.2.2. Business driven: Targeting specific sector

Market exploration was realized by the donors (PIP, 2002-2003; FIDA 2005; BAMEX 2004-2005; MCA, 2006-2007) as their intervention was mostly directed towards business activities. The lychee sector selected due to its economic weight at the national level (BAMEX, external evaluation 2008) or at the local level (PPRR, 2007); the potential impact on a large population (MCA, final report, 2008; PPRR, 2006); the potential for production development: They add to this expansion of outlets the opportunity to process lychees and end up with an estimated increase in the production of 90% and an increase in the export of 60% (MCA, 2008, p. 123); the potential for marketing development/diversification and access to foreign markets (MCA, *ibid*; BAMEX, *ibid*); the institutional local basis they have/developed (BAMEX, *ibid*); the personal relationship they have (PPRR, *ibid*); the actual difficulties the sector faces in terms of quality management – maintaining market access (PIP, Report, Septembre 2003).

Their aims are different: MCA aims to promote large-scale production (and thus productivity) and therefore is concerned by access to finance and to resources (land and water); BAMEX aims to expand exports and thereby the value of the produce, is concerned with sanitary and phytosanitary compliance of the produce; PIP promotes behaviours that ensure compliance with the EU regulation; IFAD promotes rural development, access to domestic and international markets being one of its components.

In consequence, the role of GlobalGAP is different for these donors: a priority/exclusivity for PIP; a component of the sanitary and phytosanitary standards<sup>18</sup> to be met for international trade for BAMEX; a tool to access some of the foreign markets for MCA; an opportunity driven by local demand for IFAD which was mostly a follower in it.

### 3.2.3. Business driven: the role of exporters

- Local initiatives

UCOFRUIT, the parastatal agency in charge with coordinating the exports of fresh fruit and vegetables, ceased any activity in 1996. However, at the request of public authorities, a Lychee Exporters Association (*Groupement des Exportateurs de Litchis*, GEL) was established in 2001 aiming at coordinating the exporters, and rationalizing their procurement of lychees. In 2010, all lychee exporting enterprises belong to GEL<sup>19</sup>. This association aims at organizing the lychee chain: discusses and decides on the total volume to be exported (since 2005) to sustain the prices on the European market – an informal arrangement among exporters to set quotas; foresees the allocation of the space on boats and allocates it to the exporters; promotes the reputation of Malagasy lychees (participation to international fairs; intervention in newspapers); claims to be representative for the lychee exporters profession, negotiates on their behalf with international agencies (IFC<sup>20</sup>, PIP<sup>21</sup>, IFC<sup>22</sup>).

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18 BAMEX, in collaboration with the Ministry of Agriculture, carried out phytosanitary surveillance of the lychee producing areas as well during the 2005–2006 season. This involved the training of agents in plant protection and quarantine procedures. The access to the US market was thereby the goal.

<sup>19</sup> <http://gelmada.com/>

<sup>20</sup> “The World Bank: Madagascar Country Office E-newsletter”, n° 5-2008, p. 9

<sup>21</sup> <http://pip.coleacp.org/fr/pip/17736-madagascar-au-pays-du-litchi>

<sup>22</sup> Samb, 2007

In April 2006, at the instigation of the Ministry of Trade and of the Ministry of Agriculture, and with the assistance of BAMEX, the stakeholders of the lychee value chain set up the lychee value chain coordination group (*Plateforme de Concertation de la filière Litchi* or PCL) (BAMEX, external evaluation, 2008). This structure is composed of 8 types of stakeholders (producers, brokers, transporters, technical services producers, financial institutions, administration, processors, exporters and consumers. BAMEX worked as executive secretary for this institution. The PCL aims at improving the quality of produce directed towards export and lobbies in that direction for the introduction of new laws.

- Solicitations for GlobalGAP certification

As a response to solicitations of support from local exporters, BAMEX helped them to acquire basic information about GlobalGAP requirements through information sessions and searching for certifying agencies (BAMEX, annual report, 2007, p. 5). The meetings brought together 13 exporters for the first session, 8 for a second more comprehensive session among them 5 requested COLEACP help for preliminary study to comply with GlobalGAP.

The stakeholders participating to the above mentioned workshop of 2006 agreed that the value chain needed a new rule to enhance traceability. The “*Direction des Normes et de la Qualité*” (DNQ) of the Ministry for Trade and the “*Direction du Développement des Partenariats*” (DDP) of the Ministry for Agriculture led the editing committee. The Government enacted a law (18 November 2006 “*Arrêté ministériel portant organisation de la filière litchi*”) for training and registration of consolidators, eg collectors and middlemen (BAMEX, annual report 2007, p. 5).

In 2007, the PCL launched the Litchi Action Plan (in reference to the Madagascar Action Plan): one of the measures taken into account is that of enhancing traceability by monitoring the activities of the rural brokers who deliver lychee to fumigation plants. This evolution towards registration and professionalization of brokers represents an important step towards the monitoring of procurement for exporters.

In 2007, BAMEX support consisted in lobbying on behalf of exporters for financial support of the IFC. The funding was intended for the acquisition of technical assistance to comply with GlobalGAP requirements and certification. Thus, twelve exporters marketed a part of their litchis under the GlobalGAP certificate, thanks to the financial support received from the IFC (Bamex, annual report, 2008, p.4). The funding was used to hire an external consultant who helped exporters to set the quality management procedures necessary for GlobalGAP certification: the costs of the physical investment (collection points, sheds, improvement of fumigation and packing plants) were supported by the exporters (Samb, 2007). MCA bears the costs of certification for the season 2007/2008 (MCA, 2008).

As regards support to organize the procurement system (certification under GlobalGAP option 2), PPRR and BAMEX helped exporters to coordinate with the producers organizations they developed in the framework of their general rural development policy (PPRR, 2007 p.23; BAMEX, external evaluation, 2009, p.37). Direct contracting between producers and exporters was promoted, their marketing structures (respectively MACs and BCIs) providing administrative help for the writing of contracts.

#### 3.2.4. Achievements and the donors' withdrawal

- From the donors' perspective

The final SWOT analysis of BAMEX (External evaluation, 2009, p.37) doesn't report the intervention in the lychee chain as a success. It concludes on the difficulties for operators "to commit thoroughly to market requirements". Furthermore, it viewed the involvement of members of the exporters' association as weak ("weak capacities", External evaluation, 2009, p.11) – the same statement is made by the CTHT in its report to Stabex (CTHT, 2006-2007, p.12) when referring to the governance difficulties of the association. Moreover, the same report underlines that the explicit goal of the exporter association is to control the marketing of lychees (setting volumes, bargaining for a fixed price) and not to upgrade the chain so to insure a stable access to the European market that can benefit the whole profession.

BAMEX decided to transfer the management of BCIs to the MCA in order to strengthen its system of ABCs, but zoning choices, sectors and structures did not match. BCIs were left behind despite the willingness of BAMEX to secure the transition of the established institutions towards their autonomy, and the publicity the program made for it: the political unrest and financial shortage in Madagascar since the spring 2009 made the sustainability of the program achievements uncertain.

BAMEX, specialized in the promotion of marketing, reports coordination difficulties with the program ERI, in charge with the production level. More integrated programs like PPRR managed to let the marketing structures (MACs) be administrated by producers associations even though they remained separated structures.

In August 2009, MCA left prematurely Madagascar after the coup, and the investments planed in the report of 2008, namely the first one specifically targeting sectors and proposing interventions, were only marginally realized.

PPRR promoted the production and marketing of only a few hundred tons of certified lychees through the MACs (PPRR, 2007). Moreover, as soon as 2008, the question of the GlobalGAP certification nearly disappeared from the reports (the 2008 report makes only twice mention of GlobalGAP).

PIP-COLEACP is still promoting good agricultural practices, and the secured management of procurement by exporters. The training of the CTHT professionals allows the CTHT to still propose consulting for upgrading and external auditing for GlobalGAP certification.

- GlobalGAP dynamics

Table 1. Number of certified exporters and producers in Madagascar for lychee

	2006/07	2007/08	2008/09	2009/10
GlobalGap option 1	0	1	4	4
GlobalGap option 2	2	12	7	7
<b>GlobalGap total</b>	<b>2</b>	<b>13</b>	<b>11</b>	<b>11</b>
New entrants	2	11	0	0
Drop out	0	0	2	0
Switch from option	0	0	4	0



Total number of exporters	37	ns	ns	25
Number of certified producers	41 <sup>27</sup>	1198 <sup>23</sup>	ns	≈120 <sup>24</sup>
Volumes certified	300 t	2,000 t <sup>25</sup>	ns	600 t <sup>26</sup>

The total number of exporters is decreasing over the period from, 37 during the campaign 2005/06 to 25 in 2009/10: a consolidation of intermediation is observable. The peak in the intervention of donors coincides with the highest number of producers engaged in GlobalGAP. As soon as 2008/09, 4 exporters switched to option 1 certification. These orchards are however relatively small and they report no more than 5% of the produce they handle as GlobalGAP certified, namely their own production. However, they are procuring from the same producers as those formerly GlobalGAP certified.

This evolution induces a sharp reduction in the number of GlobalGAP certified producers, as well as a reduction in the volumes of GlobalGAP certified produce. This is contrasting with the Senegalese and Kenyan cases where the number of producers is decreasing, but the volumes of certified produce is maintained thanks to the integration of production on large-scale farms by down-stream operators.

## Conclusion: What is left?

This study of the dynamics of GlobalGAP certification in the case of lychees in Madagascar, namely, the only Malagasy product that is currently GlobalGAP certified, shows that the donors' intervention is decisive. Donors help to coordinate operators along the chain, alleviate the financial constraints of small producers as well as that of intermediary firms, access further international funding related to trade promotion.

Madagascar represents an interesting case study because donors left the country after the coup of March 2009, sometimes unexpectedly. The question of the sustainability of their intervention can then be touched upon. We conclude on a sharp drop in certification as regards GlobalGAP after the withdrawal of donors.

However, the results shows that GlobalGAP promotion was only one among a bunch of interventions aiming at promoting market access for small-holders. Moreover, side-effects of certification (Henson et al., 2011) are observed. We identified an evolution of the exporters procurement system with a stabilization of the relationship to the producers and thus enhanced traceability, an upgrading of the private marketing infrastructures and an improvement of the management discipline.

This conclusion leads to the idea that, in this case, GlobalGAP as such has little impact on market access. When the donors withdrew from Madagascar, local actors didn't take over the certification initiative, and with no apparent impact on export flows. We propose that the

<sup>23</sup> MCA, 2008, annex, p. 239

<sup>24</sup> According to certification bodies and exporters' interviews.

<sup>25</sup> MCA, 2008

<sup>26</sup> Interviews with exporters, estimated.

structure of the lychee market and lychee chain is decisive to explain this outcome: the absence of international competition during the Malagasy short marketing window at the international level and the concentration of intermediation lead to a relative market power of importers who turn to act as the drivers of the chain. The strategic element in lychee marketing turns out to be the logistics, and not the supply of quality produce. However, the study show that the experience of GlobalGAP adoption helped organizing the chain and upgrading the practices. Moreover, its implementation has side-effects that benefit small producers who stabilize their relationships to exporters.

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## Appendix 1: data and sources

Summaries of the trends on the lychee European market (“la lettre du litchi”) are published on a weekly basis during the harvesting and marketing period of Malagasy lychees by the Centre Technique Horticole de Tamatave (CTHT). They cover 9 campaigns, from 2001-02 until 2009-2010. They summarize the supply of Malagasy and South African lychees (air freighted volumes, arrivals of boats including their name, tonnage and docking harbour). They report the Cost Insurance Fret (CIF) prices on various European markets (Belgium, France, Germany, the Netherlands and the UK) and describe the observed market dynamics in these countries plus Italy and Spain. They include pictures of the delivered lychees aiming at stating their quality.

For the whole period 2001-2010 except for the campaign 2007-08, reports were published by the CTHT that entail a more precise description of the yearly functioning of the lychee marketing channel. In particular, the upstream segments are described: production, transactions and transportation in Madagascar, loading of the boats.

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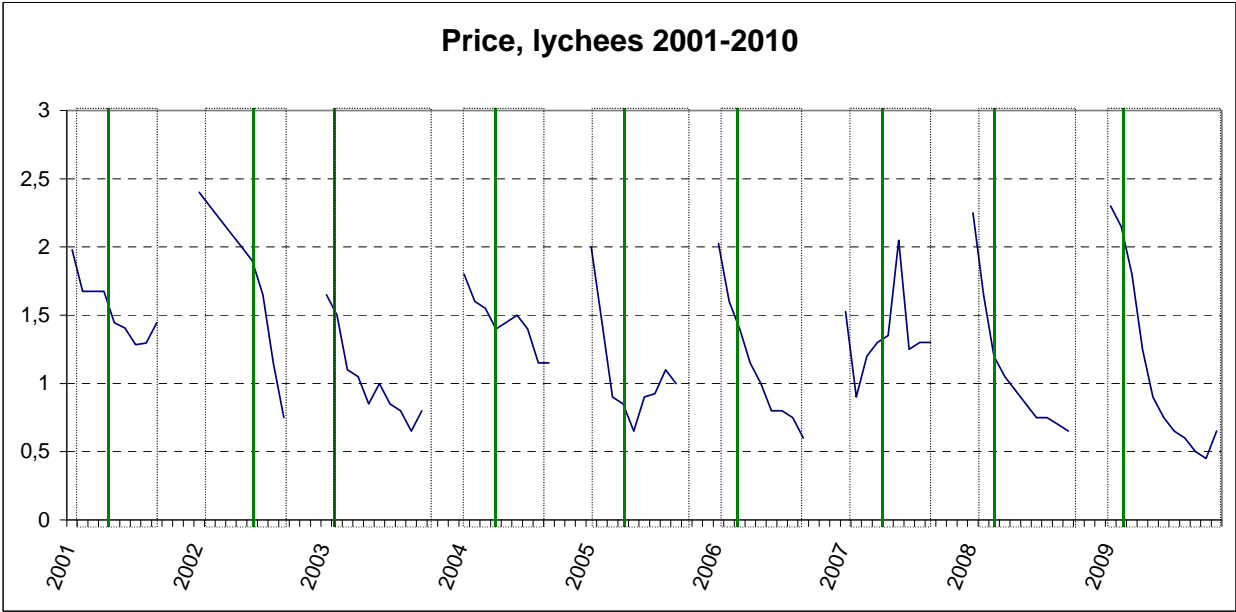
<http://www.ctht.org/litchi.php> (last accessed October 2010)

Data come from semi-structured in depth executive interviews in April, May and June 2010 with a range of Managing Directors from key importing (3 French and German firms) and exporting (11 Malagasy firms) firms. The aim of the interviews was to gather information on the firms’ characteristics, on the contractual relationships with their buyers and suppliers, and identify the key problems they encounter. Interviews with government agencies and programs supporting lychee production and marketing were also undertaken to explore their relationships with exporters and producers. On average, each interview lasted over one hour, and firm visits were sometimes possible. For confidentiality reasons, the identities of organisations are withheld.

**Appendix 2: Map of Madagascar, lychee production area**



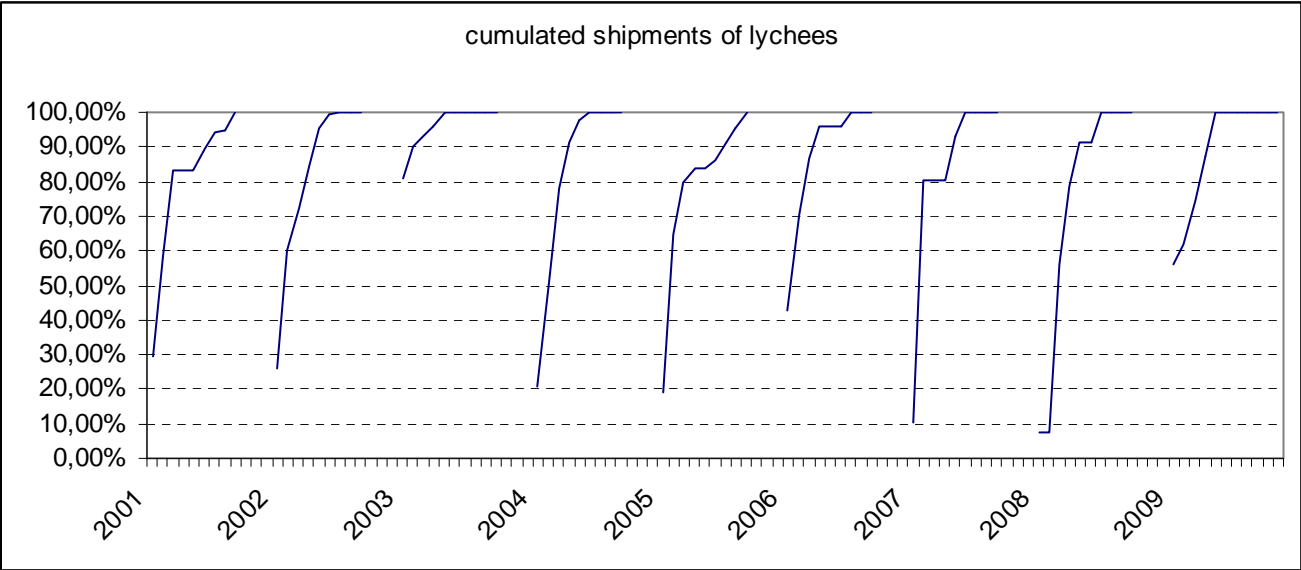
**Appendix 3: Lychee weekly price (euros) from the campaign 2001-02 to the campaign 2009-10**



In grey: marketing windows for lychees (8 to 11 weeks)

Vertical green lines: Christmas week

**Appendix 4: cumulated shipments of lychees (percentage of total volumes) from the campaign 2001-02 to the campaign 2009-10**





## **Appendix 4: Donors' reports**

**UE (COM STABEX 96/97/98/99)**, reports 1998, 2006/07, 2007/08, 2008/09

<http://www.ctht.org/bilans.php>

**PPRR (IFAD)**, reports 2005, 2006, 2007, 2008

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Assessment of lychee fruit expansion 2005

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### **ColeACP (PIP)**

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PIP Info, n° 19, Novembre 2003 "Madagascar: Preliminary study on the feasibility of EUREPGAP certification"

## Appendix 5: Donor interventions in the lychee sector

<b>European Union – Stabex<sup>27</sup></b> Since 1998	1998	Program for agricultural intensification of production in the export sector <sup>28</sup>
<b>French Ministry for Foreign Affairs</b>	2000-2003	Centre Technique Horticole pour l'Exportation (agricultural technical center for export crops)
	2001	Centre Technique Horticole de Tamatave (CTHT, agricultural technical center of Tamatave): interprofessional association. - advises public authorities on the opening date of harvest; - promotes traceability; - supervises vessels loading in Tamatave.
<b>PIP</b> Since 2002	2002	PIP sponsored a diagnosis of the Malagasy lychee and green beans chain in 2002 that evaluated the obstacles faced by operators to comply with the EU pesticide public regulation.
	2006/2007	Training sessions for the staff of the CTHT (services for upgrading of production and postharvest infrastructures with respect to GlobalGAP requirements).
	2007	Training of exporters
<b>IFAD</b> Since 2003	2003	<i>(Programme de Promotion des Revenus Ruraux, Rural Income Promotion Programme)</i> . Aims at improving small producers' access to markets. Wide range of activities directed to rural development as well (microfinance, promotion of literacy, collective infrastructure building...). Lychee sector focused first on the establishment of Market Access Centres (MAC).
	2007	Promotion of GlobalGAP by conducting training sessions at the producer level and linking exporters (4) to producers or producer associations (PPRR, 2007; p. 23).
<b>BAMEX</b> 2004-2008	2004	Inception plan in Madagascar – lychee sector targeted. Build on previous interventions such as that of LDI-USAID (Landscape Development Intervention, 1998-2002) and ERI-USAID (2004-2009, Eco-regional Initiative).
	July 2006	Coordination of the establishment of the lychee value chain coordination group.
	April 2006	Meeting with some exporters (13): promotion of

<sup>27</sup> Système de Stabilisation des Exportations, EU compensatory finance scheme to stabilise export earnings of the Africa-Caribbean-Pacific (ACP) countries.

<sup>28</sup> Programme d'intensification de la production et de la structuration professionnelle

		GlobalGAP certification
	Nov. 2007	Communication session about quality management (35 exporters)
	2008	Total funding 225,000\$
<b>MCA 2005-2009</b>	2005-2007	Inception phase: the selection of the sectors to be supported took place in 2007 (MCA, 2007)
	2007	- 80,000\$ in 2007 directed to training and to pay for the certification – ECOCERT, MCA, 2008, annex, p. 239. - trade missions were subsidized (62,500\$ estimated in 2008) for the exporters (Fruit Logistica, Berlin 2008; mission to China).
	Aug. 2009	Unexpected departure due to undemocratic coup (March 2009)
<b>IFC</b>	August 2007	Funding of external consultancy for GlobalGAP certification (10 exporters) No funding of concrete investments